RPS

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Shannon Foynes
PORT COMPANY

Capacity Extension at Shannon Foynes

Environmental Impact Assessment Report

Volume 8 Appendices

Appendix 8.2

GQRA Report

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1 Introduction

1.1 Terms of reference

RPS was appointed by Shannon Foynes Port Company to undertake an environmental ground investigation and associated testing in support of the proposed redevelopment measures at the existing Port of Foynes (Main Street, Ballynacragga North, Foynes, County Limerick). The redevelopment will incorporate a jetty extension, pontoon relocation and expansion of the Port onto neighbouring lands to the east (Durnish Lands).

This facilitated the production of a Generic Quantitative Risk Assessment (GQRA) to quantify potential contamination risks for the redevelopment.

1.2 Objectives

This report describes the investigations undertaken to characterise the ground conditions beneath the site, and to quantify the potential risks to any development from sub-soil contamination and groundwater. This information will also form the basis of any further assessments and remedial measures, if deemed necessary.

1.3 Previous reports

A Preliminary Risk Assessment (PRA) was completed by RPS for the site in March 2018:

'Shannon Foynes Port Company, Port expansion, Preliminary Risk Assessment (Desk Study) Report, IBR0973'. RPS, March 2018.

The PRA report highlighted the potential contamination sources, pathways and receptors which were likely to be present on the site. The principal source of contamination was considered to be the potential for made ground within the port and off-site sources.

It was recommended that, in accordance with CLR11, an intrusive site investigation and quantitative risk assessment should be carried out if the site is to be redeveloped to ascertain if source – pathway – receptor linkages are present.

1.4 Sources of information

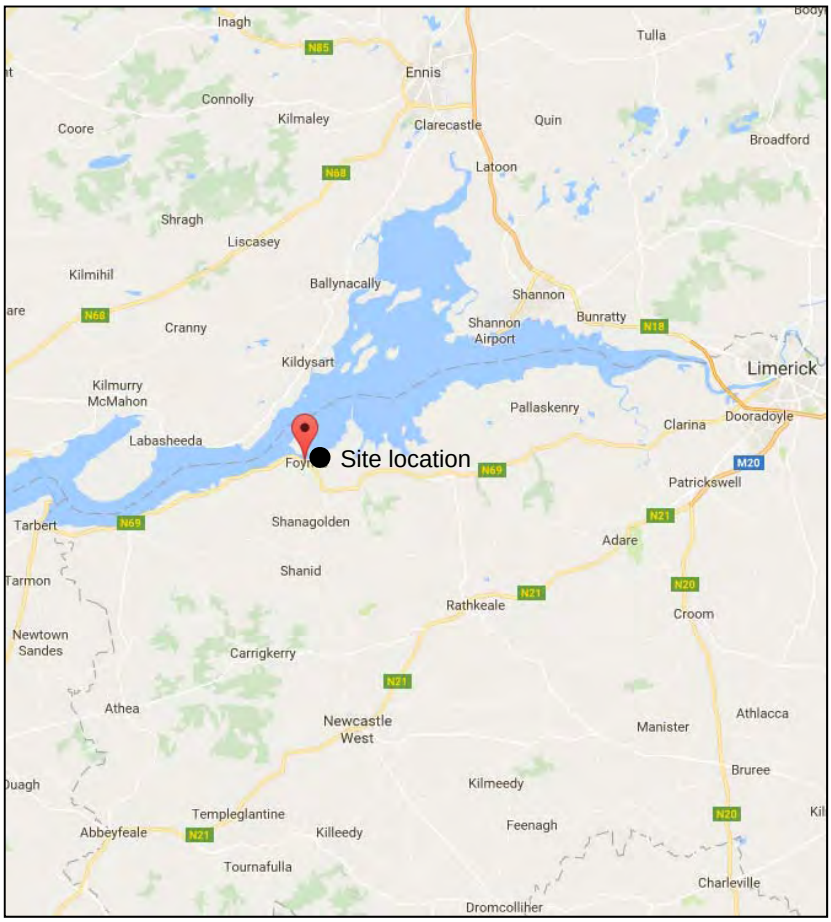
- Environmental Protection Agency Map viewer - http://gis.epa.ie/Envision/

- Geological Survey Ireland Spatial Resources Map Viewer – Department of Communications, Climate Action and Environment (http://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228)
- Model Procedures for the Management of Land Contamination, Contaminated Land Report 11, Defra and Environment Agency, September 2004
- Irish Aquifer Properties – A Reference Manual and Guide, Environmental Protection Agency and Geological Survey Ireland, March 2015
- Ordnance Survey Ireland Environmental Report (Ref. 19734562)
- Internet based aerial photography
- Environmental Protection Agency's Radon Map (http://www.epa.ie/radiation/radonmap/)
- Port of Foynes – Jetty Phase 2, Ground Investigation Report, ABCO Marine and Gavin and Doherty Geosolutions Ltd, February 2018
- Port of Foynes – Jetty Phase 2, Ground Investigation Factual Report, ABCO Marine and Gavin and Doherty Geosolutions Ltd, January 2018

2 Site description

2.1 Site location and layout

Figure 1 Site location



Port of Foynes is located to the north of the small village of Foynes, approximately 35km west of Limerick.

A site walkover was completed by RPS personnel on 20th March 2017. A photographic record of the site walkover is included in Appendix B of the PRA Report. The Port of Foynes is located at the edge of hilly land on the southern bank of the River Shannon Estuary, where the river widens before it flows into the Atlantic Ocean.

As shown on Figure 2, the proposed extension area is located to the east and south east of the existing port in the Durnish Lands area. The Durnish Lands are bounded by the River Shannon to the north, the River Robertstown (a tributary river to the River Shannon) to the east, the N69 Road to the south (which leads into Foynes Village) and the Harbour Entrance Road to the west. The Durnish Lands are generally flat, hummocky, low lying ground. In the

area west of the Harbour Entrance Road there is higher land with a steeper gradient, due to a large rock outcrop covered in thick vegetation. Various low points within the site are prone to having standing water and are very soft. Active channels of water are thought to have previously crossed the fields, though this may be dependent on rainfall or saturation of the soil. A box culvert is located on the Durnish site with a shallow watercourse. Drainage ditches bound the land and demarcate the fields; the water level in the ditches is controlled by sluices to prevent flooding. The north east of the Durnish land is protected from the tide along the river estuary by levees. A disused railway line runs east to west along the southern boundary of the Durnish Lands and crosses the Harbour Entrance Road. The railway line is mostly at the same level as the surrounding land with only short stretches on low embankments.

The Durnish Lands site is currently a greenfield site. The land is generally covered in grass with hedge lines located along the Harbour entrance road on the western boundary. The historic maps (Section 3.1) of the Durnish Lands show that the site has been used for agricultural purposes. A potential quarry was identified to the west of the site however this was not marked on OSI current or historic maps. Therefore, it can be assumed that the quarry was a minor work possibly used as a local source for limestone as lime kilns are noted in the greater area.

Table 1 Site details

Site address	Port of Foynes, Foynes, Limerick, Ireland
Grid reference	126300E 151445N
Estimated site area	620,870 m^2

Figure 2 Site layout plan

Table 2 Surrounding land uses

Boundary	Surrounding land uses
North	The Shannon Estuary is present to the north of the site.
East	The River Robertstown is present to the east of the site; it flows into the Shannon Estuary just north of the site. Beyond the river to the east, Aughinish Alumina, Europe's largest alumina refinery, is present. The Bauxite Residue Disposal Area (BRDA) for the plant is present just east of the river. The waste bauxite residue produced during the refining of the alumina is deposited in this area.
South	The Port of Foynes is present to the south of the site. A railway line runs along the southern boundary of the Durnish Lands site. The small village of Foynes is present further south.
West	The area to the west of the site is generally undeveloped.

2.2 Proposed development

The development proposals incorporate modifications to the existing jetties and quays including connecting the existing West quay and East Quay, relocation of a small craft landing pontoon and expansion of the Port Estate onto the Durnish Lands present immediately east of the existing Port of Foynes. This will involve filling and raising of the Durnish Lands site levels to a typical height of 4.44m OD using material imported from

authorised quarries. General infrastructure will be developed on the Durnish Lands site as well as a number of warehouses.

Foul water will be treated to a tertiary level using a package treatment system. The effluent will be subjected to tertiary treatment by the means of a polishing filter which also acts as a percolation area to redistribute the treated and polished effluent to the groundwater. It is proposed to use a stratified sand polishing filter to provide the dual function of polishing the effluent and also infiltrating the treated effluent to the groundwater.

3 Preliminary Risk Assessment (Desk Study)

The PRA was completed by RPS in March 2018 and is summarised in Sections 3 and 4.

3.1 Historical development of the site

Two historical maps of the area are provided within the Ordnance Survey Ireland (OSI) Environmental Report; a six inch map from c. 1830s and a twenty-five inch map from c. 1890s. 'Durnish Cottage', a small residential dwelling, was present on the wider Port of Foynes site on both historical maps. The surrounding area of the site was generally undeveloped on the 1830s map. The only notable addition on the 1890s map was the presence of a railway line running along the southern boundary of the site.

As reported in the Ground Investigation Report produced by Gavin and Doherty Geosolutions (February 2018), initial works were carried out at the Port in 1846, with the construction of a masonry wharf 83m long and 12m wide in the location now known as the West Quay. This wall is still in place at Berth 1.

In 1936, the port was designed to cater for 8,000 ton vessels with maximum draft of 7.6m. In 1968 the Trustees constructed the East Jetty under Foreshore License; this was principally for the provision of a berth to service ore exports and included a conveyor and loading arm. In 1984, the East Jetty was extended westwards to cater for the growing number of ships calling at the Harbour. A dedicated Oil Dolphin facility was constructed in 1992 and provided a berth for oil and chemical tankers. The new West Quay was completed in 1999.

The Port has expanded during the 20th century. The inner port area of Foynes comprises of two distinct jetties; the western jetty and the eastern jetty. Planning permission was secured in 2012 for a 2.5 hectare land reclamation project behind the jetty. The western jetty was originally constructed in 1934 and then completely upgraded and extended in 1998, with 271m of quayside berthage (SFPC Master Plan, February 2013).

3.2 Consultation

Consultation requests were sent to a number of statutory consultees as part of the EIA scoping process. The responses have been reviewed and summarised below where any comments relevant to this assessment were noted.

Clare County Council

The response received from Clare County Council requested that 'subsoil pollution' be addressed as part of the Environmental Impact Statement.

BIM – Ireland's Seafood Development Agency

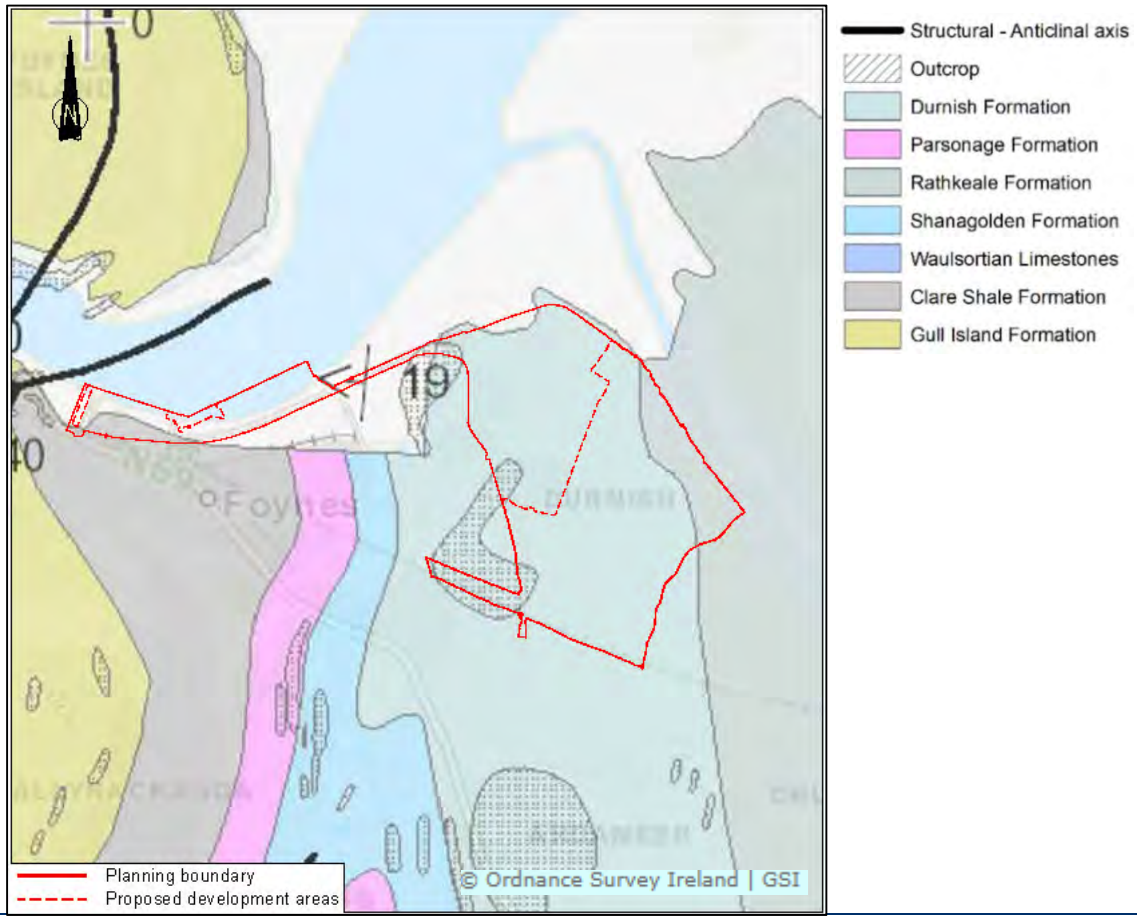
As part of the BIM response it is noted that adequate protection will be provided to the aquaculture industry. In particular, they note that background levels of suspended solids in the nearby waters cannot at any time increase by more than 30% (due to the presence of licenced shellfish sites).

3.3 Ground conditions

Information held online by Geological Survey Ireland at their Spatial Resources Map Viewer was used to clarify the geology and hydrogeology information provided in the OSI Environmental Report. The following describes the findings of this preliminary research. Information on the anticipated ground conditions is also provided within the Ground Investigation and Ground Investigation Factual Reports produced by ABCO Marine and Gavin and Doherty Geosolutions.

3.3.1 Solid geology

Figure 3 Solid geology (taken from GSI's Spatial Resources portal)

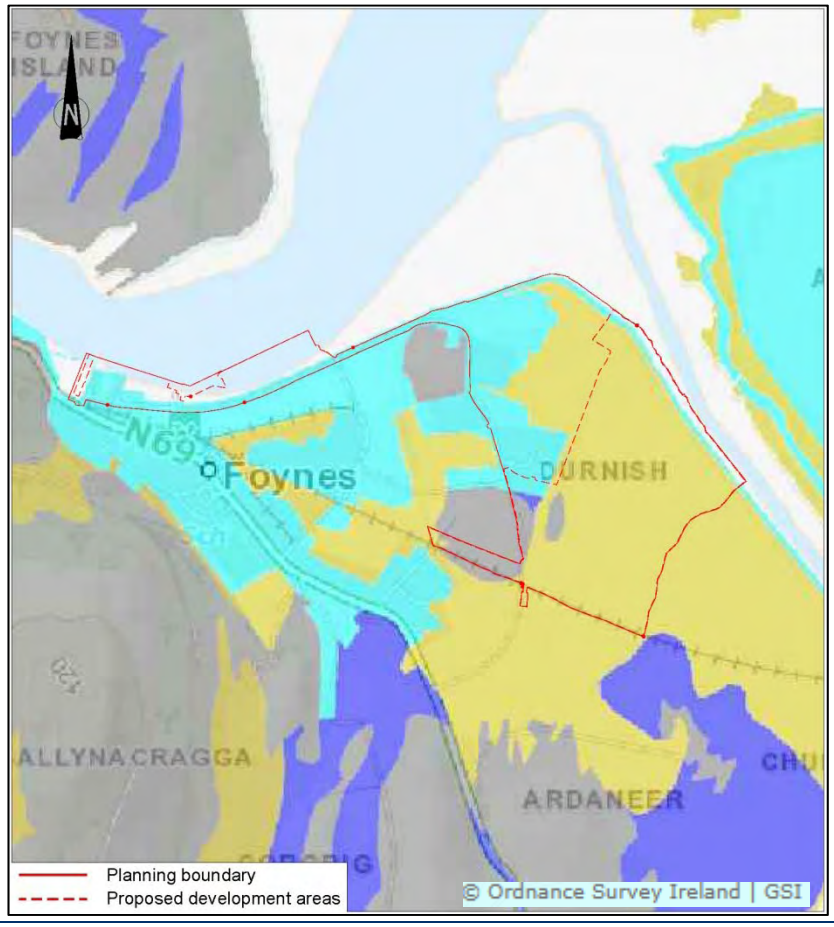


The bedrock geology anticipated in the vicinity of the site is shown on Figure 3. The geology of the wider Foynes area consists of formations from the Carboniferous system, from the Visean and basal Namurian stage. The formations are dipping gently to the south west. The bedrock of the Durnish lands site consists of the Rathkeale Formation to the east of the site and the Durnish Formation to the west. The bedrock geology of the Port of Foynes marine site is the Clare Shale Formation.

The Rathkeale Formation comprises non fossiliferous dark muddy limestone with mudstones, which are well bedded and brittle. This is uniformly overlain by the Durnish Formation, which is a uniform bioclastic limestone with bands that include chert nodules parallel to bedding. It is abundant in fossils, with complete coral beds. The Durnish formation is overlain by the Shanagolden Formation of black limestone and then the Parsonage and Corgrig Lodge formation, a fine grained muddy limestone. These are overlain by the Clare Shale Formation which is a clay rich mudstone with bands of siltstone. The carboniferous limestone formations represent an offshore ramp. The changes in grain size and the fossil content between the formations indicates changes in relative sea level. The Clare shale formation which was deposited above the carboniferous limestone formations represents a deep marine, representing a significant rise in relative sea level.

3.3.2 Drift geology

Figure 4 Sub soils (taken from GSI's Spatial Resources portal)



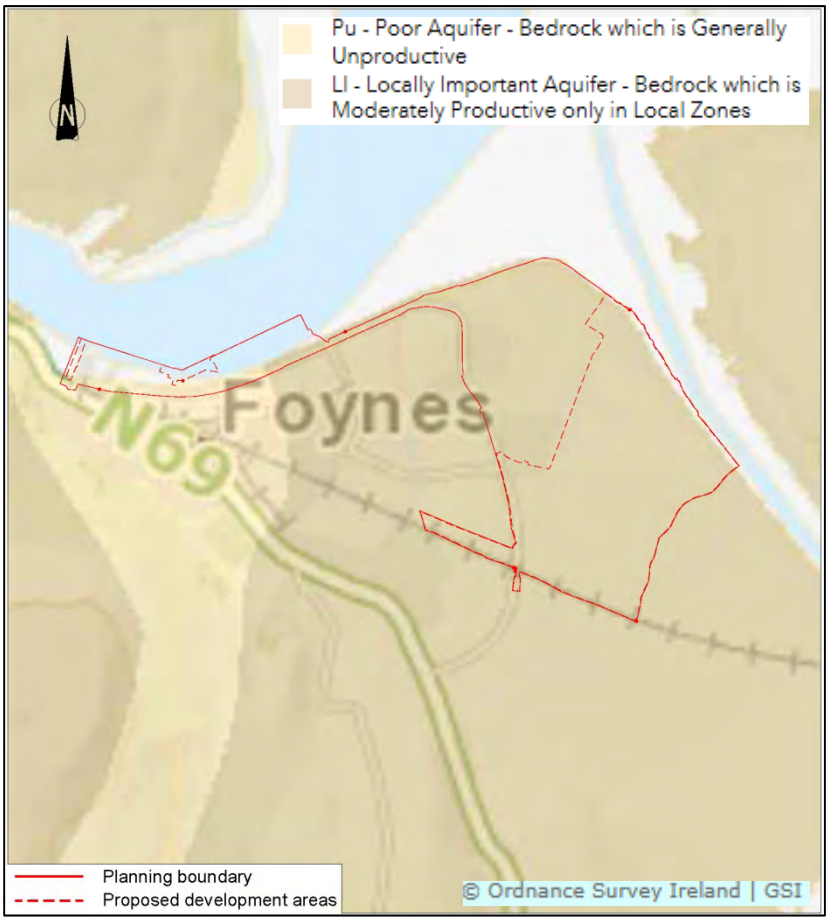
As shown on Figure 4, the Port of Foynes is mapped as Made Ground (blue), which is superimposed on a region composed mostly of Estuarine Sediments consisting of silts and clays (green). Glacial tills (purple), mainly of limestone origin, are present to the south of the Durnish site while bedrock (shale and limestone) is anticipated at surface in certain areas on and in proximity to the site (grey).

3.3.3 Hydrogeology

As shown in Figure 5, the site area is located across two aquifer domains: Poor Aquifer (PU) and Locally Important Aquifer (LI). The PU designation represents bedrock which is generally unproductive while the LI designation represents bedrock which is moderately productive only in local zones. A Regionally Important Aquifer - Karstified (conduit) is present to the east of the site area (approximately 2km).

Karst activities were found in two boreholes less than 3k from Port of Foynes in the Walsortian Limestone and Rathkeale Formation.

Figure 5 Groundwater aquifer (taken from GSI's Spatial Resources portal)

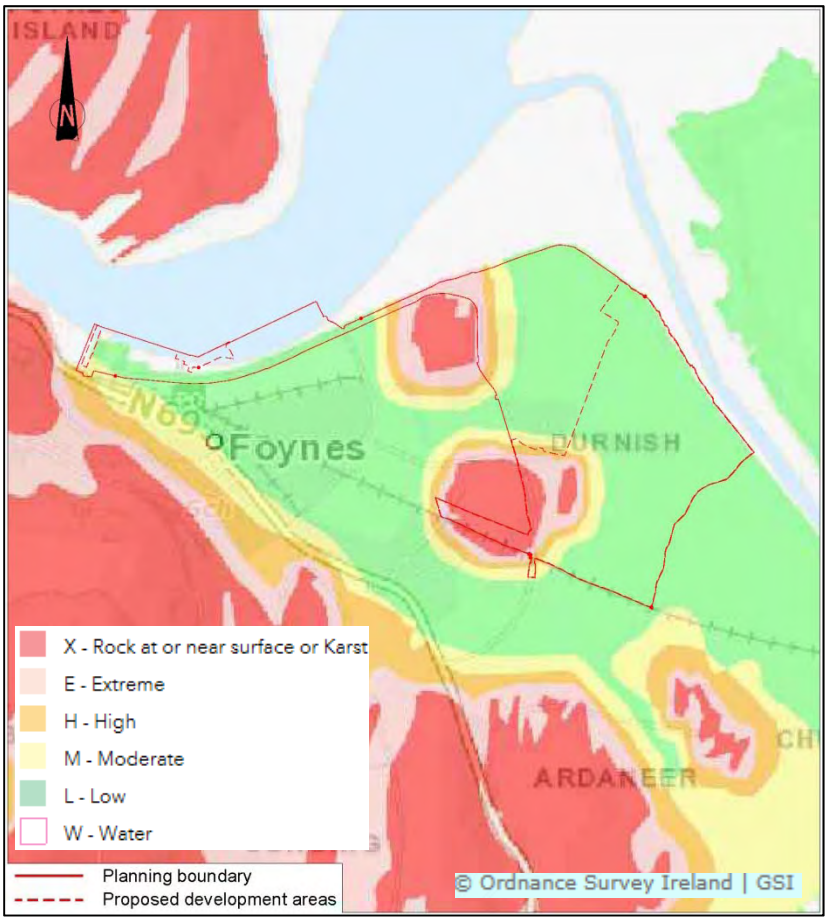


3.3.4 Groundwater vulnerability

In accordance with the Water Framework Directive (2000/60/EC) it is necessary to understand the groundwater vulnerability of the site, which is defined as the tendency and likelihood for general contaminants to reach the water table after introduction at the ground surface.

The site mainly falls within an area of low groundwater vulnerability. However, higher groundwater vulnerability is anticipated where rock is present at surface i.e. in the western portion of the site.

Figure 6 Groundwater vulnerability (taken from GSI's Spatial Resources portal)



3.3.5 Surface water hydrology

The OSI Environmental Report shows a number of watercourses to be present on the site. Small watercourses seem to form the boundary of the site. In addition, a number of watercourses are present in the northern portion of the site with small field drains also present along many of the field boundaries. The large Robertstown River runs along the eastern boundary of the site, into the Shannon River/Estuary just north of the site.

The OSI Environmental Reports identifies one weir, four springs, two sluices and two pumps within the search radius of the site. The Lower Shannon Estuary is noted to be of unpolluted status.

4 Preliminary Risk Assessment & outline conceptual site model

4.1 Introduction

Risk estimation involves detailed evaluation of source – pathway – receptor scenarios to determine whether a linkage exists between any sources of contaminants and potential receptors. A risk exists where a receptor is exposed to a contaminant, via a pathway. If any element of the source-pathway-receptor linkage is absent, then no risk is present.

The preliminary conceptual site model and Preliminary Risk Assessment are presented in Table 3.

Table 3 Conceptual model for the site

POTENTIAL SOURCES
Potential on-site sources: ▪ Made ground within port area **Potential off-site sources:** ▪ Aughinish Alumina, Europe's largest alumina refinery, is present to the east of the site
POTENTIAL PATHWAYS
Humans: ▪ Dermal (skin) contact with contaminated soil, fugitive dust or waters and the absorption of any contaminants through the skin into the body ▪ Inhalation of fugitive soil dust or vapour ▪ Ingestion of soil by hand to mouth activity **Environment:** ▪ Leaching of contaminants from soils to groundwater ▪ Vertical and horizontal migration in groundwater
POTENTIAL RECEPTORS
▪ Humans in form of future site users (commercial, site workers), landscaping and maintenance workers ▪ Perched groundwater, bedrock aquifer, River Robertstown and Shannon Estuary ▪ Buildings and services

4.2 Preliminary Risk Assessment conclusions

The desk study highlighted the potential contamination sources, pathways and receptors which were likely to be present on the site. The principal source of contamination was likely to be the presence of Made Ground within the Port and an off ite source (Aughinish Alumina).

Therefore, as per the guidance provided in CLR 11; an intrusive ground investigation followed by a generic quantitative risk assessment was undertaken.

5 Intrusive ground investigation methodology & objectives

5.1 Methodology

The contamination assessment comprised six main elements, carried out on a phased basis as described below:

Phase I - PRA

- Desk Study (carried out by RPS)
- Site walkover (carried out by RPS)

The information gathered during the PRA (as detailed in the previous sections) was used to plan and focus the Phase II investigation, which comprised the following:

Phase II - GQRA

- Ground investigation
- Chemical testing of soil samples
- Chemical testing of groundwater samples
- Contamination risk assessment

5.2 Objectives for Investigation

- To assess sub-soil and groundwater contamination to enable a generic quantitative risk assessment (GQRA) to be undertaken to assess the potential risks to human health and from future development proposals.
- To summarise the findings of the chemical testing and based on the results; revise the Conceptual Model for the site and risk rating proposed by RPS in the Preliminary Risk Assessment report.
- To provide sufficient evidence with regards to the sites suitability for the proposed end use.

5.3 Sampling strategy

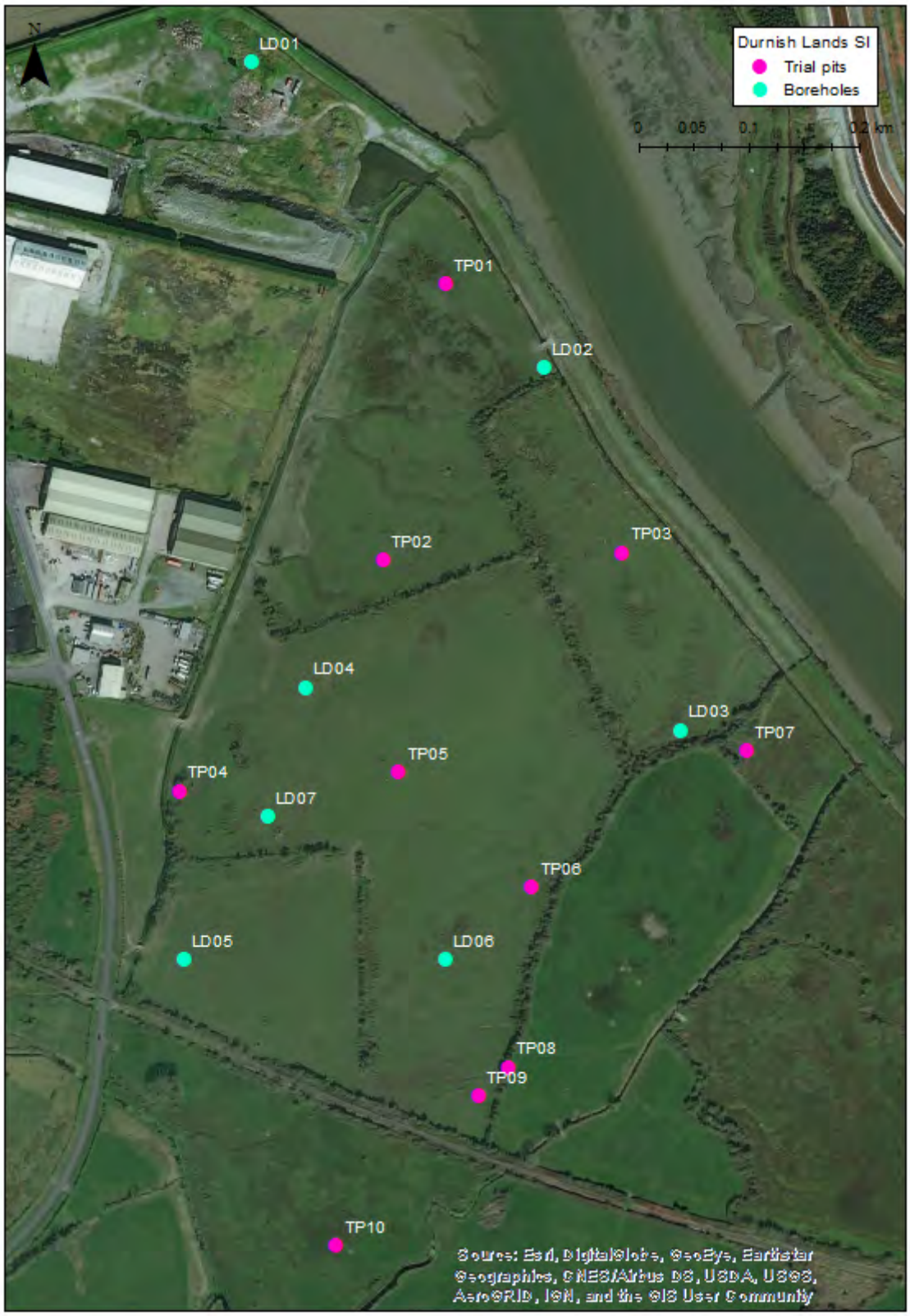
An intrusive ground investigation was undertaken by ABCO Marine between March and July 2017. The site investigation has been reported upon by Gavin and Doherty Geosolutions Ltd on behalf of ABCO Marine. The site investigation report is included in Appendix A. As shown on Figure 7, the investigation on the Durnish Lands comprised:

- Seven (7) boreholes (LD01 – LD07) to a maximum depth of 17.8m bgl

- Ten (10) trial pits (TP01 – TP10) to a maximum depth of 4.7m bgl

They were positioned within the footprint of the proposed expansion area onto Durnish Lands. The boreholes were used to provide information on ground conditions and soil and groundwater quality. The trial pits were used to provide information on ground conditions and soil quality.

Figure 7 Site investigation locations on Durnish Lands



As shown on Figure 8, the investigation at the Jetty extension site incorporated:

- Eight (8) on land boreholes (L01 – L08) to a maximum depth of 30.1m bgl

- Seventeen (17) marine boreholes (M01 – M16B) to a maximum depth of 45.2m bgl

Figure 8 Site investigation locations at Jetty extension site

The boreholes were sunk using a combination of cable percussion drilling (Dando 2000 rig) and rotary core follow on drilling (T44 Beretta rig). As discussed within the ground investigation report, a number of in situ and laboratory geotechnical tests were also completed as part of the investigation.

Environmental soil samples were taken at regular intervals throughout the length of the excavation of each borehole and trial pit. The protocol observed during the recovery of samples followed the guidance set out in BS 10175:2011 the Code of Practice for the Investigation of Potentially Contaminated Sites.

50mm HDPE slotted pipes were installed within six of the boreholes on the Durnish Lands site (LD01 – LD06) to facilitate the monitoring of groundwater. All of these installations incorporated a slotted section of pipe across the encountered bedrock (i.e. following rotary coring) and as such the groundwater samples are considered representative of the bedrock groundwater body. Groundwater samples were collected from the installed boreholes in August 2017, following development and purging of at least three well volumes, to ensure a representative sample of groundwater was taken from each well.

No groundwater monitoring was undertaken within the land based boreholes at the jetty extension site as no significant land based earthworks will be required to facilitate the proposed development in this area.

As outlined with the PRA completed by RPS in March 2018, it was not deemed necessary for ground gas monitoring to be completed. A potential risk from ground gases could only

exist on the Durnish Lands site as receptors in the form of buildings are planned for construction on this site. Made ground, one of the main sources of ground gas, was not anticipated on the Durnish Lands site as it is a greenfield site. In addition, the land at Durnish is to be raised and filled with material that will be imported from authorised quarries. This material may act as a 'passive dispersal layer' for any ground gas to be dispersed through.

5.4 Analytical strategy

Forty-seven (47) soil samples from the Durnish Lands site investigation and five (5) samples from the land-based site investigation at the proposed jetty extension site were sent to Exova Jones Environmental for analysis. Samples were analysed for a mixture of; pH, Sulphate as SO4, Chloride, Cyanide (total), Loss on ignition, Organic matter, Total organic carbon, Asbestos in soil, Aluminium, Arsenic, Barium, Beryllium, Boron (water soluble), Cadmium, Copper, Chromium (total), Chromium (hexavalent), Iron, Lead, Mercury, Nickel, Selenium, Sulphur as S, Vanadium, Zinc, Dibutyltin, Tributyltin, Triphenyltin, Total Petroleum Hydrocarbons (TPH-CWG C5 – C35 aromatic-aliphatic split), Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), Benzene, Toluene, Ethylbenzene, Xylenes, Methyl tert-butyl ether (MTBE), speciated Polycyclic Aromatic Hydrocarbons (PAHs), speciated Poly Chlorinated Biphenyls (PCBs) and Phenols (speciated HPLC).

Speciated TPH analysis was undertaken to provide a better understanding of the 'make up' of the hydrocarbon contamination in relation to the specific carbon banding, as suggested within the 'Total Petroleum Hydrocarbon Criteria Working Group' (TPH-CWG) literature and recommended by the Environment Agency document P5-080/TR3 'The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbon in Soil'.

Six (6) groundwater samples for environmental analysis were taken and analysed for a similar range of contaminants as listed above for the soil samples. The soil and groundwater laboratory analytical results are included within Appendix A.

6 Risk assessment methodology

6.1 Soils risk assessment methodology

6.1.1 Contamination assessment methodology

In the absence of government guidance on contaminated land risk assessment within the Republic of Ireland, current guidance provided by the UK Environment Agency (EA) has been utilised to form the basis of this assessment.

6.1.2 Human health risk assessment framework

The Environment Agency has published guidance in relation to assessing the potential risk from contaminated land to human health. Science Report SR2 'Human Health Toxicological Assessment of Contaminants in Soil' and Science Report SR3 'Updated Technical Background to the CLEA Model' are intended to replace CLR 9 and 10 respectively and together with CLR 11 'Model Procedures for the Management of Land Contamination' provide the most up to date framework for human health risk assessment within the UK.

CLR10 previously stated that '*the contamination is assumed to be at or within 1m of the surface*' (CLR10 pg 10). SR3 contains a brief discussion of contamination depth on p13 and although it does not specifically mention a depth of 1.0m it states that '*it is assumed that the pollution is at the surface or close to it*' and '*whether or not soil contamination at greater depth or beneath hard standing poses a risk to health depends on the importance of the contact pathways (primarily ingestion and dermal contact) and the likelihood that such soils may be brought to the surface through activities such as gardening or building works*'. For the purpose of this assessment therefore, it is considered that at depths greater than 1m, the probability of human exposure via the direct contact pathways are significantly reduced.

6.1.3 Published generic site assessment criteria

In order to assess the human health and environmental risks posed by potential contaminants within the underlying soils, RPS undertook an initial screen of the laboratory results using the 2015 LQM/CIEH Suitable 4 Use Levels (S4ULs) (Copyright Land Quality management Limited reproduced with permission; Publication Number S4UL3474. All Rights Reserved) as trigger values. Where contamination results are recorded above these S4ULs, further assessment of the risks or remedial action may be needed.

These new LQM/CIEH S4ULs replace the second edition of the LQM/CIEH Generic Assessment Criteria (GAC) published in 2009. Differences in modelling assumptions and

added land uses and substances create the difference between these S4ULs and the previous GAC. These values are provided for 6 land use classifications:

- Residential with homegrown produce
- Residential without homegrown produce
- Allotments
- Commercial
- Public open space near residential housing
- Public park

The provisional Category 4 Screening Levels (pC4SLs) developed by Defra provide the same added land uses as the S4ULs but are based on a different toxicological benchmark. The pC4SLs are based on a 'low level of toxicological concern' (LLTC) whereas the S4ULs remain based on the 'minimal' or 'tolerable' risk level outlined in SR2 to ensure a fully conservative approach is being taken.

These new values have been adopted within this investigation as they provide the most up to date trigger values that are based on appropriate and rationale assumptions. Similarly to the previous GAC, the S4ULs are provided for 1%, 2.5% and 6% soil organic matter (SOM). In the absence of complete analysis of SOM at the site, generic values derived for a SOM value of 1% have been utilised in the risk assessment where possible to ensure the most conservative approach is taken.

For pollutants with no relevant S4ULs, assessment criteria were provided by the following publications:

- Soil Guideline Values (SGVs)
- The Soil Generic Assessment Criteria (GAC) for Human Health Risk Assessment – CL:AIRE December 2009

In light of the publication of SR2 and SR3 the Environment Agency published SGVs for Benzene, Toluene, Ethylbenzene, Xylene, Selenium, Mercury, Arsenic, Cadmium, Phenol, Nickel and Sum of PCDDs, PCDFs and dioxin-like PCBs for the following standard land use scenarios assuming a Sandy Loam soil and Soil Organic Matter (SOM) content of 6%:

- Residential
- Allotments
- Commercial

CL:AIRE in association with The Environmental Industries Commission (EIC) and Association of Geotechnical and Geo-environmental Specialists (AGS) published a set of Generic Assessment Criteria in 2009 for previously unpublished contaminants which are intended to complement the SGVs derived by the Environment Agency. The GACs have been derived predominantly for VOCs and SVOCs using CLEA v1.06 for a number of different Soil Organic Matter contents (1%, 2.5% and 6%).

As the planned redevelopment of the Port of Foynes includes a jetty extension and warehousing, storage and port centric development on Durnish Lands, all soil samples have been screened against generic values derived for a commercial end use.

6.1.4 Ground contamination assessment

A summary of the geochemical test results is presented in Appendix B. Within these tables, those cells with no value recorded indicate that the samples were not scheduled for that particular suite of analysis. All samples were screened against the generic site assessment criteria discussed in Section 6.1.3.

The ground contamination assessment for the site is discussed in Section 8 of this report.

6.2 Groundwater risk assessment methodology

6.2.1 Published generic site assessment criteria

The groundwater chemical analysis results were initially screened against threshold values listed by:

1. Guidelines for Drinking-water Quality, World Health Organization, 4th edition, 2011 (WHO).
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. No. 366 of 2016)
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (S.I. No. 386 of 2015)
4. Interim Guideline Values provided by 'Towards setting guideline values for the protection of groundwater in Ireland', Environmental Protection Agency, January 2003
5. European Communities (Drinking Water) Regulations 2014 (S.I. No. 122 of 2014)
6. Atkins ATRISK Water Screening Values derived using CLEA for a Commercial land use, 2011 (WSV).

Use of the Drinking Water Standards (1 and 5) provides a very conservative risk assessment as groundwater is not utilised for drinking water in the area of the site. Groundwater

chemistry results used as part of the site assessment are included in Appendix C and the detailed discussion of the groundwater contamination assessment is presented in Section 9 of this report.

7 Actual ground conditions

7.1 Ground conditions

The ground conditions indicated by the exploratory investigations are described in the exploratory hole logs presented in Appendix A and are briefly summarised below.

The site investigation logs indicate that the Durnish Lands site is generally underlain by the sequence demonstrated in Table 4 while the on shore part of the jetty extension site is generally underlain by the sequence outlined in Table 5. The offshore jetty extension ground conditions are summarised in Table 6.

Table 4 Ground conditions encountered on Durnish Lands

Strata	Typical description	Depth (m bgl)	
		To top	To bottom
Drift deposits			
Topsoil	Soft to firm sandy gravelly clay/silt	0.0	0.3
Estuarine/Alluvial – Cohesive	Soft sandy silty gravelly CLAY	0.0	7.7
Estuarine/Alluvial – Granular	Silty GRAVEL	2.6	12.0
Glacial – Granular	Cobbles and boulders	0.0	14.5
Solid geology: Rathkeale Formation			
Limestone	Strong to very strong grey bedded crystalline Limestone	0.0	17.8

Table 5 Ground conditions encountered on jetty extension (on shore) site

Strata	Typical description	Depth (m bgl)	
		To top	To bottom
Made ground			
Made Ground	Silty sandy GRAVEL with occasional cobbles placed as fill (current quay)	0.0	5.0
Drift deposits			
Estuarine/Alluvial – Cohesive	Very soft sandy CLAY	3.3	7.0
	Very soft sandy SILT with shell fragments	4.0	18.0
Estuarine/Alluvial – Granular	From clayey sandy GRAVEL to GRAVEL and COBBLES	18.0	27.0
Solid geology: Clare Shale Formation			
Limestone	Strong, dark, fine to medium grained crystalline Limestone	22.2	25.8

Table 6 Ground conditions encountered on jetty extension (off shore) site

Material	Typical description	Depth bgl (m)	
		To top	To Bottom
Drift deposits			
Estuarine/Alluvial – Cohesive	Very soft silty CLAY to sandy gravelly CLAY	0.0	14.5
Estuarine/Alluvial – Granular	From GRAVEL to boulder GRAVEL	13.5	30.4
Solid geology: Clare Shale Formation			
Limestone	Strong dark, fine to coarse grained crystalline Limestone	9.0	45.2
Siltstone	Strong thinly laminated black Siltstone	14.1	21.3

7.2 Groundwater conditions

7.2.1 Groundwater strikes during drilling

During the site investigation, groundwater was encountered during excavation of six (6) of the ten (10) trial pits undertaken on the Durnish Lands site at depths between 1.30m and 4.00m bgl. No groundwater strikes were noted within any of the boreholes. Groundwater strikes are summarised in Table 7.

Table 7 Summary of water strikes during drilling

Site investigation location	Waterstrike (m bgl)	Waterstrike (m CD)	Remark	Strata
TP01	4.0	0.24	Slight seepage	Soft grey with brown mottling slightly sandy slightly gravelly SILT with occasional lenses of fine sand and plant remains
TP02	4.0	0.68	Slight seepage	Soft to firm grey sandy SILT with fragments of sea shell.
TP03	4.0	0.78	Slight seepage	Soft grey sandy SILT with fragments of sea shell.
TP06	1.3	3.25	Very fast	Firm to stiff grey brown slightly sandy slightly gravelly CLAY with frequent sub angular to sub rounded cobbles and boulders and occasional lenses of fine Sand.
TP08	2.0	2.93	Fast	Firm to stiff grey slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders.

Site investigation location	Waterstrike (m bgl)	Waterstrike (m CD)	Remark	Strata
TP09	1.5	2.75	Very fast	Stiff grey slightly sandy slightly gravelly CLAY with frequent sub angular to sub rounded cobbles and rare boulders.

7.2.2 Standing groundwater

Groundwater monitoring wells were installed in boreholes LD01 to LD06 on the Durnish Lands. Groundwater measurements were recorded on 10th August 2017. The results of the monitoring are presented in Table 8.

Table 8 Groundwater monitoring levels

Site investigation location	Ground level (m CD)	Water depth (m bgl)	Water level (m CD)
LD01	11.8	1.2	10.6
LD02	17.9	1.3	16.6
LD03	8.0	1.5	6.5
LD04	8.8	1.7	7.1
LD05	7.7	2.2	5.5
LD06	6.3	1.9	4.4

7.3 Hydrogeological units & groundwater flow

It should be noted that all the boreholes were installed with the screened portions across the encountered bedrock. The monitoring rounds suggest that bedrock groundwater flow is generally from the north east to the south west across the Durnish Lands site with the locations closest to Shannon River/Estuary under tidal influence.

As noted in Table 7, groundwater strikes during excavation were encountered in six of the trial pits. These groundwater strikes were all encountered within the cohesive estuarine/alluvial deposits. No groundwater strikes are recorded on the borehole logs. This suggests the presence of an inconsistent shallow groundwater body in certain parts of the site.

7.4 Observation of potential contaminants in soil and groundwater

No visual or olfactory observations of contamination were identified during the site investigation.

7.5 Underground structures and services

No underground obstructions or services were noted during the site investigation.

8 Ground contamination

8.1 Introduction

The results of the laboratory analysis were used to carry out a generic quantitative risk assessment (GQRA) using the methodology outlined in Section 6.0. The soil results have been screened against the latest available LQM/CIEH S4ULs, CL:AIRE GAC and SGVs for a commercial end use.

A summary of the soil geochemical test results are presented in Appendix B. Within these tables, those cells with no recorded values indicate that the samples were not scheduled for that particular suite of analysis.

8.2 Discussion of the soil chemical results

8.2.1 Contaminants below laboratory detection limits

The following soil contaminant concentrations were at or below the method detection limit and have therefore not been considered further within this report;

Chromium VI, Mercury, Dibutyltin, Tributyltin, Triphenyltin, all PAHs, all TPH-CWG except Aliphatics C21-C35, Aromatics C16-C21 and Aromatics C21-C35, Benzene, Ethylbenzene, Xylenes, MTBE, all PCBs, all Phenols except Phenol, o-Cresol, and Cresols, all SVOCs and all VOCs except Toluene and Dichloromethane.

8.2.2 Contamination above detection limits but below S4UL, SGV or GAC

The following soil contaminants were recorded at concentrations above the method detection limit but below their S4UL, SGV or GAC value;

Arsenic, Beryllium, Boron (water soluble), Cadmium, Copper, Chromium (total), Nickel, Selenium, Vanadium, Zinc, Aliphatics C21-C35, Aromatics C16-C21, Aromatics C21-C35, Toluene, Phenol, Cresols, Toluene and Dichloromethane.

The above contaminants were recorded at concentrations which do not pose an unacceptable risk to human health and are not considered further in the risk assessment.

8.2.3 Contamination above detection limits with no S4UL, SGV or GAC

The concentrations of one contaminant, for which no S4UL, SGV or GAC is currently available, were recorded above the laboratory method detection limit:

o-Cresol.

The recorded concentrations of o-Cresol were very low and therefore are not considered to pose a risk.

8.2.4 Contaminants exceeding commercial S4UL, SGV or GAC

None of the contaminants exceeded the commercial screening values.

8.3 Asbestos in soils

Screening for the present of asbestos was completed on thirty-seven (37) of the fifty-two (52) samples. As shown in Appendix B, asbestos was not identified in any of the samples.

9 Groundwater contamination

9.1 Introduction

A groundwater screening table for the six groundwater samples is presented in Appendix C. These have been screened against the generic site assessment criteria discussed in Section 6.2.1.

9.2 Results

Upon completion of the intrusive site investigation, groundwater samples were taken from LD01 – LD06. These samples were analysed for a range of potential contaminants including:

- Metals
- TPH-CWG
- PAHs (16 USEPA Speciated)
- SVOCs
- VOCs

The vast majority of contaminants recorded concentrations less than the method detection limit in the groundwater samples. As shown in Table 9, the samples show some exceedances of the screening values.

Table 9 Groundwater contaminant concentrations exceeding screening values

Contaminant	Screening value	Exceeding concentrations	Locations exceeding
Sulphate as SO4	187.5 mg/l (Groundwater Regulations 2016)	198.3-1918.4 mg/l	LD03, LD04 & LD06
Chloride	18735 mg/l (Groundwater Regulations 2016)	195.4-13829 mg/l	LD01-LD06
Total Cyanide	10 µg/l (IGV, EPA 2003)	1090-3326 µg/l	LD01-LD06
Aluminium	150 µg/l (Groundwater Regulations 2016)	250-355 µg/l	LD01, LD02 & LD04
Arsenic	7.5 µg/l (Groundwater Regulations 2016)	10.9-52.5 µg/l	LD01, LD04, LD05 & LD06
Barium	100 µg/l (IGV, EPA 2003)	135 & 179 µg/l	LD03 & LD06
Boron	1000 µg/l (IGV, EPA 2003)	2459 & 2500 µg/l	LD03 & LD04

Contaminant	Screening value	Exceeding concentrations	Locations exceeding
Calcium	200 µg/l (IGV, EPA 2003)	285.5-369 mg/l	LD01, LD02, LD03 & LD04
Iron	200 µg/l (IGV, EPA 2003)	1458-37220 µg/l	LD01, LD02, LD03 & LD04
Magnesium	50 mg/l (IGV, EPA 2003)	56.1-1062 mg/l	LD01, LD03 & LD04
Manganese	50 µg/l (IGV, EPA 2003)	77-6122 µg/l	LD01-LD06
Nickel	8.6 µg/l (Surface water Regulations 2015)	23 & 34 µg/l	LD04 & LD05
Potassium	5 mg/l (IGV, EPA 2003)	9.2-291.7 mg/l	LD01-LD06
Sodium	150 mg/l (IGV, EPA 2003)	273.5-8473 mg/l	LD01, LD02, LD03, LD04 & LD06
Zinc	75 µg/l (Groundwater Regulations 2016)	126 µg/l	LD03
Exceeds groundwater/surface water regulations		Exceeds EPA Interim Guideline Values	

The EPA Interim Guideline Values were produced in 2003 and are guideline values only. The interim guideline value chosen was the GSI Trigger Value (background concentration) where it applied, and where it did not apply the most stringent value of the:

- The Drinking Water Standard, or
- The EQS for the Aquatic Environment/ Dangerous Substances, where appropriate.

In many cases these IGVs are therefore potentially outdated or based on Drinking Water Standards. It is therefore considered that exceedances of the groundwater or surface water regulations are more pertinent to this assessment.

No anthropogenic sources of Sulphate, Chloride, Aluminium, Arsenic, Nickel or Zinc were identified on the Durnish Lands. It is possible that geogenic sources of these potential contaminants are contributing to their concentrations in groundwater. The likely direction of groundwater flow across the Durnish Lands site is from the north east towards the south west. The off-site aluminium plant could therefore be acting as a source of these contaminants in groundwater.

10 Risk Assessment

Using the methodology outlined in the previous sections, the laboratory analytical results were used to carry out a generic quantitative risk assessment (GQRA).

10.1 Overview of contaminant sources, pathways and receptors

10.1.1 Sources

Ground contamination

No exceedances of the commercial screening values used were noted within any soil samples and as such no risk to human health is considered to exist.

Groundwater contamination

Exceedances of the EPA Interim Guideline Values have not been considered in any more detail. The IGVs were produced in 2003 and in many cases are therefore potentially outdated or based on Drinking Water Standards. It is therefore considered that exceedances of the groundwater or surface water regulations are more pertinent to this assessment.

Exceedances of the groundwater or surface water regulations exist for Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc within the samples taken from the bedrock groundwater on the Durnish Lands site. No anthropogenic sources of these potential contaminants were identified on the Durnish Lands. It is possible that geogenic sources of these potential contaminants are contributing to their concentrations in groundwater. The likely direction of groundwater flow across the Durnish Lands site is from the north east towards the south west. The off-site aluminium plant could therefore be acting as a source of these contaminants in groundwater.

Radon gas

According to the radon map for the Republic of Ireland, between one and five per cent of the homes in the area are estimated to be above the reference level.

Off site sources

As outlined in Section 0, the off-site aluminium plant located to the east of the site could be the source of elevated concentrations of metals detected within the groundwater samples from the Durnish Lands site.

10.1.2 Pathways

- Pathways associated with impacts to human health through inhalation of soil and/or dusts will not exist as no soil contamination has been identified on site.
- Groundwater within the site will not be used as a potable source of water, therefore, the ingestion pathway for contamination to human health from groundwater is not deemed to be active.
- A pathway for the migration of contaminants from shallow groundwater into the underlying deeper bedrock aquifer is unlikely on site as no continuous shallow groundwater body was encountered on site.
- The fill proposed to be imported for raising and filling the Durnish Lands site will be imported from authorised quarries and will have minimal potential for leaching contaminants into the underlying soil and groundwater.
- A pathway may exist whereby groundwater on site can migrate into the River Robertstown or the Shannon Estuary.
- A pathway for the migration of Radon gas into buildings will not be active on the developed Durnish Lands site (as this is the only located where buildings are proposed for development) as Radon concentrations are known to be low.

10.1.3 Receptors

End-Users

As no significant soil or groundwater contamination has been identified there is no risk posed to commercial site end users.

Construction workers

As no significant soil or groundwater contamination has been identified there is no risk posed to construction workers.

Groundwater

Although a shallow groundwater body was identified on the Durnish Lands site during the site investigation it was found to be inconsistent. The bedrock groundwater has been impacted by elevated concentrations of Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc. As discussed in Section 10.1.1, both geogenic sources and the nearby alumina refinery plant could be contributing to these elevated concentrations (as suggested by the direction of groundwater flow across the Durnish Lands site from north east to south west). Therefore, the elevated concentrations are considered to be representative of the bedrock groundwater within the vicinity of the site and therefore representative of the baseline conditions.

Surface water – River Robertstown and Shannon Estuary

It is possible that shallow and or bedrock groundwater could be in hydraulic conductivity with the River Robertstown and/or the Shannon Estuary. The bedrock groundwater has been impacted by elevated concentrations of Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc. As discussed in Section 10.1.1, both geogenic sources and the nearby alumina refinery plant could be contributing to these elevated concentrations (as suggested by the direction of groundwater flow across the Durnish Lands site from north east to south west). Therefore, the elevated concentrations are considered to be representative of the bedrock groundwater within the vicinity of the site and therefore representative of the baseline conditions.

10.2 Risk Assessment and Revised Conceptual Model

A review of the CSM based on the above information indicates that no potential contaminant linkages exist, for the proposed site end-use. The revised site conceptual model is illustrated in Table 10 and the risks to receptors are summarised below.

Risk to human health

No risks to human health have been identified.

Risk to groundwater

The bedrock groundwater has been impacted by elevated concentrations of Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc. The elevated concentrations of potential contaminants identified within the bedrock groundwater are considered to be representative of the baseline conditions in the vicinity of the site and as such no significant risk to groundwater is considered to exist.

Risk to surface water

It is possible that shallow and or bedrock groundwater could be in hydraulic conductivity with the River Robertstown and/or the Shannon Estuary. The elevated concentrations of potential contaminants identified within the bedrock groundwater are considered to be representative of the baseline conditions in the vicinity of the site and as such no significant risk to surface water is considered to exist.

Table 10 Refined risk assessment & site conceptual model

Source	Pathway(s)	Receptors(s)	Relevant Source – Pathway – Receptor linkage (SPR)	Mitigation measures
On-site sources				
Contaminants in soil	Dermal contact, inhalation and/or ingestion of soil or dust	Humans in form of construction workers, maintenance workers and site end users	No contaminants were identified at concentrations exceeding the screening values in the soil samples.	None required
Contaminants in groundwater	Horizontal migration	River Robertstown and Shannon Estuary	Elevated concentrations of Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc were identified within the groundwater. However, these concentrations are considered are considered to be representative of the baseline conditions in the vicinity of the site and as such no significant risk to surface waters is considered to exist.	None required
	Vertical migration	Bedrock aquifer	Elevated concentrations of Sulphate, Chloride, Aluminium, Arsenic, Nickel and Zinc were identified within the groundwater. However, these concentrations are considered are considered to be representative of the baseline conditions in the vicinity of the site and as such no significant risk to groundwater is considered to exist.	
Ground borne gas (Radon)	Migration to indoor air	Humans in the form of future site users	According to the radon map for the Republic of Ireland, between one and five per cent of the homes in the area are estimated to be above the reference level.	None required

11 Conclusions

As identified in Section 10, the risk assessment has demonstrated that no source-pathway-receptor linkages exist on the proposed development site. No remedial measures are considered necessary if the site is to be developed for commercial end use.

11.1 Recommendations

11.1.1 Unidentified contamination

During construction works should unexpected contamination be encountered in soils or groundwater with visual or olfactory signs of contamination, samples of the potentially contaminated material should be obtained and sent for chemical analysis. An updated risk assessment should be completed to assess risks to human health and environmental receptors. Should unacceptable risks be identified then appropriate remedial works will be conducted and agreement sought from the relevant regulatory bodies.

Appendix A

Foynes Port – Jetty Phase 2, ABCO, GDG Gavin & Doherty Geosolutions, Ground Investigation Factual Report, January 2018

Foynes Port – Jetty Phase 2

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Project Title:	Foynes Port – Jetty Phase 2
Report Title:	Ground Investigation Factual Report
Document reference:	

Client:	ABCO Marine
Ultimate Client:	RPS under authority of Shannon Foynes Port Company
Confidentiality:	Between GDG and ABCO Marine, extending also to their client RPS and Shannon Foynes Port Company as end user client.
Essential Requirements:	This report is best viewed in colour.

Document Control

Revision	Date	Authored:	Checked:	Approved:
DRAFT		CB/NM		WB

Revision	Date	Authored:	Checked:	Approved:
00	03/01/2018	CB/NM		WB

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Table of Contents

1 Introduction

Gavin and Doherty Geosolutions Ltd. (GDG) were engaged by ABCO Marine to provide geotechnical services for the ground investigation at Foynes Port, Co. Limerick. ABCO Marine were instructed by RPS ("the Client's Representative") under the authority of Shannon Foynes Port Company ("the Client") to undertake a ground investigation at Foynes Port.

The investigation was undertaken to provide geotechnical and environmental information for the design team to provide an understanding of the existing ground conditions in order to facilitate the design of an extension to the existing jetty infrastructure, associated land reclamation and enabling works for the development of the Durnish site.

1.1 Description of the Project

RPS were engaged by Shannon Foynes Port Company to procure and oversee the geotechnical and environmental ground investigation to provide design information for proposed new development works at the Foynes Port site. The proposed new development works include storage sheds at the Durnish site and an extension which will join two existing structures at the port; the East Jetty and the West Quay.

ABCO Marine were instructed by RPS to undertake an intrusive ground investigation including land boreholes and trial pits at the Durnish site, and a combination of land and marine boreholes and cone penetration tests (CPT) at the site of the jetty extension. Grab samples were also taken at the marine site for contamination testing as part of the environmental investigation. Ground investigations at both sites included retrieving samples for geotechnical and environmental laboratory testing.

ABCO Marine facilitated the marine boreholes and CPTs by utilising a jack up barge. Ground Investigations Ireland (GII) carried out the borehole drilling using a combination of cable percussion (CP) and rotary core (RC) methods at the Durnish site and the marine site. GII and GEO site and Testing Services (GSTL) undertook the geotechnical laboratory testing. Environmental samples were transferred to Jones Lab for testing.

GDG were present during the ground investigations and undertook the borehole logging and geotechnical test scheduling, for approval by RPS. RPS undertook scheduling for environmental testing.

The ground investigation began on 27th March 2017 and was completed on 6th July 2017. The geotechnical and environmental laboratory testing were completed in October 2017.

1.2 Purpose and scope

The investigation was designed by RPS with the objective of obtaining the following information:

- An overview of the ground and groundwater conditions present with relation to strength and compressibility properties of the ground;
- Information relating to ground contamination.

The purpose of the report is to present the factual information and data from the ground investigation, including logs of the intrusive ground investigation, results of in-situ testing and results of laboratory testing.

The scope of the ground investigation included the following:

Durnish site

- 6 No. land boreholes
- 10 No. trial pits
- Standard penetration testing (SPT)
- In-situ shear vane testing
- Sample recovery for geotechnical laboratory testing
- Sample recovery for environmental sampling
- Installation of groundwater monitoring wells

Jetty extension site

- 8 No. land boreholes
- 15 No. marine boreholes
- 8 No. marine CPTs
- 8 No. 4m sediment sample for environmental sampling
- SPTs
- In-situ shear vane testing
- Sample recovery for geotechnical laboratory testing
- Sample recovery for environmental sampling

Soil and rock descriptions were undertaken in accordance with British Standard BS5930:2015, Code of Practice for Site Investigation which incorporates guidance presented in BS EN ISO 14688-1:2002+A1:2013, BS EN ISO 14688-2:2004+A1:2013 and BS EN ISO 14689-1:2003.

As noted in BS5930:2015 Clause 33.4.4.2, Table 15, the classification of very coarse soils (cobbles and boulders) requires sample size circa 1000kg. As it is not reasonably possible to recover representative samples from boreholes and conventional trial pits to quantify cobble and boulder content, the exploratory hole logs presented in this report make reference to the presence of cobbles and boulders only.

All rock cores obtained were logged by an experienced Engineering Geologist or Geotechnical Engineer. Fracture Index (FI), as recorded on the rotary borehole logs, has been expressed in terms of fracture frequency per metre length of core. The term non-intact has been used for highly fractured or fragmented core where the rock material was recovered as fine to coarse gravel sized fragments.

2 The site

2.1 Site location

The Shannon Foynes Port Company, is located at Main St, Foynes, Co. Limerick, Ireland V94 R232; on the west coast of Ireland. The port is located on the southern shore of the River Shannon Near the N69 Limerick to Tralee road, 30km west of Limerick City and 55km north east of Tralee. The Irish National Grid coordinates for the two sites are provided below:

- Durnish site: E126460, N151440
- Foynes Port marine site: E125225, N151812

Figure 2-1 Location of Shannon Foynes Port Company

The project site comprises two sites; a marine site and a land site. The marine site is located in the existing port and comprises two existing marine structures; i.e. the East Jetty and the West Quay, and the intertidal area in between. It is proposed that the existing East jetty is extended to meet the West Quay. The land site is located to the east and south east of the existing port in the Durnish land area. The two site locations are shown on Figure 2-2 below.

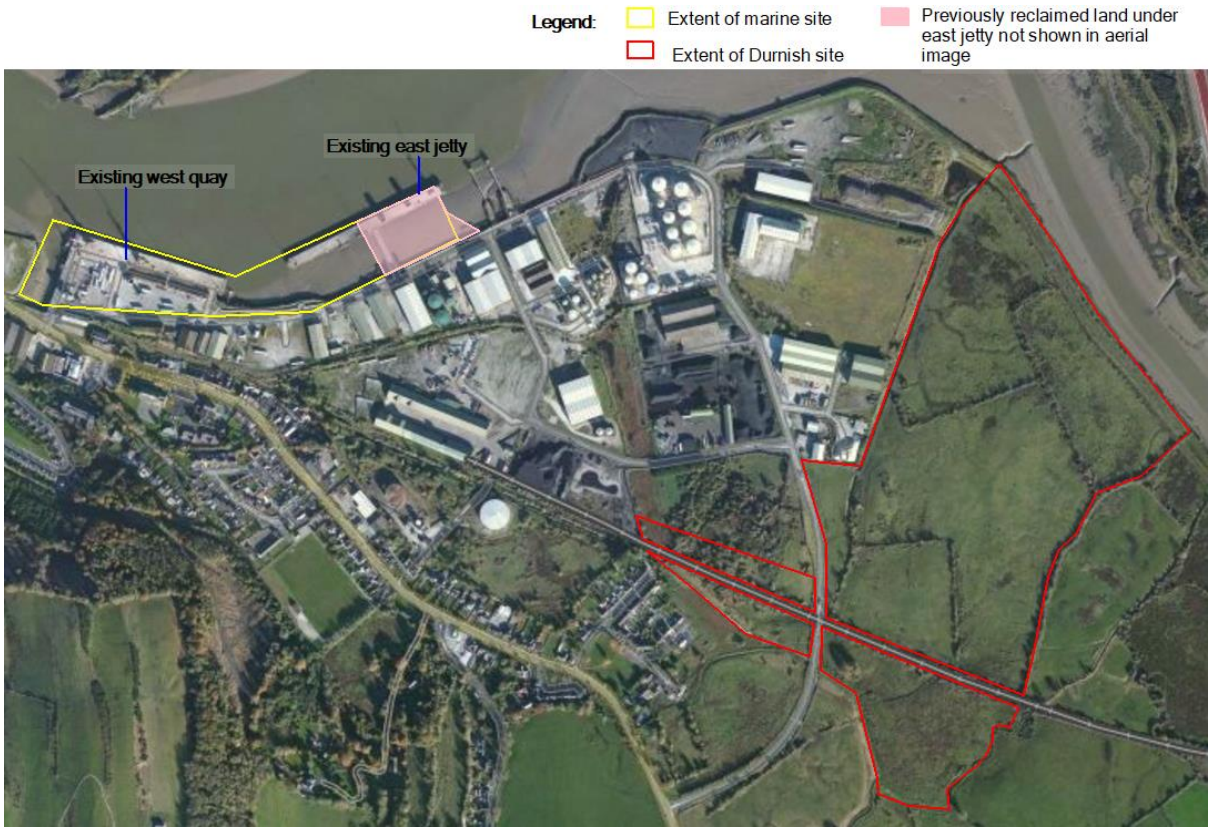

Figure 2-2 Aerial image showing Shannon Foynes Port site location

The jetty extension marine site is bound by the River Shannon to the north, the existing east jetty to the east, the existing West Quay to the west and the port facilities site to the south. The marine site is approximately 73km^2.

The Durnish land site is bound by the River Shannon to the North, the River Robertstown (a tributary river to the River Shannon) to the east, N69 Road to the south which leads into Foynes Village and Harbour Entrance Road to the west. The Durnish site is approximately 370km^2.

2.2 Current land use

The East Jetty and West Quay at the marine site are currently used for general port operations, including docking of passenger ships and commercial ships for import and export of goods. The area has a history of marine industry with the port expanding throughout the 19th and 20th century.

The Durnish land site is currently a greenfield site and appears to have no obvious purpose at present. The land is generally covered in grass with hedge lines located along the Harbour entrance road on the western boundary. From historic maps (OSI) of the Durnish site, it shows that the land has been

used as agricultural land with no other use besides a disused railway that crosses the site. The railway is not currently in use but has not been abandoned and therefore maybe active in the future. From the RPS drawing of the Proposed Durnish Development Site Investigation, this drawing shows a quarry that is noted to be to the west of the site. The quarry is not marked on OSI current or historic maps, though dense vegetation is noted in the area both by surveyors and aerial imaging. Therefore, it can be assumed that the quarry was possibly used as a local source for limestone as lime kilns are noted in the greater area.

2.3 Topography and land features

Bathymetry models for the berthing area along the east jetty and the west quay, presents a range in water depth from 8.0m to 12.0m. The majority of the berthing area is approximately 11.7m in depth which is the port authority's stated minimum water depth of the facility. The berthing depth decreases to 9.2m at the Mooring Dolphins to the north east of the east jetty. For the area between the east jetty and the west quay, and behind the jetty, where reclamation is proposed, the bathymetry shows water depth ranges from 0.0m to 2.0m. In this area bed level is relatively higher due to accumulation of estuarine deposits.

The Durnish site is generally flat, hummocky, low lying ground. The ground levels of the boreholes at the Durnish averaged at 1.59m OD, ranging from 1.78m at LD06 in the east to 1.39m at LD05 in the west. In the area west of the port entrance road there is higher land with a steeper gradient, due to a large rock outcrop that is covered in thick vegetation. Various low points within the site are prone to having standing water and are very soft. Historical aerial imaging of the site shows active channels within the site crossing the fields that are not seen in recent aerial imaging, though this may be depended on rainfall or saturation of the soil. A box culvert is located on the Durnish site with a shallow watercourse. Drainage ditches bound the land and demarcate the fields. The drainage ditches have the water level controlled by sluices to prevent flooding. The north east of the Durnish land is protected from the tide along the river estuary by levees. A natural rise in the land to the west of the Durnish land is marked by a large rock outcrop underlying brambles and hawthorns.

A currently disused railway line runs east to west across the site and the site crosses Harbour Entrance Road. The railway line is mostly on the same level as the surrounding land with only short stretches on a low embankment fill to keep the track level consistent.

2.4 Geology

The Geology of this region is defined by the Geological Survey of Ireland, with the Shannon Estuary region being covered by Sheet No.17 and the accompanying booklet for the 1:100,000 scale series. The lithologies recognized as bedrock by GSI for the site are presented in Table 2-1. In this it is possible to differ 5 formations, coming from two stages of the geologic time. An older one formed by marine shelf facies represented by the formations **Rathkeale Formation**, **Durnish Formation**, **Shanagolden Formation** and **Parsonage & Corgrig Lodge Formation**; and another more recent, **Clare Shale Formation**, characterized as fluvio-deltaic & basinal marine. The geological formations are spatialized on the map in .

Table 2-1 Bedrock lithology details (GSI)

Unit Name	Origin	Description	Regional thickness	Age
Rathkeale Formation	Marine shelf facies	**Dark muddy limestone & shaly mudstone.** Comprises dark argillaceous limestones and shaly mudstones. The formation is unfossiliferous apart from trace fossils. The limestones are well-bedded and brittle and have a fracture cleavage. The lower part of the formation is dominantly shaly.	Maximum estimate of 457.2 m	Carboniferous Dinantian 318.1 - 359.2 (Ma)
Durnish Formation	Marine shelf facies	**Blue-black cherty bioclastic limestone.** Uniform, blue-black, bioclastic limestones which commonly contain bands of chert nodules parallel to bedding. The limestones contain a coral - brachiopod fauna, the corals being chiefly large solitary Caniniid - Clisiophyllid types.	304.8 m	Carboniferous Dinantian 318.1 - 359.2 (Ma)
Shanagolden Formation	Marine shelf facies	**Black well bedded skeletal limestone**. Black, well-bedded limestones in which chert is uncommon. The formation is similar to the Durnish Formation except for the general rarity of chert. They are divided from them on the basis of a distinctive coral fauna. The large Caniniids and Clisioph.	76.2 m	Carboniferous Dinantian 318.1 - 359.2 (Ma)
Parsonage & Corgrig Lodge Formation	Marine shelf facies	**Fine laminated & muddy limestone & shale.**	-	Carboniferous Dinantian Upper 326.4 - 345.3 (Ma)
Clare Shale Formation	Fluvio-deltaic & basinal marine	**Mudstone, cherty at base.** In the type area the formation consists of a condensed sequence of black shales with closely spaced layers rich in goniatites, underlain by shales with many phosphatic horizons. Nodules and bands of clay ironstone occur near the top of the formation.	12 – 15 m	Carboniferous Namurian 311.7 - 326.4 (Ma)

The geology of the Foynes marine area consists of formations from the Carboniferous system, from the Visean and basal Namurian stage. The formations are dipping gently to the south west. The bedrock of the Durnish site consists of the Rathkeale Formation (RK) to the east of the site and the Durnish Formation (DU) to the west. The Bedrock geology of the Foynes Port marine site is the Clare Shale Formation (CS). All of these formations are Carboniferous in age.

The Rathkeale Formation (RK) comprises dark muddy limestone with mudstones, which are well bedded and brittle. This formation is non fossiliferous. This is uniformly overlain by the Durnish Formation (DU), which is a uniform bioclastic limestone with bands that include chert nodules parallel to bedding. It is abundant in fossils, with complete coral beds. The Durnish formation is overlain by the Shanagolden Formation (SG) of black limestone and then the Parsonage and Corgrig Lodge formation (PA), a fine grained muddy limestone. These are over lain by the Clare Shale Formation (CS) which is a clay rich mudstone with band of siltstone. The carboniferous limestone formations represent an offshore ramp. The changes in grain size and the fossil content between the formations

indicates changes in relative sea level. The Clare shale formation (CS) which was deposited above the carboniferous limestone formations represents a deep marine, representing a significant rise in relative sea level.

The subsoil of the site area was described by Agriculture and Food Development Authority - Teagasc - and is available in GSI website as well. Foynes Port is mapped as Made Ground, that is superimposed on a region composed by mostly of Estuarine Sediments (silts, clays) – Mesc, on the west area by Limestone till from the Carboniferous – TLs, and also the bedrock at surface (shale and limestone), as can be visualized in Table 2-2 Subsoil (Teagasc) and Figure 2-4.

Table 2-2 Subsoil (Teagasc)

Subsoil Category
Made Ground
Mesc - Estuarine silts and clays
TLs - Till derived from limestones
TNSSs - Till derived from Namurian sandstones and shales
Rck - Bedrock outcrop or subcrop

The both sites, marine and Durnish are shown to be covered in marine/estuarine sediments, of silts and clays (Mesc). Glacial tills, mainly of limestone in origin are present in the south of the Durnish site, as well as outcrops of the bedrock.

Karst activies were found in 2 boreholes in less than 3k from Foynes Port in the Walsortian Limestone and Rathkeale Formation, .

The bedrock determines the regional behavior of groundwater and can be visualized in Figure 2-5. The site area is located on two aquifer domains: Poor Aquifer (PU) and Locally Important Aquifer (LI). Adjacent to the site area is a Regionally Important Aquifer Karstified – conduit (Rkc).

GSI database has a list of minerals locality, also it has mine records disposal in shapefile. The data generated from this data is avaiable in Figure 2-6. Pyrite is a record found very close to the site. Also is shown in the map a calcite and a limestone locality. The limestone point is also the Barrigone Quarry.

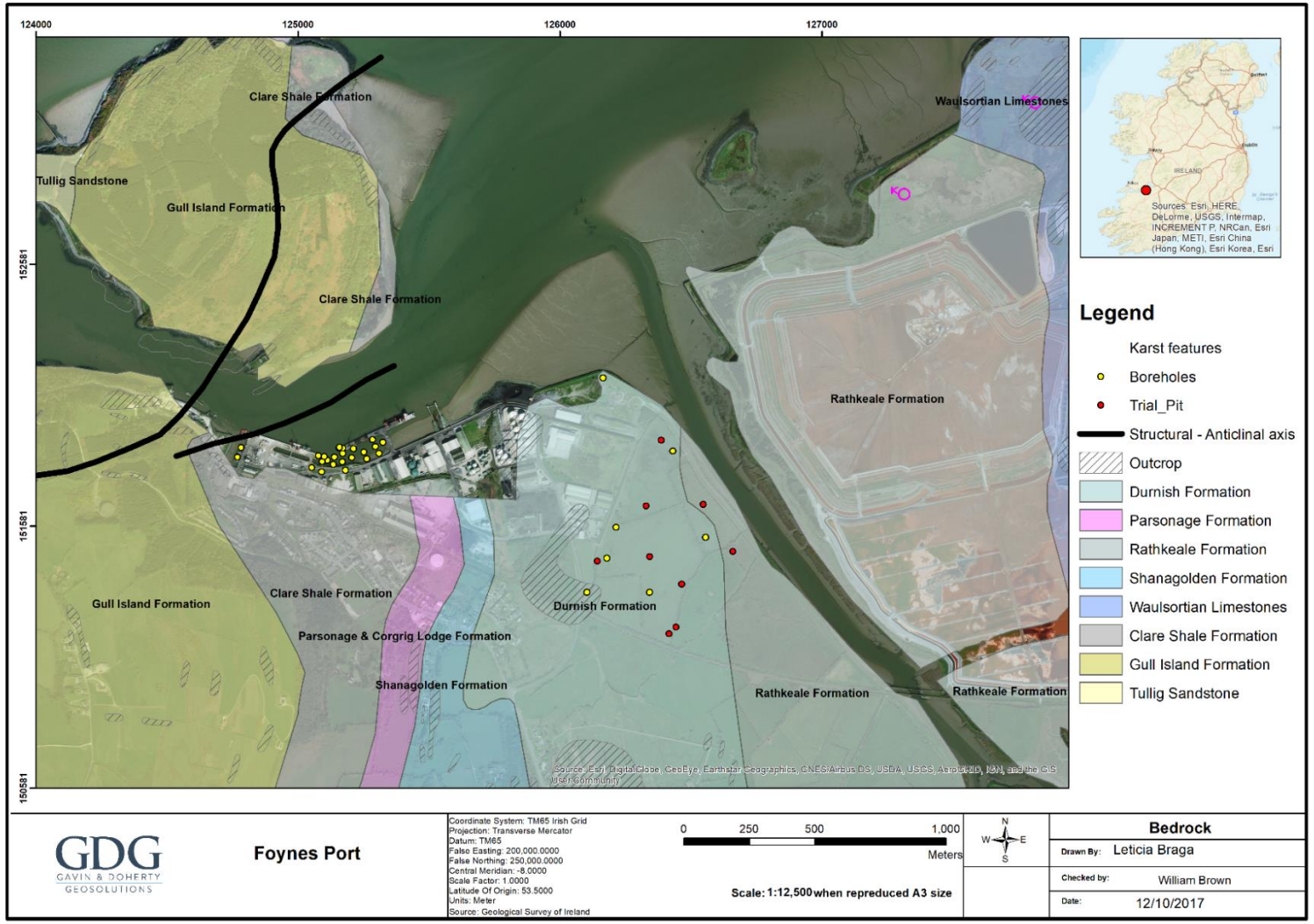

Figure 2-3 Bedrock Map 1:100 resolution (GSI)

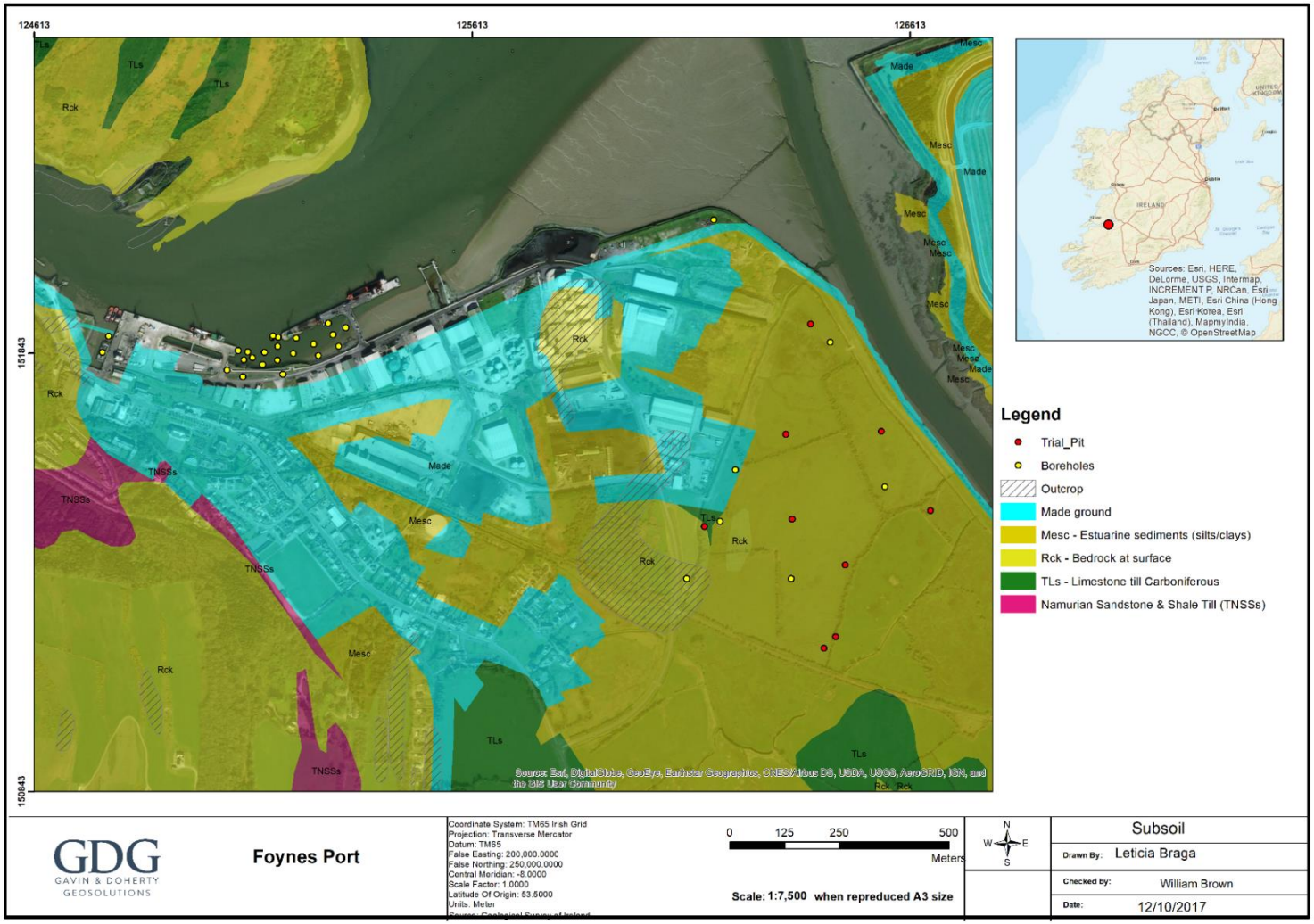

Figure 2-4 Subsoil Map (GSI)

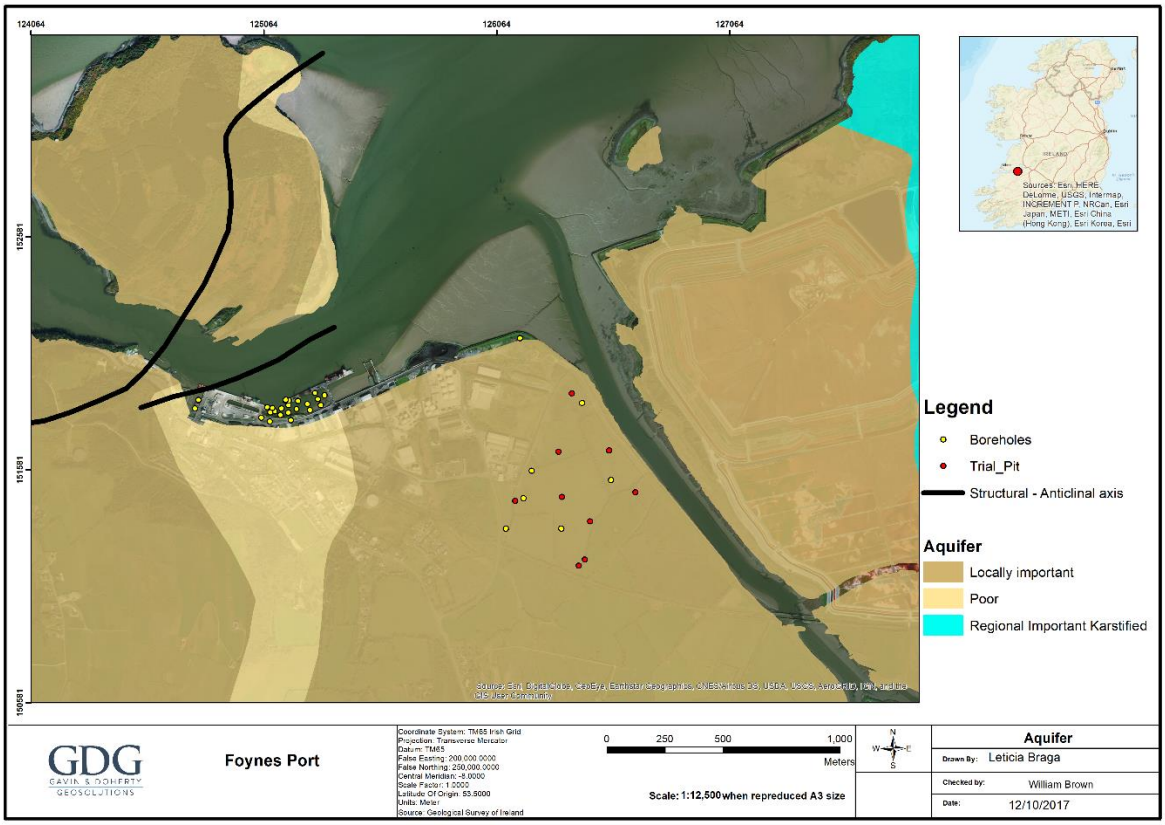

Figure 2-5 Groundwater Bedrock Aquifers (GSI)

Figure 2-6 Mineral location

3 Ground investigations

3.1 Previous ground investigations

There are no records of previous ground investigations at our project sites. We are aware that previous ground investigations have been carried out within the port near to our project site, but have not been made available at this time.

3.2 Exploratory holes

A number of exploratory holes have been carried out within the project sites. Table 3-1 presents details of the type and number of exploratory locations on each site.

Table 3-1 Number of exploratory holes dug on site

Exploratory hole type	Number of exploratory locations on site	
	Durnish site	Jetty extension site
Land Boreholes	6	8
Marine Boreholes	0	15
Trial Pits	10	8
Marine CPTs	0	8

Locations of the exploratory holes are presented in Figure 3-1 and Figure 3-2, and in a borehole location plan drawing by RPS, presented in Appendix 4.

Figure 3-1 Durnish site boreholes

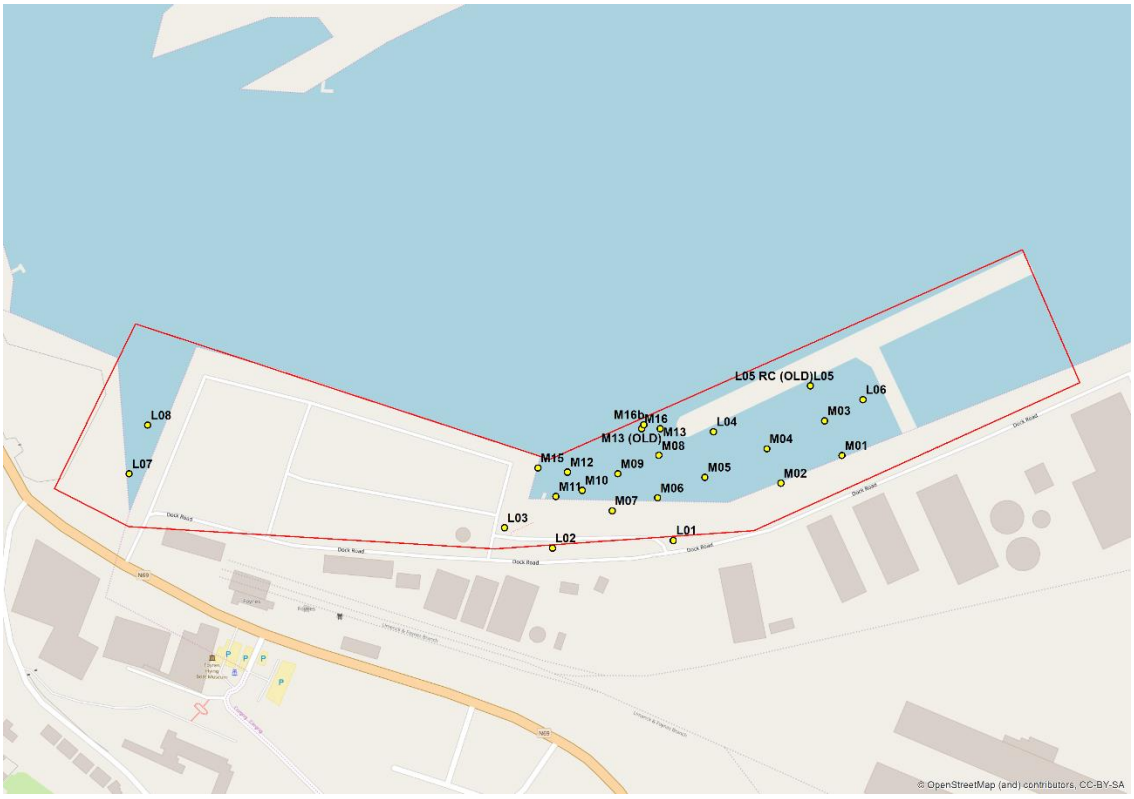

Figure 3-2 Jetty extension site boreholes

3.3 Drilling

Boreholes were drilled by means of a combination of cable percussion (CP) drilling with rotary core (RC) follow on.

The CP drilling was carried out using the Dando 2000 CP rig. CP drilling, also known as shell and auger, is carried out using a shell in non-cohesive soils and a clay cutter in cohesive soils, operated by a wire cable and trip. The core is then extruded from the shell for logging. Due to the nature of the drilling method some mixing of thinly laminated soils occurs and therefore thin granular layers may not have been logged as such.

As the borehole was extended through very soft estuarine clay, gravel and highly fractured rock, it was necessary to line the borehole with 200mm diameter steel casing to prevent collapse. Effort was made to extend the casing as deep as possible by using CP drilling before moving to RC follow on.

The boreholes were extended into dense gravel and rock by RC drilling method using a track mounted T44 Beretta rig. The T44 Beretta utilised a conventional double barrel system with a semi-rigid inner plastic liner, operated using a wireline drilling process. The outer barrel has a coring bit attached to the lower end and is rotated by the drill rods. The inner barrel does not rotate during drilling. The liner retains the core intact as much as reasonably possible. The core is cut by the coring bit and passes to the inner liner. The core is recovered within the inner barrel by a wire rope, and is then placed into a core box in order of recovery. Water flush drilling fluid was used. RC drilling using water flush can wash away fine grained material during coring. The recovery achieved is recorded on the borehole logs and core photographs are provided.

3.4 In situ testing

3.4.1 SPT

SPT tests were carried out in accordance with BS 1377:1990. In cohesive soils a split spoon sampler was used, and in granular soils a solid cone penetrometer is used. Any penetration of the sampler under self-weight was recorded. The test included seating drive, equal to 150mm penetration or 25 blows, whichever is first, and four increments of 75mm with the blows for each 75mm increment being recorded. The test is terminated after the total length of 300mm, or 50 blows, have been reached.

SPT testing was generally carried out at 1m intervals to 5m bgl and at 1.5m intervals thereafter, until refusal. However, within the marine boreholes at the site of the proposed jetty extension and reclamation, the SPT generally gained full penetration under self-weight, therefore the SPT testing was limited within this stratum maximise piston and tube sampling.

3.4.2 Shear Vane

Geonore H-10 shear vane borer instrument was used to carry out the shear vane testing in the soft silty clay deposits encountered in the marine boreholes. Testing was generally carried out at 0.5m above and at 0.5m below each piston sample. In the following boreholes:

- L02,
- L04,
- L05,
- L07,
- L08,
- M01,
- M02,
- M03,
- M04,
- M05,
- M06,
- M07,
- M08,
- M10,
- M11, and
- M12.

Whereas, shear vane testing was carried out in the trial pits at the Durnish site using a Pilcon hand held shear vane. Testing was generally carried out at 0.5m bgl, 1m bgl and at 1m intervals thereafter, or at a change of stratum, at the following ground investigation locations:

- TP01,
- TP02,
- TP03,
- TP04,
- TP05,
- TP06,
- TP07,
- TP08,
- TP09, and
- TP10.

3.4.3 CPT

Static Cone Penetration Testing was carried out by In Situ Site Investigation. The testing and reporting were carried out in accordance with BS EN ISO 22475-1:2012. The factual report is appended to this report while the test results are included in the attached AGS data.

3.5 Sampling

3.5.1 Disturbed Samples

Small disturbed samples and bulk disturbed samples were generally taken in all trial pits and boreholes in each new stratum, at 0.5m depth, at 1.0m intervals to 5.0m and at 1.5m intervals thereafter, or as directed by the investigation supervisor/Engineer. They were generally taken midway between successive open tube samples/SPTs.

3.5.2 Undisturbed Samples

In cohesive deposits U100 open tube samples were generally taken at 1.0m depth intervals to 5.0m and at 1.5m intervals thereafter, or as directed by the investigation supervisor/Engineer.

Piston tube samples, of minimum 1.0m length, were recovered at 1.5m increments in very soft cohesive subsoils, or as directed by the investigation supervisor/Engineer.

All undisturbed samples were inspected and waxed before drilling recommenced.

All samples were immediately logged as per BS 5930:2015 and IS EN ISO 22475-1.

3.6 Laboratory testing

Soil and rock samples were selected for geotechnical and environmental laboratory testing. Geotechnical laboratory testing was carried out by Geo site & Testing Services Limited (GSTL), Carmarthenshire, while environmental contamination testing was carried out by Exova Jones Environmental, Deeside, Wales and City Analysts limited, Environmental laboratories Ringsend Dublin 4.

The following geotechnical laboratory tests were carried out.

Table 3-2 Geotechnical Laboratory Testing Summary

Test	Quantity	Boreholes
Density Test	11 boreholes (69 tests)	L01, L02, L03, L06, L07, L08, LD01, LD02, LD04, LD06, M09
Atterberg Limits	25 boreholes (199 tests)	L01,L02,L03,L04,L05,L06,L07,L08,LD01,LD02,LD04, LD06,M01,M02,M03,M04,M05,M06,M07,M08 ,M09,M10,M11,M12,M15
Moisture Content	26 boreholes (236 tests)	L01, L02, L03, L04, L05, L06, L07, L08, LD01, LD02 , LD04 , LD06 , M01 ,M02,M03 ,M04, M05, M06 , M07, M08, M09, M10, M11, M12, M13, M15

Test	Quantity	Boreholes
Bulk and dry density by water immersion or displacement	12 boreholes (36 tests)	L04, L05, M01, M02, M03, M04, M05, M06, M08, M11, M13, M15
Particle Size Distribution - Wet sieving	23 boreholes (157 tests)	L03, L04, L05, L06, L07, L08, LD01, LD02, LD04, LD06, M01, M02, M03, M04, M05, M06, M07, M08, M09, M10, M11, M12, M15
Particle Size Distribution - hydrometer	9 boreholes (12 tests)	L01, L05, L06, L07, LD01, LD02 , M04, M06, M09
One dimensional consolidation	21 boreholes (63 tests)	L01, L02, L04, L05, L06, L07, LD01, LD02, LD04, LD06, M01, M02, M03 M04, M05, M06, M08, M09, M11, M13, M15
Laboratory Vane Test – Sher strength	17 boreholes (38 tests)	L01, L02, L04, L05, L06, L07, LD01, LD02, LD04, LD06, M01, M02, M03, M04, M05, M06, M08, M09, M11, M15
Direct shear test	16 boreholes (36 tests)	L04, L05, M01, M02, M03, M04, M05, M06, M08, M11, M13, M15
Large direct shear	4 boreholes (4 tests)	L07, LD02, LD05, LD07
Shear strength by undrained triaxial	14 boreholes (19 tests)	L01, L04, L05, L06, L07, M03, M04, M05, M06, M08, M09, M11, LD02, LD04
Consolidated undrained triaxial with pwp	9 boreholes (12 tests)	LD01, L04, L05, M04, M06, M08, M11, LD01, LD06

Table 3-3 Summary of failed geotechnical laboratory testing

Test	Sample	Depth (m)	Comment
Shear Box	L04	12.50	Samples too soft to test, sample was leaking out shear box when consolidating and submerged with water.
	M04	13.00	Samples too soft to test, sample was leaking out shear box when consolidating and submerged with water.
Triaxial	L04	12.50	Sample too soft to obtain a CUT test (slumped)
	M03	1.00	CUT sample slumped when being extruded (very soft)
	M03	3.00	CUT sample slumped when being extruded (very soft)
	M03	5.00	CUT sample slumped when being extruded (very soft)
	L05	14.00	CUT Sample too soft to obtain a CUT specimen (Slumped)
	M11	5.00	QUT sample too soft to obtain a QUT test (Slumped)
	M11	11-11.50	QUT sample too soft to obtain a QUT test (Slumped)
UCS	LD03	6.80-7.08	Fractured upon inspection

The following environmental contamination laboratory tests were carried out.

Table 3-4 Soil Environmental Contamination Laboratory Testing Summary

Test	Quantity	Boreholes
Metals	7 boreholes, 10 test pits, 8 grab samples (41 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10, G01, G01, G03, G04, G05, G06, G07, G08

Test	Quantity	Boreholes
VOC	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
SVOC	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
PAHs	7 boreholes, 10 test pits, 8 grab samples (41 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10, G01, G01, G03, G04, G05, G06, G07, G08
TPH-CWG	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
BTEX	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
PCBs	7 boreholes, 10 test pits, 8 grab samples (26 tests)	L01, LD01, LD02, LD03 LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10, G01, G01, G03, G04, G05, G06, G07, G08
Asbestos screen	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
Phenols	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
Cyanide	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
Sulphur	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
Sulphur Total	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10

Test	Quantity	Boreholes
pH	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
SOM	7 boreholes, 10 test pits (33 tests)	L01, LD01, LD02, LD03, LD04, LD05, LD06, TP01, TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP09, TP10
WAC	5 test pits (5 tests)	TP01, TP03, TP05, TP07, TP10
TBT	5 boreholes, 8 grab samples (13 tests)	L01, LD02, LD03, LD04, LD06, G01, G01, G03, G04, G05, G06, G07, G08
DBT	5 boreholes, 8 grab samples (13 tests)	L01, LD02, LD03, LD04, LD06, G01, G01, G03, G04, G05, G06, G07, G08
Total organic content	8 grab samples (8 tests)	G01, G01, G03, G04, G05, G06, G07, G08
HCH	8 grab samples (8 tests)	G01, G01, G03, G04, G05, G06, G07, G08
Aliphatic/Aromatic EPHs	8 grab samples (8 tests)	G01, G01, G03, G04, G05, G06, G07, G08
Carbonates	8 grab samples (8 tests)	G01, G01, G03, G04, G05, G06, G07, G08
Toxicity testing	8 grab samples (8 tests)	G01, G01, G03, G04, G05, G06, G07, G08

Table 3-5 Water Sample Environmental Contamination Laboratory Testing Summary

Test	Quantity	Boreholes
pH	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
Major Ions	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
Metals and Minor Ions	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
PAHs	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
TPH-CWG	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
BTEX	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06

Test	Quantity	Boreholes
SVOCs ex PAHs	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
PCBs	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06
Phenols Speciated	6 test pits (6 tests)	LD01, LD02, LD03, LD04, LD05, LD06

3.7 Reporting

This Factual report is accompanied by AGS format data. The AGS data includes all ground investigation logging, co-ordinates and ground levels ,in-situ test results and laboratory test results.

All coordinates are reported according to Ordnance Survey Ireland Irish Grid, while all elevations are reported according to Foynes Shannon Port Chart Datum. Foynes Shannon Port Chart Datum is 3m below Malin Ordnance Datum (commonly taken as the Irish national datum).

Copies of all ground investigation logging, in-situ test results and laboratory test results are appended to this report.

4 Ground summary

4.1 Ground model

The ground conditions for the Durnish land site vary across the site but generally comprise of a thin layer of top soil over thick estuarine/alluvial deposits and glacial tills, overlying the bedrock. The Bedrock of the Durnish land site is a limestone which is exposed at the surface in certain locations of the site. The ground investigations have generally confirmed the anticipated geology described in the GIR. The sequence and type of geological strata generally identified in the ground investigations are summarised in Table 4-1, starting with the most recent deposits.

Table 4-1 General ground profile summary for Durnish land site

Material Name	Typical Description	Depth bgl (m)		Holebase stratum code
		To top	To bottom	
Drift Deposits				
Topsoil	Soft to firm sandy gravelly clay/silt	0.0	0.3	Tsl
Estuarine/Alluvial - Cohesive	Soft sandy silty gravelly CLAY with low	0.0	3.1	Al-c
Estuarine/Alluvial - Granular	Silty GRAVEL	2.0	11.0	Al-c
Glacial - Granular	Cobbles and boulders	0.0	14.5	Gl-c
Solid Geology : Rathkeale Formation				
Limestone	Strong to very strong grey bedded crystalline Limestone	0.0	17.3	Lms

The onshore area of the jetty extension site has thick layer of made ground which forms the current quay. This is above a thick layer of very soft estuarine/alluvial cohesive clays and silts, which becomes coarser with depth, towards estuarine/alluvial granular gravel and cobbles. The Bedrock for this location is a fine grained limestone.

Table 4-2 General ground profile summary for Jetty Extension Site Onshore

Material Name	Typical Description	Depth bgl (m)		Holebase stratum code
		To top	To bottom	
Made Ground				
Made Ground	Silty sandy Gravel with occasional cobbles placed as fill (Current quay)	0.0	5.0	MGd
Drift Deposits				
Estuarine/Alluvial - Cohesive	Very soft sandy CLAY	3.3	7.0	Al-c
	Very soft sandy SILT with shell fragments	4.0	18.0	Al-c
Estuarine/Alluvial - Granular	From clayey sandy GRAVEL to gravel and cobbles	18.0	27.0	Al-g
Solid Geology : Clare Shale Formation				
Limestone	Strong dark, fine to medium grained crystalline Limestone	22.2	25.8	Lms

The offshore area of the jetty extension has soft estuarine clays, above gravel that contains some boulders. The area has a bedrock of mostly limestone, with occasional interbeds of siltstone and mudstone. The ground investigations have generally confirmed the anticipated change in geological formation described in the GIR.

Table 4-3 General ground profile summary for Jetty Extension Site Offshore

Material Name	Typical Description	Depth bgl (m)		Holebase stratum code
		To top	To bottom	
Drift Deposits				
Estuarine/Alluvial - Cohesive	Very soft silty CLAY to sandy gravelly CLAY	0	1.2	Al-c
Estuarine/Alluvial - Granular	From GRAVEL to boulder GRAVEL	0.2	25.0	Al-g
Solid Geology : Clare Shale Formation				
Limestone	Strong dark, fine to coarse grained crystalline Limestone	9.0	25.0	Lms
Siltstone	Strong thinly laminated black Siltstone	14.1	21.3	Stst

4.1.1 Made Ground

The Made Ground as seen in the Onshore part of the Jetty extension, belongs to the pre-existing quay. The depth of made ground stratum varies from 3.3m to 5.0m. the made ground consists of a silty sandy gravel with the occasional cobble. The gravel is angular and subangular. The sand is fine to coarse grained, the cobbles are surrounded limestone The made ground is firm and stiff.

4.1.2 Topsoil

Soft to firm top layer mainly consisting of clay or silt, with some sand and gravel. This stratum layer ranges in thickness from 0.2m to 0.3m.

4.1.3 Estuarine/Alluvial Deposits

Deposits from the river estuary dominates all of the localities. The majority of the estuarine deposits are the cohesive sandy clay/silts. However, at greater depths there are the coarser grained more granular deposits of sandy gravels. The finer grained deposits are very soft, especially the deposits in the marine site which have undergone no consolidation. The estuarine deposits do include shell fragments in parts.

4.1.4 Glacial Deposits

Glacial deposits are found in the Durnish land site consisting of a glacial till. The deposits are granular in nature, consisting predominantly of cobbles and boulders. The cobbles and boulders consist of clasts of limestone. Within the site they are overlain by later estuarine deposits. The glacial deposit is classed as stiff.

4.1.5 Limestone

Limestone is the predominate bedrock of all sites. It is exposed at the surface within the Durnish site but is at greater depths for the jetty extension, ranging in depths from 0.0m to >25m. The limestone has a dark appearance and varies in strength from weak to very strong. The limestone has differing thickness of lamination and is highly fractured with areas of ironstaining.

4.1.6 Siltstone

The siltstone is strong and thinly laminated. It forms interbeds within the limestone beneath the offshore jetty extension site. The thickness of the siltstone interbeds vary from 0.7m to 2.1m.

4.2 Groundwater

4.2.1 Waterstrikes

Groundwater strikes were recorded in the test pits carried out in the Durnish site. The measurements are presented in Table 4-2.

Table 4-2 Groundwater measurements at Durnish site

Borehole	Ground level (m CD)	Waterstrike (m bgl)	Waterstrike (m CD)	Date	Remark
TP01	4.26	4.0	0.24	31/03/2017	Slight seepage
TP02	4.68	4.0	0.68	31/03/2017	Slight seepage
TP03	4.78	4.0	0.78	31/03/2017	Slight seepage
TP06	4.55	1.3	3.25	31/03/2017	Very fast
TP08	4.93	2.0	2.93	31/03/2017	Fast
TP09	4.25	1.5	2.75	31/03/2017	Very fast

4.2.2 Groundwater monitoring

Groundwater monitoring wells were installed in boreholes LD01 to LD06 at the Durnish site. Groundwater measurement were recorded on 10th August 2017. The groundwater measurements are presented in Table 4-3.

Table 4-3 Groundwater measurements at Durnish site

Borehole	Ground level (m CD)	Water depth (m bgl)	Water level (m CD)	Date	Time
LD01	11.8	1.2	10.6	10/08/2017	15:10:00
LD02	17.9	1.3	16.6	10/08/2017	13:00:00
LD03	8	1.5	6.5	10/08/2017	16:00:00
LD04	8.8	1.7	7.1	10/08/2017	11:50:00
LD05	7.7	2.2	5.5	10/08/2017	09:05:00
LD06	6.3	1.9	4.4	10/08/2017	10:45:00

References

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APPENDIX 1

BOREHOLE AND TRIAL PIT LOGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L01** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125226E - 151760N	Hole Type CP+RC
Location:	Foynes Port		Level:	5.81 m CD	Scale 1:50
Client:	RPS		Dates:	25/05/2017 - 28/06/2017	Logged By CL +LB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	B					MADE GROUND: Firm to stiff grey brown sandy gravelly CLAY fill with occasional mixed cobbles. Gravel is angular to subangular, fine to coarse. Sand is fine to coarse. Cobbles are subangular to angular.
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00	SPT	N=14 (2,3/2,3,5,4)				
		2.00	B					
		2.00	D					
		2.00	SPT	N=12 (4,3/3,4,3,2)				
		2.70	B		2.70	3.11		
		2.70	D					MADE GROUND: Soft to firm brown mottled grey silty sandy gravelly CLAY with occasional cobbles. Gravel is subangular to subrounded mixed lithology. Sand is fine to medium. Cobbles are subrounded limestone.
		3.00	B					
		3.00	D		3.10	2.71		
		3.00	ES					Very soft dark grey very sandy CLAY with rare shell fragments and rare gravel. Sand is fine.
		3.00	SPT	N=6 (3,2/2,1,2,1)				
		3.10	B					
		4.00	B					
		4.00	D					
		4.00 - 4.45	UT					
		4.50	SPT	N=4 (2,1/1,1,1,1)	4.50	1.31		Very soft grey sandy slightly gravelly SILT with rare shell fragments. Sand is fine. Gravel is subangular to subrounded, fine to medium.
		5.00	B					
		5.00	D					
		5.00	ES					
		5.00 - 5.45	UT					
		5.50	SPT	N=3 (1,1/1,0,1,1)				
		6.00	B					
		6.00	D					
		6.00 - 6.45	UT					
		6.50	SPT	N=2 (1,0/1,0,1,0)				
		7.00	B					
		7.00	D					
		7.00	ES					
		7.00 - 7.45	UT					
		7.50	SPT	N=2 (1,0/1,0,1,0)				
		8.00	B					
		8.00	D					
		8.50 - 8.95	UT		8.50	-2.69		Very soft grey slightly sandy SILT with rare shells and shell fragments.
		9.00	B					
		9.00	D					
		9.00	SPT	N=2 (1,0/1,0,0,1)				
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. CP drilling carried out on 25/05/2017. Casing left in place until RC was completed on 28/06/2017.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L01** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125226E - 151760N	Hole Type CP+RC
Location:	Foynes Port		Level:	5.81 m CD	Scale 1:50
Client:	RPS		Dates:	25/05/2017 - 28/06/2017	Logged By CL +LB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D					Very soft grey slightly sandy SILT with rare shells and shell fragments.
		10.00 - 10.45	UT					
		10.50	SPT	N=3 (1,0/0,1,1,1)				
		11.00	B					
		11.00	D					
		11.50 - 11.95	UT					
		12.00	B					
		12.00	D					
		12.00	SPT	N=2 (1,0/1,0,1,0)				
					12.40	-6.59		SWITCH TO ROTARY CORE No recovery
		12.40 - 15.80		0				
					15.80	-9.99		Very soft, grey, very slightly coarse sandy slightly silty CLAY. Sand is white. Rare tiny shell conch.
		15.80 - 17.30		100				
					17.30	-11.49		No recovery
					17.45	-11.64		Very soft, grey, very slightly coarse sandy slightly silty CLAY. Sand is white. Rare tiny shell conch.
		17.30 - 18.80		90	18.00	-12.19		High fractured limestone recovered as gravel. Medium dense, discontinuities are extremely closely to very closely. Grey clayey medium to coarse GRAVEL, angular and flat.
					18.80	-12.99		Medium dense, slightly sandy GRAVEL and COBBLE. Gravels are dark grey and orange mottled and angular, cobbles are light grey and sub-angular.
		18.80 - 20.30		53				
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. CP drilling carried out on 25/05/2017. Casing left in place until RC was completed on 28/06/2017.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L01** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125225.82 - 151760.02	Hole Type CP+RC
Location: Foynes Port		Level: 5.81 m CD	Scale 1:50
Client: RPS		Dates: 25/05/2017 - 28/06/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							20.30	-14.49		Medium dense, slightly sandy GRAVEL and COBBLE. Gravels are dark grey and orange mottled and angular, cobbles are light grey and sub-angular.
		20.30 - 21.80		100						Medium dense, light grey with orange mottled, slightly sandy clayey GRAVEL with occasional cobbles. Gravels and cobbles are sub-angular.
							21.80	-15.99		
		21.80 - 23.30		80						Very soft, grey mottled yellow, sandy gravelly CLAY with rare sub-angular cobble and numerous tiny pyrite nodules.
							23.30	-17.49		
		23.30 - 24.80		87						Medium dense, slightly sandy clayey GRAVEL and COBBLE. Gravels are dark grey and orange mottled and angular, cobbles are light grey and sub-angular.
							24.60	-18.79		No recovery
							24.80	-18.99		Grey and light grey mottled brownish orange, slightly sandy gravelly sub-angular COBBLE.
		24.80 - 26.30		80						
							26.00	-20.19		No recovery
							26.72	-20.91		Dense, light grey to grey, sandy clayey sub-angular GRAVEL with occasional cobble.
		26.30 - 27.80		72						
							27.80	-21.99		No recovery
							27.95	-22.14		Dense, light grey to grey brownish yellow, sandy clayey angular GRAVEL and COBBLE with occasional tiny pyrite nodules.
		27.80 - 29.30		90						
							29.30	-23.49		End of Borehole at 29.300m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. CP drilling carried out on 25/05/2017. Casing left in place until RC was completed on 28/06/2017.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L02** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125134E - 151754N	Hole Type CP+RC
Location:	Foynes Port		Level:	6.00 m CD	Scale 1:50
Client:	RPS		Dates:	26/06/2017 - 28/06/2017	Logged By CL+LB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	B					MADE GROUND: Firm to stiff grey brown sandy gravelly CLAY fill with occasional mixed cobbles. Gravel is angular to subangular, fine to coarse. Sand is fine to coarse. Cobbles are subangular to angular.
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00	SPT	N=22 (3,5/4,5,7,6)				
		2.00	B					
		2.00	D					
		2.00	ES					
		2.00	SPT	N=14 (3,4/4,3,4,3)				
		2.60	B		2.50	3.50		MADE GROUND: Brown and grey silty sandy GRAVEL with occasional cobbles. Gravel is angular to subangular, fine to coarse. Sand is fine to medium. Cobbles are subangular to angular.
		3.00	B		2.90	3.10		
		3.00	D					
		3.00	ES					
		3.00	SPT	N=3 (2,2/1,1,1,0)	3.30	2.70		Very soft dark grey sandy gravelly CLAY.
		3.30	B					Very soft to soft grey very sandy SILT with occasional shell fragments.
		4.00	B					
		4.00	D					
		4.00 - 4.45	UT					
		4.00		HVP=15				
		4.50	SPT	N=3 (2,1/0,1,1,1)				
		5.00	B		5.00	1.00		Soft to very soft grey sandy SILT with rare shell fragments.
		5.00	D					
		5.00	ES					
		5.00		HVP=14				
		5.50	SPT	N=5 (1,2/1,1,2,1)				
		6.00	B					
		6.00	D					
		7.00	B					
		7.00	D					
		7.00	ES					
		7.50 - 7.95	UT					
		7.50		HVP=10				
		8.00	B		8.00	-2.00		Very soft grey slightly sandy SILT.
		8.00	D					
		8.00	SPT	N=1 (1,0/1,0,0,0)				
		9.00	B					
		9.00	D					
		9.00 - 9.45	UT					
		9.50	SPT	N=0 (1,0/0,0,0,0)				
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. Shear Vane testing was carried out on UT samples at 12.00-12.45m and 13.50-13.95m using hand held Pilcon shear vane.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L02** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125134E - 151754N	Hole Type CP+RC
Location: Foynes Port		Level: 6.00 m CD	Scale 1:50
Client: RPS		Dates: 26/06/2017 - 28/06/2017	Logged By CL+LB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D					Very soft grey slightly sandy SILT.
		10.50 - 10.95	UT					
		10.50		HVP=17				
		11.00	B					
		11.00	D					
		11.00	SPT	N=5 (1,1/1,2,1,1)				
		12.00	B					
		12.00	D					
		12.00 - 12.45	UT					
		12.00		HVP=19				
		12.50	SPT	N=4 (1,2/1,1,1,1)				
		13.00	B					
		13.00	D					
		13.50 - 13.95	UT					
		13.50		HVP=18				
		14.00	B					
		14.00	D					
		14.00	SPT	N=3 (1,1/1,0,1,1)				
		15.00	B					
		15.00	D					
		15.00 - 15.45	UT					
		15.50	SPT	N=2 (1,1/0,1,0,1)				
		16.00	B					
		16.00	D					
					16.30	-10.30		SWITCH TO ROTARY CORE. No recovery
		16.32 - 17.30		0				
					17.30	-11.30		Very soft, grey, slightly sandy silty CLAY with rare tiny shell conch.
		17.30 - 18.80		100				
					18.50	-12.50		Dense, fissured: breaks into blocks along unpolished discontinuities, grey, angular, sandy fine to coarse GRAVEL.
					18.80	-12.80		Medium loose, grey, clayey angular medium to coarse GRAVEL.
		18.80 - 20.30		67 3	19.30	-13.30		Grey, sandy clayey sub-angular COBBLE.
					19.80	-13.80		No recovery
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. Shear Vane testing was carried out on UT samples at 12.00-12.45m and 13.50-13.95m using hand held Pilcon shear vane.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L02** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125134.34 - 151754.10	Hole Type CP+RC
Location: Foynes Port		Level: 6.00 m CD	Scale 1:50
Client: RPS		Dates: 26/06/2017 - 28/06/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										No recovery
		20.30 - 21.80		73	20	20	20.70	-14.70		Fissured: breaks into blocks along unpolished discontinuities, grey yellow mottled, sub-angular, sandy clayey, bouldery COBBLE. Boulders and cobbles are angular to sub-angular.
							21.80	-15.80		No recovery
		21.80 - 23.30		73			22.20 22.30	-16.20 -16.30		Strong, laminated, black when wet, fine medium grained LIMESTONE with rare pyrite nodules. Discontinuities are very closely, roughness is smooth stepped, aperture from very tight to moderately wide.
		23.30 - 24.80		100	13					Strong, very thinly laminated, grey, medium fine grained LIMESTONE with rare pyrite nodules. Discontinuities are closely, roughness is smooth undulating, aperture from partly open to open. Surface staining orange.
		24.80 - 25.80		100	16		24.80	-18.80		Strong, thinly laminated, dark grey LIMESTONE with rare tiny pyrite nodules. Discontinuities are very closely to closely, smooth undulating, apertures partly open to open, fine sandy soil infilling, surfaces staining orange.
		25.60	C				25.80	-19.80		End of Borehole at 25.800m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. Shear Vane testing was carried out on UT samples at 12.00-12.45m and 13.50-13.95m using hand held Pilcon shear vane.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L03** Sheet 1 of 2

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125098E - 151770N	Hole Type CP
Location:	Foynes Port		Level:	6.38 m CD	Scale 1:50
Client:	RPS		Dates:	18/05/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.00	B					MADE GROUND: Medium dense brownish grey very silty GRAVEL. Gravel is fine to coarse, subangular to sub-rounded.
		1.00	D					
		1.00	ES					
		1.00	SPT	N=38 (7,9/38 for 0mm)	1.40	6.38		
		2.00	B					MADE GROUND: Medium dense black silty GRAVEL. Gravel is fine to coarse, angular to subangular with rare cobbles.
		2.00	D					
		2.00	SPT	N=30 (5,5/8,8,6,8)				
		3.00	B					
		3.00	D					
		3.00	ES					
		3.00	SPT	N=21 (4,4/5,6,5,5)				
		4.00	B					
		4.00	D					
		4.00	SPT	N=8 (3,3/2,3,2,1)				
		4.50 - 4.95	UT		4.40	4.98		MADE GROUND: Stiff, black gravelly CLAY/clayey GRAVEL. Gravel is angular to subangular fine to coarse with rare cobbles.
		5.00	B					
		5.00	D					
		5.00	ES					
		5.00	SPT	N=5 (1,1/1,2,1,1)	5.30	1.98		Very soft dark grey very sandy CLAY.
		5.50 - 5.95	UT					
		6.00	B					
		6.00	D					
		6.00	ES					
		6.00	SPT	N=2 (1,1/0,1,0,1)				
		6.50 - 6.95	UT					
		7.00	B					
		7.00	D					
		7.00	ES		7.30	1.08		Soft, grey, sandy SILT. Sand is fine.
		7.00	SPT					
		8.00	B					
		8.00	D					
		8.00	SPT	N=1 (1,0/0,0,1,0)				
		8.50 - 8.95	UT					
		9.00	B		9.00	-0.92		Soft, grey, clayey SILT.
		9.00	D					
		9.00	ES					
		9.00	SPT	N=0 (1,0/0,0,0,0)				
		9.50 - 9.95	UT					
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. Chiselled for 1 hour at 18.3m. Client confirmed OK to pull off hole.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L03** Sheet 2 of 2

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125098E - 151770N
Location:	Foynes Port		Level: 6.38 m CD
Client:	RPS		Dates: 18/05/2017

Hole Type: CP
Scale: 1:50
Logged By: CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.00	D					Soft, grey, clayey SILT.
		10.00	SPT	N=0 (1,0/0,0,0,0)				
		11.00	B		11.00	-2.62		Very soft to soft grey slightly silty CLAy with occasional shells
		11.00	D					
		11.00	ES					
		11.00	SPT	N=1 (1,0/0,0,1,0)				
		11.50 - 11.95	UT					
		12.00	B		12.00	-4.62		Very soft grey slightly silty CLAY with rare organic timber like fragments.
		12.00	D					
		12.00	SPT	N=1 (1,0/0,1,0,0)				
		12.50	UT					
		13.00	B		13.00	-5.62		Soft grey sandy clayey SILT. Sand is fine.
		13.00	D					
		13.00	ES					
		13.00	SPT	N=1 (1,0/1,0,0,0)				
		13.50	UT					
		14.00	B		14.00	-6.62		Soft grey slightly silty CLAY with rare shell fragments.
		14.00	D					
		14.00	SPT	N=1 (1,0/1,0,0,0)				
		14.50	ES					
		15.00	B					
		15.00	D					
		15.00	ES					
		15.00	SPT	N=2 (1,0/1,0,1,0)				
		16.00	B					
		16.00	D					
		16.00	SPT	N=3 (1,0/1,0,1,1)				
		17.00	B					
		17.00	D					
		17.00	ES					
		17.00	SPT	N=5 (1,0/1,1,1,2)				
		18.00	B		18.00	-7.62		Medium dense brownish grey and black silty clayey GRAVEL.
		18.00	D					
		18.00	SPT	N=50 (5,5/50 for 150mm)	18.30	-11.62		End of Borehole at 18.30m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system. Chiselled for 1 hour at 18.3m. Client confirmed OK to pull off hole.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L04** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125256E - 151842N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.82 m CD	Scale 1:50
Client:	RPS		Dates:	07/04/2017 - 08/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft to soft grey silty, slightly sandy CLAY.
		0.50	B					
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00	UT	Ublow=3				
		2.00	B					
		2.00	D					
		2.00 - 2.45	UT	Ublow=6				
		3.00	B					
		3.00	D					
		3.00	ES					
		3.00	P					
		3.00	UT					
		3.75		HVP=30				
		4.25		HVP=36				
		5.00	ES					
		5.00 - 5.45	UT	Ublow=9				
		5.50	B					
		5.50	D					
		6.50 - 6.95	UT	Ublow=6				
		7.00	B					
		7.00	D					
		8.00	SPT	N=0 (0,0/0,0,0,0)				
		8.50	B					
		8.50	D					
		9.00	B					
		9.00	D					
		9.50 - 9.95	UT	Ublow=9				
		10.00	B					

At 9.0m possible fragment of compressed peat block with faint writing embossed.

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L04** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125256E - 151842N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.82 m CD	Scale 1:50
Client:	RPS		Dates:	07/04/2017 - 08/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing					Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results						
		10.00	D							
		11.00	SPT	N=0 (0,0/0,0,0,0)						
		11.50 11.50	B D							
		12.50 - 12.95	UT	Ublow=13						*Blow 12.5m slightly sandier with occasional white shell fragments noted.*
		13.00 13.00	B D							
							13.30	-11.48		Medium dense, fine to coarse GRAVEL of limestone
		14.00	SPT	N=19 (10,11/7,5,3,4)						
		14.50 14.50	B D							
		15.50 - 15.70		100	0	0	15.50	-13.68		SWITCH TO ROTARY CORE Medium dense, fine to coarse GRAVEL of limestone
		15.70 - 17.20		87						
		17.20 - 18.70		100						
		18.70 - 20.20		80						
			Type/Fl	TCR	SCR	RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L04** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125256.15 - 151842.30	Hole Type CP+RC
Location: Foynes Port		Level: 1.82 m CD	Scale 1:50
Client: RPS		Dates: 07/04/2017 - 08/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Medium dense, fine to coarse GRAVEL of limestone
		20.20 - 21.70		80						
		21.70 - 23.20		100						
		23.20 - 24.70		100						
		24.70 - 26.20		100						
		26.20 - 27.70		100			26.20	-24.38		Sub angular to subrounded fine to coarse gravel of black limestone, with occasional gravel of light grey/ white limestone, and cobbles of black limestone. *Between 27.0 & 27.2m gravelly clay*
		27.70 - 29.20		100	23	0	27.70	-25.88		Strong to very strong, very thinly to thinly bedded, black, fine grained LIMESTONE. Fractures are sub horizontal to sub vertical & clean. Bulk of mass non intact.
		29.20 - 29.90		100	14	0	29.20	-27.38		All material black LIMESTONE but very highly fractured.
							29.90	-28.08		End of Borehole at 29.900m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L05** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125329E - 151877N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.09 m CD	Scale 1:50
Client:	RPS		Dates:	10/04/2017 - 11/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	B					Very soft grey silty CLAY
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00	UT					
		1.50	B					
		1.50	D					
		2.00	UT					
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00	UT					
		3.50	B					
		3.50	D					
		3.75		HVP=18				
		4.00	P					
		5.00	B					
		5.00	D					
		5.00	ES					
		5.25		HVP=18				
		6.00	B					
		6.00	D					
		6.50	SPT	N=0 (0,0/0,0,0,0)				
		7.00	B					
		7.00	D					
		8.00	UT					
		8.50	B					
		9.50	B					
		9.50	SPT	N=0 (0,0/0,0,0,0)				
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L05** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125329E - 151877N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.09 m CD	Scale 1:50
Client:	RPS		Dates:	10/04/2017 - 11/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D					Very soft grey silty CLAY
		11.00	UT					
		11.50	B					
		11.50	D					
		11.50	SPT	N=0 (0,0/0,0,0,0)				
					12.20	-11.11		Very soft to soft, light grey, silty, slightly sandy CLAY. Occasional small shell fragments noted.
		12.50	B					
		13.00	B					
		13.00	D					
		14.00	UT					
		14.50	B					
		14.50	D					
					15.40	-14.31		Very stiff, slightly sandy, indistinctly laminated, black CLAY.
		15.50	B					
		15.50	SPT	N=50 (7,8/50 for 160mm)				
		16.00	B					
		16.00	D					
		17.20	SPT	N=50 (9,14/50 for 135mm)				
					17.20	-16.11		SWITCH TO ROTARY CORE
		17.20 - 18.70		73 / 53 / 0				Strong, very thinly to thinly bedded, black, fine grained, LIMESTONE. Fractures sub horizontal, parallel to bedding, with secondary sub vertical set. *Fractures sub horizontal (bedding orientated), extremely to very closely spaced, clean. Secondary set sub vertical, very closely spaced (parallel to line of fractures) with slight ironstaining. At base of run (18.55-18.7) becoming NI, probably drill induced.*
		18.70 - 20.20		93 / 67 / 0				*Strong, very thinly to thinly bedded, black, fine grained, LIMESTONE. Fractures sub horizontal, parallel to bedding, with secondary sub vertical set.*
			Type/Fl	TCR / SCR / RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L05** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125329.45 - 151877.00	Hole Type CP+RC
Location: Foynes Port		Level: 1.09 m CD	Scale 1:50
Client: RPS		Dates: 10/04/2017 - 11/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		20.20 - 21.70		93	80	0				*Fractures sub horizontal (bedding orientated), extremely closely spaced. Sub vertical fractures tight and clean but in combination with first set result in core being highly fractured.*
		21.70 - 23.20		93	27	0				*Fractures generally sub horizontal, bedding orientated.* *Fractures sub horizontal (bedding orientated), extremely to very closely spaced, clean. Secondary set sub vertical, very closely spaced (parallel to line of fractures) clean.* *Non Intact*
		23.20 - 24.20		100						*Core liner split, core recoverd as Non Intact, noted on core box.*
		24.20 - 24.70		100	6	0				*Fractures sub horizontal (bedding orientated), extremely to very closely spaced, clean. Secondary set sub vertical, very closely spaced (parallel to line of fractures) clean.* *Non Intact*
		24.70 - 26.20		87	30	0				*Fractures sub horizontal to sub vertical (c. 40 degs, bedding orientated), extremely to very closely spaced, clean.*
							26.20	-25.11		End of Borehole at 26.200m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L06**

Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125369E - 151867N	Hole Type CP+RC
Location:	Foynes Port		Level:	6.54 m CD	Scale 1:50
Client:	RPS		Dates:	03/07/2017 - 06/07/2017	Logged By LB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Drilled straight to 9.00 m to drill through existing hard fill platform of the jetty.
		9.00 9.00	B SPT	N=9 (1,2/2,2,3,3,2)	9.00	-2.46		Very soft, grey mottled dark grey, slightly sandy silty CLAY with rare sub-rounded cobbles and gravels.
		10.00	B		10.00	-3.46		Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L06** Sheet 2 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125369E - 151867N	Hole Type CP+RC
Location:	Foynes Port		Level:	6.54 m CD	Scale 1:50
Client:	RPS		Dates:	03/07/2017 - 06/07/2017	Logged By LB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.00	SPT	N=10 (1,1/2,3,2,3)				Very soft, grey mottled dark grey, slightly sandy silty CLAY with rare angular gravels.	
		11.00	B		11.00	-4.46			11
		11.00	SPT	N=3 (1,0/1,1,0,1)				Very soft, mottled dark grey, slightly sandy silty CLAY.	
		12.00	B		12.00	-5.46			12
		12.00	SPT	N=2 (0,0/0,1,0,1)				Very soft, dark grey, slightly sandy silty CLAY with rare sub-angular gravels and occasional shell conch.	
		13.00	B		13.00	-6.46			13
		13.00	D						
		13.00 - 13.40	UT	Ublow=19				Very soft, grey black stripped, slightly sandy silty CLAY, with occasional tiny shell conch.	
		14.00	B						14
		14.00	D						
		14.00 - 14.50	UT	Ublow=6					
		15.00	B						15
		15.00 - 15.50	UT	Ublow=7					
		16.00	B		16.00	-9.46			16
		16.00 - 16.50	UT	Ublow=9				Very soft, grey, slightly sandy silty CLAY, with occasional tiny shell conch.	
		17.00	B						17
		17.00 - 17.50	UT	Ublow=13					
		18.00	B						18
		18.00 - 18.50	UT	Ublow=16					
		19.00	B		19.00	-12.46			19
		19.00 - 19.50	UT	Ublow=12				Very soft, grey, slightly sandy silty CLAY.	
		20.00	B		20.00	-13.46			20

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L06** Sheet 3 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125369E - 151867N	Hole Type CP+RC
Location: Foynes Port		Level: 6.54 m CD	Scale 1:50
Client: RPS		Dates: 03/07/2017 - 06/07/2017	Logged By LB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		20.00 - 20.50	UT	Ublow=14				Very soft, grey, slightly sandy silty CLAY, with occasional tiny shell conch and rootlets
		21.00	B					
		21.00 - 21.50	UT	Ublow=12				
					21.40	-14.86		SWITCH TO ROTARY CORE
		21.40 - 23.30		0				No recovery
					23.30	-16.76		Firm, dark grey, silty CLAY
					23.56	-17.02		No recovery
		23.30 - 24.80		17				
					24.80	-18.26		Limestone recovered as cobbles. Dark grey, slightly gravely sub-angular and flat COBBLE with occasional tiny pyrate nodules. Gravels are sub-angular.
		24.80 - 26.30		45	25.47	-18.93		No recovery
					26.30	-19.76		No recovery
		26.30 - 27.80		53	27.00	-20.46		Limestone recovered as cobbles. Dark grey, gravely sub-angular and flat COBBLE.
					27.80	-21.26		No recovery
		27.80 - 29.30		60	28.40	-21.86		Medium dense, dark grey, sub-angular GRAVEL with some occasional clayey infilling
					29.30	-22.76		Limestone recovered as cobbles. Dark grey, gravely sub-angular and flat COBBLE.
		29.30 - 30.10		50				
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L06** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125369.14 - 151866.64	Hole Type CP+RC
Location: Foynes Port		Level: 6.54 m CD	Scale 1:50
Client: RPS		Dates: 03/07/2017 - 06/07/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							30.10	-23.56		Limestone recovered as cobbles. Dark grey, gravely sub-angular and flat COBBLE. End of Borehole at 30.100m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **L07** Sheet 1 of 2

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	124814E - 151810N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.29 m CD	Scale 1:50
Client:	RPS		Dates:	30/05/2017 - 31/05/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	B					Very soft dark blackish grey silty CLAY
		0.00	D					
		0.50	B					
		0.50	D					
		1.00	ES					
		1.00 - 1.45	UT	Ublow=7				
		1.50	B					
		1.50	D					*rare organic timber fragments*
		2.00	SPT					
		2.50	B					
		2.50	D					
		2.75		HVP=44				
		3.00	ES					
		3.00	UT					
		3.00 - 4.00	P					
		4.25		HVP=51				
		4.50	B					
		4.50	D					*slight increase in stiffness*
		5.00	ES					
		5.00 - 5.45	UT	Ublow=9				
		5.50	B					
		5.50	D					
		6.50	SPT	N=1 (0,0/0,0,0,1)				
		7.00	B					
		7.00	D					
		7.80	B		7.50	-6.21		Medium dense very clayey black fine to coarse angular some tabular GRAVEL (of black fine graned limestone), clay is grey
		7.80	SPT	N=50 (4,6/50 for 45mm)	7.90	-6.61		SWITCH TO ROTARY CORE
		7.90 - 9.20		54				Extremely highly weathered rock recovered as very dense blackish grey silty GRAVEL with boulders, gravel is fine to coarse subangular
		9.20 - 10.70		87	9.20	-7.91		Extremely highly weathered rock recovered as very dense blackish grey silty GRAVEL with cobbles, gravel is fine to coarse subangular, cobbles are grey subrounded
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L07** Sheet 2 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 124814.05 - 151810.37	Hole Type CP+RC
Location: Foynes Port		Level: 1.29 m CD	Scale 1:50
Client: RPS		Dates: 30/05/2017 - 31/05/2017	Logged By CB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							10.70	-9.41		Extremely highly weathered rock recovered as very dense blackish grey silty GRAVEL with cobbles, gravel is fine to coarse subangular, cobbles are grey subrounded
		10.70 - 12.20		87			12.00	-10.71		Highly fractured rock recovered as dense grey coarse subangular GRAVEL with cobbles
		12.20 - 13.70		93						Strong grey slightly weathered fractured fine grained LIMESTONE. Fractures are closely spaced, generally subhorizontal with some subvertical, open, surfaces are undulating smooth and planar rough with clay infill.
		13.70 - 15.20		100						*highly fractured zone*
		15.20 - 16.50		100						
		16.90 17.10	C C				18.00	-16.71		End of Borehole at 18.000m

11 12 13 14 15 16 17 18 19 20

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **L08** Sheet 1 of 2

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	124828E - 151847N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.18 m CD	Scale 1:50
Client:	RPS		Dates:	31/05/2017 - 01/06/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00	B					Very soft dark grey silty CLAY
		0.00	D					
		0.50	B					
		0.50	D					
		1.00	ES					
		1.00 - 1.45	UT	Ublow=5				
		1.50	B					
		1.50	D					
		1.75		HVP=41				
		2.00	P					
		3.00	ES					
		3.25		HVP=26				
		3.50	B		3.50	-3.32		
		3.50	D					Soft dark grey very silty CLAY to very clayey SILT
		4.00	SPT	N=6 (1,0/1,1,2,2)				
		4.50	B		4.50	-4.32		
		4.50	D					Soft silty gravelly CLAY , gravel is black fine to coarse angular some tabular (of black fine graned limestone)
		5.00	ES					
		5.50	SPT	N=13 (2,3/3,3,4,3)				
		6.00	B					
		6.00	D					
		6.80	B		6.80	-6.62		
					6.90	-6.72		Medium dense black silty fine to coarse angular some tabular GRAVEL (of black fine grained limestone), possibly extremely weathered rock
		6.90 - 8.20		38				SWITCH TO ROTARY CORE
					7.70	-7.52		No recovery
		8.08	C					Stong dark grey highly fractured LIMESTONE, fractures are subhorizontal extremely closely spaced planar rough with some light brownish orange staining and some silt infill
		8.20 - 9.70		100				
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **L08** Sheet 2 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 124828.29 - 151847.19	Hole Type CP+RC
Location: Foynes Port		Level: 0.18 m CD	Scale 1:50
Client: RPS		Dates: 31/05/2017 - 01/06/2017	Logged By CB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		10.31	C							Stong dark grey highly fractured LIMESTONE, fractures are subhorizontal extremely closely spaced planar rough with some light brownish orange staining and some silt infill
		10.87	C							
		11.40	C							
		11.47	C							
							11.80	-11.62		End of Borehole at 11.800m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **LD01** Sheet 1 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126209.57 - 152112.41	Hole Type RC
Location: Foynes Port		Level: 5.81 m CD	Scale 1:50
Client: RPS		Dates: 05/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							0.30	5.51		MADE GROUND
		0.50	D							Firm, slightly sandy, silty, gravelly CLAY, gravel is fine to medium sub angular. Driller notes presence of cobbles.
		0.50	ES							
		1.00	B							
		1.00	D							
		1.00	ES				1.30	4.51		Soft to very soft, grey silty CLAY.
		2.00	B							
		2.00	D							
		2.00	ES							
		2.50	UT							
		3.00	B							
		3.00	D							
		3.00	ES							
		4.00	B							
		4.00	D							
		4.00	ES							
		4.50	UT							
		5.00	B							
		5.00	D							
		5.00	ES							*At 5.0m wet orange-brown silty, sandy fine to coarse sub angular to sub rounded gravel of limestone.*
		6.00	B							
		6.00	D							
		6.00	ES							
		7.00	B							
		7.00	D							
		7.00	ES							*Water strike, rose to 4.8m in 20 minutes*
		7.50	UT							*Between 7.1m and 7.7m driller notes peat bands.*
							7.70	-1.89		
		8.00	B							COBBLES over claybound BOULDERS. Assumed glacial till with much of fines/clay lost in flush.
		8.00	D							
		8.00	ES							
		8.50 - 9.50		100						
							9.50	-3.69		Strong, grey, thinly to medium bedded, fine grained LIMESTONE with occasional small fossil fragments and small calcite veins.

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **LD01** Sheet 2 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126209.57 - 152112.41	Hole Type RC
Location: Foynes Port		Level: 5.81 m CD	Scale 1:50
Client: RPS		Dates: 05/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		9.50 - 11.00		93	60	40				*Vertical calcite vein, 50-70mm thick. Intact but highly fractured.*
		11.00 - 12.50		93	80	60				*Fracture with clay infill.*
		12.01	C				12.50	-6.69		End of Borehole at 12.500m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **LD02** Sheet 1 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126475.50 - 151833.27	Hole Type RC
Location: Foynes Port		Level: 4.60 m CD	Scale 1:50
Client: RPS		Dates: 06/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							0.20	4.40		TOPSOIL
										Brownish grey slightly sandy CLAY with rootlets
		0.50	D							
		0.50	ES							
		1.00	B							
		1.00	D							
		1.00	ES							
		1.50	UT							
		2.00	B							
		2.00	D							
		2.00	ES							
		2.50	UT				2.40	2.20		Grey SILT
		3.00	B							
		3.00	D							
		3.00	ES							
		4.00	B							
		4.00	D							
		4.00	ES							
		4.50	UT							
		5.00	B							
		5.00	D							
		5.00	ES							
		6.00	B							
		6.00	D							
		6.00	ES							
		6.50	UT							
		7.00	B							
		7.00	D							
		7.00	ES							
		8.00	B							
		8.00	D							
		8.00	ES							
		8.50	UT							
		9.00	B							
		9.00	D							
		9.00	ES							
		10.00	B				9.90	-5.30		

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **LD02** Sheet 2 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126475.50 - 151833.27	Hole Type RC
Location: Foynes Port		Level: 4.60 m CD	Scale 1:50
Client: RPS		Dates: 06/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D				10.20	-5.60		Greyish white slightly gravelly SILT with peat
		10.00	ES							Greyish white slightly gravelly SILT
		11.00	B				11.10	-6.50		
		11.00	D							Grey fine to coarse angular the subrounded silty GRAVEL
		11.00	ES							
							12.00	-7.40		BOULDERS and COBBLES of limestone.
		13.00	B							
		13.00	D							
		13.00	ES							
		13.00 - 14.50		93						
							14.50	-9.90		
		14.50 - 14.80		100	67	67				Strong, grey, thinly to medium bedded, fine grained LIMESTONE.
		14.95	C							
										50mm sub vertical fracture with brown clay infill.
		14.80 - 16.30		100	93	80				
		15.70	C							
										fractures generally sub horizontal.
		16.30 - 17.80		100	77	73				
							17.80	-13.20		End of Borehole at 17.800m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **LD03** Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126600.50 - 151503.52	Hole Type RC
Location: Foynes Port		Level: 4.68 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		0.50	ES				0.80	3.88		Grass over stiff brown CLAY (estimated depth)
		2.00	ES							Soft to firm brown silty CLAY.
		0.00 - 6.00		17						
		6.00	ES				6.00	-1.32		
		6.00 - 6.50		100						Stiff brown CLAY over limestone BOULDER
		6.37	C				6.50	-1.82		
		6.80	C							Strong to very strong, medium bedded, grey LIMESTONE with thin calcite veins and fossil fragments. Fractures generally sub horizontal, rough and clean.
		6.50 - 8.00		100	80	73				*Very thinly spaced sub horizontal fractures with associated slight to moderate weathering. Weathering has resulted in loss of strength and discolouration.*
		8.00 - 9.50		100	100	97				*Very thinly spaced sub horizontal fractures with associated slight to moderate weathering. Weathering has resulted in loss of strength and discolouration.*
		9.19	C							
							9.50	-4.82		End of Borehole at 9.500m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **LD04** Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126259E - 151542N	Hole Type CP+RC
Location: Foynes Port		Level: 4.51 m CD	Scale 1:50
Client: RPS		Dates: 03/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	TCR	SCR	RQD	Depth (m)	Level (m)	Legend	Stratum Description
								0.20	4.31		TOPSOIL
		0.50	D								Brown slightly sandy CLAY with rootlets and shell fragments
		0.50	ES								
		1.00	B								
		1.00	D								
		1.00	ES								
		1.00	SPT	N=13 (1,2/2,3,3,5)							
		1.50	UT								
		2.00	B								
		2.00	D								
		2.00	SPT	N=8 (1,2/1,2,2,3)							
								2.60	1.91		Brown slightly gravelly SILT with rootlets and shell fragments. Gravel is fine to coarse sub-angular to subrounded
		3.00	D								
		3.00	ES								
		3.00	UT								
		3.50	B								
		3.50	SPT	N=33 (1,3/6,5,9,13)							
		4.00	D								
		4.00	ES								
		4.50	B								
		4.50	SPT	N=0 (2,7/0 for 0mm)							
		5.29	C					5.10	-0.59		SWITCH TO ROTARY CORE
		5.10 - 6.00			100	89	44				Strong, grey, thinly to medium bedded, fine grained LIMESTONE with discrete calcite veins. Fractures sub horizontal and sub vertical. *Fractures smooth with slight white (calcite?) staining.*
		6.22	C								
		6.00 - 7.50			93	73	40				*Slightly to moderately weathered zone with clay, associated with sub vertical fracture. Weathering has resulted in discolouration and reduction in strength*
		7.50 - 9.00			93	93	93				*At 8.2m 120mm wide sub vertical calcite vein.*
		8.61	C								
								9.00	-4.49		End of Borehole at 9.000m
			Type/FI	TCR	SCR	RQD					

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

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Rotary Core Log

Borehole No. **LD05** Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126147.70 - 151294.15	Hole Type RC
Location: Foynes Port		Level: 4.39 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 6.50		12			6.50	-2.11		Recovered as COBBLES and GRAVEL.
		6.50 - 8.00		100	73	73				Strong to very strong, medium bedded, grey LIMESTONE with thin calcite veins and fossil fragments. Fractures generally sub horizontal, rough and clean. *Fractured zone* *Fractures associated with 2 horizontal fractures. Brown/black clay within fractures.*
		8.20 8.60 8.00 - 9.50 9.20	C C C	100	100	100	9.50	-5.11		*Fracturing associated with sub horizontal fractures. Fractures are rough with slight ironstaining.* End of Borehole at 9.500m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

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Rotary Core Log

Borehole No. **LD06** Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126386.61 - 151294.15	Hole Type RC
Location: Foynes Port		Level: 4.78 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							0.20	4.58		TOPSOIL
										Brown grey slightly sandy gravelly CLAY with rootlets
		0.50	D							
		0.50	ES							
		1.00	D							
		1.00	ES							
		1.00	UT							
		1.50	B							
							1.60	3.18		Grey fine to coarse sub-angular to sub-rounded silty GRAVEL with cobbles and boulders
		2.00	D							
		2.00	ES							
							2.20	2.58		Grey gravelly SILT with cobbles. Gravel is fine medium to coarse sub-angular to sub-rounded
		2.50	B							
		3.00	D							
		3.00	ES							
		3.40	B				3.40	1.38		Strong to very strong, medium bedded, grey LIMESTONE with thin calcite veins and fossil fragments. Fractures generally sub horizontal, rough and clean.
		3.40 - 4.90		100	87	80				*Broken zone, rockhead?*
		4.90	C							
		4.90 - 6.40		100	100	93				*Sub vertical 60mm calcite vein with open fracture running down centreline.*
		6.30	C							
							6.40	-1.62		End of Borehole at 6.400m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **LD07** Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 126224.10 - 151424.52	Hole Type RC
Location: Foynes Port		Level: 9.63 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.60		81	50	13				Grass over strong to very strong, medium bedded, grey LIMESTONE with thin calcite veins and fossil fragments. Fractures generally sub horizontal, rough and clean.
										Broken zone associated with sub horizontal fracture overlying 60mm calcite vein. Beneath vein is second broken zone with clay.
		1.90	C							*Damp brown clay with fractured rock.*
		1.60 - 3.10		100	93	47				*Broken rock with brown clay overlying fractured, ironstained rock. Beneath this rock is slightly weathered and thinly laminated, weathering has resulted in loss of strength and discolouration.*
		2.50	C							
		3.10 - 3.60	C	100	100	80				*Two horizontal/sub horizontal fracture with some brown (clay?) staining. At 3.35 stylolites within intact limestone.*
		3.41	C				3.60	6.03		End of Borehole at 3.600m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M01** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125353E - 151824N	Hole Type CP+RC
Location:	Foynes Port		Level:	3.52 m CD	Scale 1:50
Client:	RPS		Dates:	12/04/2017 - 13/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	B					Very soft, grey, slightly silty CLAY. Occasional shell fragments noted from bed level believed to be recently deposited material.
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.50	B					
		1.50	D					
		2.00	ES					
		2.00 - 2.45	UT	Ublow=5				
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00 - 3.45	UT	Ublow=6				
		3.50	B					
		3.50	D					
		4.00 - 4.45	UT	Ublow=7				
		4.50	B					
		4.50	D					
		5.00 - 5.45	UT	Ublow=9				
		5.50	B					
		5.50	D					
		5.75		HVP=30				
		6.00	P					
		6.00	UT					
		7.00	B					
		7.25		HVP=20				
		7.50	B					
		7.50	D					
		8.50 - 8.95	UT	Ublow=8				
		9.00	B					
		9.00	D					
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M01** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125353E - 151824N	Hole Type CP+RC
Location: Foynes Port		Level: 3.52 m CD	Scale 1:50
Client: RPS		Dates: 12/04/2017 - 13/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00 - 10.50	B					Very soft, grey, slightly silty CLAY. Occasional shell fragments noted from bed level believed to be recently deposited material.
		10.00	SPT	N=0 (0,0/0,0,0,0)				
		10.50	B					
		10.50	D					
		11.50 - 11.95	UT	Ublow=8				
		12.00	B					
		12.00	D					
		13.00	B					
		13.00	SPT	N=0 (0,0/0,0,0,0)				
		13.50	B					
		13.50	D					
		14.50 - 14.95	UT	Ublow=9				
		15.00	B					
		15.00	D					
					15.90	-12.38		Slightly clayey fine to medium angular GRAVEL of black limestone. Possible fractured rock, rockhead.
		16.00	B					
		16.00	SPT	N=25 (3,4/5,5,7,8)	16.15	-12.63		Weak, very thinly laminated, black, LIMESTONE, highly weathered.
					16.40	-12.88		SWITCH TO ROTARY CORE
		16.40 - 17.90		67 / 13 / 0				Very stiff to hard, thinly laminated, black, highly to completely weathered LIMESTONE. Remnant structure visible.
		17.90 - 19.40		93 / 80 / 0	18.20	-14.68		Strong, very thinly to thinly bedded, black, fine grained LIMESTONE. Fractures sub horizontal, parallel to bedding, with secondary sub vertical set. *Fractures sub horizontal (bedding orientated), occasionally sub vertical, clean.* *Non intact, drill induced?*
			Type/Fl	TCR / SCR / RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M01** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125353.49 - 151824.25	Hole Type CP+RC
Location: Foynes Port		Level: 3.52 m CD	Scale 1:50
Client: RPS		Dates: 12/04/2017 - 13/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		19.40 - 20.90		90	40	0				*20.3-22.4 Fractures sub horizontal (bedding orientated), occasionally sub vertical, clean. 21.35-21.55m core intact but numerous sub vertical to vertical fractures. 21.55-22.40m core intact but 2 sub vertical to vertical fractures*
		20.90 - 22.40		97	83	0				
		22.40 - 23.90		100	87	35				
		23.60	C							
		23.90 - 25.40		80	73	53				*23.9-24.5 Spacing (lf) as recorded above. Fresh pyrite present on open (bedding orientated) sub horizontal fractures and sub vertical fractures, also noted as small lenses within intact core parallel to bedding.*
							25.40	-21.88		End of Borehole at 25.400m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M02** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125307E - 151803N	Hole Type CP+RC
Location:	Foynes Port		Level:	3.64 m CD	Scale 1:50
Client:	RPS		Dates:	26/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft, grey, silty CLAY
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 1.45	P	Ublow=3				
		1.50	B					
		1.50	D					
		1.75		HVP=12				
		2.00	UT					
		2.00 - 3.00	P					
		2.25		HVP=18				
		3.00	ES					
		3.50	B					
		3.50	D					
		4.00 - 4.45	UT	Ublow=6				
		4.50	B					
		4.50	D					
		4.75		HVP=19				
		5.00	ES		5.00	-1.36		
		5.00	UT					Soft, grey, silty CLAY.
		5.00 - 6.00	P					
		5.75		HVP=39				
		6.50	B					
		6.50	D					
		7.50	D					
		7.50	SPT	N=0 (0,0/0,0,0,0)				
		8.00	B					
		8.00	D					
		9.00 - 9.45	UT	Ublow=9				
		9.50	B					
		9.50	D					
								Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M02** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125307E - 151803N	Hole Type CP+RC
Location: Foynes Port		Level: 3.64 m CD	Scale 1:50
Client: RPS		Dates: 26/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.50 10.50	D SPT	N=0 (0,0/0,0,0,0)				
		11.00 11.00	B D					*Below 10.90m very small shells noted.*
		12.00 - 12.45	UT	Ublow=11				
		12.50 12.50	B D					
		13.50 13.50	D SPT	N=0 (0,0/0,0,0,0)				
		14.00 14.00	B D					
		15.00 - 15.45	UT	Ublow=11				
		15.50 15.50	B D					*At 15.50m occasional fibres notes and becoming firm.*
		16.40 16.40 16.40 16.40 16.40 - 17.00	B B D D SPT	N=16 (4,4/3,3,5,5)	16.40 16.65	-12.76 -13.01		Angular, tabular GRAVEL of black limestone, possible rockhead. SWITCH TO ROTARY CORE Dense, black, fine to coarse, tabular, angular GRAVEL of black limestone. Many fracture surfaces ironstained, possible highly fractured rock. *All recovered material comprises black shaley LIMESTONE.*
		17.00 - 18.50		13				
		18.50 - 20.00			18.50 20.00	-14.86 -16.36		No Recovery
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M02** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125307.08 - 151803.30	Hole Type CP+RC
Location: Foynes Port		Level: 3.64 m CD	Scale 1:50
Client: RPS		Dates: 26/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		20.00 - 21.50		60						Dense, black, fine to coarse, tabular, angular GRAVEL of black limestone. Many fracture surfaces ironstained, possible highly fractured rock. Some possibly in situ bedding present. *SPT at 20m, refusal.*
		21.50 - 23.00		93	27	0				*Strong, thinly bedded, black LIMESTONE. Sub horizontal (bedding orientated) fractures and 2 sub vertical fractures. Ironstaining on fractures.*
		23.00 - 24.50		80	17	0				
							24.50	-20.86		End of Borehole at 24.500m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M03** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125340E - 151851N	Hole Type CP+RC
Location:	Foynes Port		Level:	3.05 m CD	Scale 1:50
Client:	RPS		Dates:	18/04/2017 - 19/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft grey/dark grey silty CLAY
		0.50	B					
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 1.45	UT					
		1.50	B					
		1.50	D					
		2.00 - 2.45	UT					
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00 - 3.45	UT					
		3.50	B					
		3.50	D					
		4.00 - 4.45	UT					
		4.50	B					
		4.50	D					
		4.75		HVP=23				
		5.00	ES					
		5.00	UT					
		5.00 - 6.00	P					
		5.10		HVP=25				
		6.25		HVP=22				
		6.50		HVP=4				
		7.00	B					
		7.00	D					
		7.50	SPT	N=0 (0,0/0,0,0,0)				
		8.00	B					
		8.00	D					
		9.00	UT					
		9.50	B					
		9.50	D					

Continued on Next Sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M03** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125340E - 151851N	Hole Type CP+RC
Location:	Foynes Port		Level:	3.05 m CD	Scale 1:50
Client:	RPS		Dates:	18/04/2017 - 19/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	TCR	SCR	RQD	Depth (m)	Level (m)	Legend	Stratum Description
		10.50	SPT	N=0 (0,0/0,0,0,0)							
		11.00 11.00	B D								
		12.00 - 12.45	UT								
		12.50 12.50	B D								
		13.50	SPT	N=0 (0,0/0,0,0,0)							*Very soft to soft grey silty CLAY*
		14.00 14.00	B D								
		15.00 - 15.45	UT								
		15.50 15.50	B D								
		15.80 - 17.30		93	67	0		15.80	-12.75		SWITCH TO ROTARY CORE Strong, thickly laminated to very thinly bedded, black, fine grained LIMESTONE. Slightly weathered with 2 fracture sets: 1 bedding orientated at about 30 degrees and second sub vertical at about 75 degrees. Weathering has s resulted in slight discolouration along sub vertical fractures and opening of bedding orientated fractures.
		17.30 - 18.80		100	93	0					
		18.80 - 20.30		93	80	13					*Open vertical fracture.* *As above but thickly laminated to thinly bedded.*
			Type/Fl	TCR	SCR	RQD					

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No.
M03
Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125340.37 - 151850.60	Hole Type CP+RC
Location: Foynes Port		Level: 3.05 m CD	Scale 1:50
Client: RPS		Dates: 18/04/2017 - 19/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							20.30	-17.25		Strong, thickly laminated to very thinly bedded, black, fine grained LIMESTONE. Slightly weathered with 2 fracture sets: 1 bedding orientated at about 30 degrees and second sub vertical at about 75 degrees. Weathering has s resulted in slight discolouration along sub vertical fractures and opening of bedding orientated fractures.
										End of Borehole at 20.300m

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22
23
24
25
26
27
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29
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Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M04**

Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125297E - 151829N	Hole Type CP+RC
Location:	Foynes Port		Level:	2.44 m CD	Scale 1:50
Client:	RPS		Dates:	28/04/2017 - 02/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft grey slightly silty CLAY.
		1.50	B					
		1.50	D					
		2.50	D					
		2.50	UT					
		3.50	B					
		3.50 - 3.95	UT					
		3.75		HVP=10				
		4.00	U					
		4.00	UT					
		4.00 - 5.00	P					
		5.25		HVP=31				
		6.50	B					
		6.50 - 6.95	UT					
		7.00	B					
		7.00	D					
		8.00 - 8.45	D					
		8.00	SPT	N=0 (0,0/0,0,0,0)				
		9.50 - 9.95	UT					
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M04** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125297E - 151829N	Hole Type CP+RC
Location:	Foynes Port		Level:	2.44 m CD	Scale 1:50
Client:	RPS		Dates:	28/04/2017 - 02/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	TCR	SCR	RQD	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D								Very soft grey slightly silty CLAY.
		11.00 - 11.45	D								
		11.00	SPT	N=0 (0,0/0,0,0,0)							
		13.00 - 13.45	UT								
		13.50	B								
		13.50	D								
		14.50 - 15.16	D								
		14.50	SPT	N=0 (0,0/0,0,0,0)							
		15.00	B								
		15.00	D								
		15.80	B					15.80	-13.36		
		15.80	D								Dark grey, black, fine to medium SAND over firm black CLAY with a little fine angular gravel of black limestone.
		16.00 - 16.45	D								
		16.00	SPT	N=11 (3,4/4,3,3,1)							
		16.50	B					16.50	-14.06		
		16.50	D								(Dense) sandy fine to coarse sub angular to sub rounded GRAVEL with low cobble content, cobbles sub rounded.
		16.80	B					16.80	-14.36		SWITCH TO ROTARY CORE
		16.80 - 17.30		20							Poor recovery of medium to coarse, sub angular to sub rounded GRAVEL.
		17.30	B								
		17.30 - 18.80		20							
		18.80 - 20.30		67	13	0		18.80	-16.36		Strong, thickly laminated to very thinly bedded, black, LIMESTONE. Generally non intact, with ironstaining on fracture surface.
			Type/Fl	TCR	SCR	RQD					

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M04** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125296.53 - 151829.34	Hole Type CP+RC
Location: Foynes Port		Level: 2.44 m CD	Scale 1:50
Client: RPS		Dates: 28/04/2017 - 02/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Strong, thickly laminated to very thinly bedded, black, LIMESTONE. Generally non intact, with ironstaining on fracture surface.
		20.30 - 21.80		87	0	0				
		21.80 - 23.30		93	80	7	22.10	-19.66		Strong, very thinly bedded, black, LIMESTONE. Fractures sub horizontal (bedding orientated) and sub vertical with some ironstaining, more prominent on sub vertical fractures.
		23.30 - 24.10		87	0	0	23.30	-20.86		Strong, thickly laminated to very thinly bedded, black, LIMESTONE. Generally non intact, with some ironstaining on fracture surface.
							24.10	-21.66		End of Borehole at 24.100m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M05** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125250E - 151808N	Hole Type CP+RC
Location:	Foynes Port		Level:	2.60 m CD	Scale 1:50
Client:	RPS		Dates:	08/05/2017 - 09/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft to soft, grey, silty CLAY
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00	UT	Ublow=3				
		2.00	SPTLS					
		2.00	SPT	N=0 (0,0/0,0,0,0)				
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00 - 3.45	UT	Ublow=6				
		3.50	B					
		3.50	D					
		4.00	SPTLS					
		4.00	SPT	N=0 (0,0/0,0,0,0)				
		4.50	B					
		4.50	D					
		5.00	ES					
		5.00 - 5.45	UT	Ublow=7				
		5.50	B					
		5.50	D					
		6.50	B					
		6.50	D					
		6.75		HVP=19				
		7.00	UT					
		7.00 - 8.00	P					
		8.25		HVP=34				
		8.50	B					
		8.50	D					
		9.00 - 9.45	UT	Ublow=9				
		9.50	UT					

1 2 3 4 5 6 7 8 9 10

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M05** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125250E - 151808N	Hole Type CP+RC
Location:	Foynes Port		Level: 2.60 m CD	Scale 1:50
Client:	RPS		Dates: 08/05/2017 - 09/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.50	SPT	N=0 (0,0/0,0,0,0)				Very soft to soft, grey, silty CLAY
		11.00 11.00	BLK D					
		12.00 - 12.45	UT	Ublow=11				
		12.50 12.50	B D					
		13.50	SPT	N=0 (0,0/0,0,0,0)				
		14.00 14.00	B D					
		14.70 14.70	B SPT	N=18 (5,5/7,4,3,4)	14.40	-11.80		Fine to coarse SAND and fine to coarse sub rounded GRAVEL. Gravel is predominantly of grey limestone with lesser orange brown sandstone and black limestone. Low cobble content.
		16.00 - 17.90			16.00	-13.40		Refusal of CP SWITCH TO ROTARY CORE No recovery *200mm of gravel and cobbles, bagged.*
		~~17.90 - 22.40~~	C		17.90	-15.30		Sub angular to sub rounded, fine to medium GRAVEL of grey limestone.
		17.90 - 19.40		80	18.20 18.80	-15.60 -16.20		COBBLES of light grey limestone. Slightly sandy, slightly clayey, sub angular to sub rounded, occasionally tabular, fine to medium GRAVEL of black and grey limestone and occasional red brown sandstone with low to medium cobble content.

Type/Fl	TCR	SCR	RQD

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No.
M05
Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125249.72 - 151807.80	Hole Type CP+RC
Location: Foynes Port		Level: 2.60 m CD	Scale 1:50
Client: RPS		Dates: 08/05/2017 - 09/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		19.40 - 20.90		93						*Black fine to coarse SAND*
		20.90 - 22.40		87						*Below 22.9m medium cobble content*
		~~22.40 - 22.90~~	B							*Firm to stiff grey brown CLAY and COBBLES*
		22.90 - 23.90	C							
							23.90	-21.30		End of Borehole at 23.900m

Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M06** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125214E - 151792N	Hole Type CP
Location:	Foynes Port		Level:	1.64 m CD	Scale 1:50
Client:	RPS		Dates:	06/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	B					Very soft to soft, dark grey, silty CLAY.
		0.50	B					
		1.00	ES					
		1.00 - 2.00	P					
		2.00	B					
		2.00	D					
		2.00	ES					
		2.00 - 3.00	P					
		3.00	B					
		3.00	D					
		3.00	ES					
		3.00 - 4.00	P					
		4.00	B					
		4.00	D					
		4.50 - 4.95	UT	Ublow=8				
		5.00	B					
		5.00	D					
		5.00	ES					
		6.00 - 6.45	D					
		6.00	SPT	N=0 (0,0/0,0,0,0)				
		6.50	B					
		6.50	D					
		7.50 - 7.95	UT					
		8.00	B					
		8.00	D					
		8.25		HVP=50				*Below 8.25m firm.*
		8.50	UT					
		8.50 - 9.50	P					
		9.50	B					
		9.50	D					
		9.75		HVP=54				

Continued on Next Sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M06** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125214E - 151792N	Hole Type CP
Location:	Foynes Port		Level:	1.64 m CD	Scale 1:50
Client:	RPS		Dates:	06/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft to soft, dark grey, silty CLAY.
		10.50 - 10.95	UT	Ublow=13				
		11.00	B					
		11.00	D					
		12.00 - 12.45	D					
		12.00	SPT	N=0 (0,0/0,0,0,0)				
		12.50	B					
		12.50	D					
		13.50 - 13.95	D		13.50	1.64		
		13.50	SPT	N=20 (2,2/3,7,7,3)				Sandy to very sandy, fine to coarse subrounded, occasionally tabular, GRAVEL of mixed lithology, predominantly limestone.
		14.00	B					*Between 13.50m and 14.00m some medium gravel and cobbles sized fragments of highly weathered black thinly laminated limestone noted.*
		14.00	D					
		15.00	SPT	N=15 (4,5/4,4,4,3)				
		15.50	B					
					16.00	-11.86		Fine to coarse SAND and fine to coarse sub rounded to rounded GRAVEL with low cobble content, gravel is predominantly grey limestone.
		18.00	SPT	N=20 (3,4/4,5,6,5)				
								Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No.
M06
Sheet 3 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125214E - 151792N	Hole Type CP
Location:	Foynes Port		Level:	1.64 m CD	Scale 1:50
Client:	RPS		Dates:	06/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					20.50	-14.36		Fine to coarse SAND and fine to coarse sub rounded to rounded GRAVEL with low cobble content, gravel is predominantly grey limestone.
		21.00	SPT	N=50 (25 for 145mm/50 for 230mm)				Sandy to very sandy, fine to coarse, subrounded GRAVEL of mixed lithology, predominantly limestone, with low cobble content.
		24.00	SPT	N=50 (25 for 140mm/50 for 160mm)	24.00	-18.86		End of Borehole at 24.00m

21 22 23 24 25 26 27 28 29 30

Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M07**

Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125179E - 151782N	Hole Type CP+RC
Location:	Foynes Port		Level:	1.90 m CD	Scale 1:50
Client:	RPS		Dates:	03/05/2017 - 04/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing					Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results						
										Very soft, dark grey, silty CLAY.
		0.50	B							
		0.50	D							
		1.00	B							
		1.00	D							
		1.00	ES							
		1.00 - 2.00	P							
		2.00	B							
		2.00	D							
		2.00 - 3.00	P							
		3.00	ES							
							3.20	-1.30		MADE GROUND: driving and fracturing obstruction, possible boulder from collapse of nearby rock armour? Chiselling through obstruction. *At 3.2m Obstruction.*
		5.20	B				5.20	-3.30		MADE GROUND : material recovered as angular, medium to coarse, limestone gravel.
		5.20	D							
		5.50	SPT	N=50 (25 for 110mm/50 for 160mm)						
		5.60	B				5.60	-3.70		SWITCH TO ROTARY CORE
		5.60	B							Cored limestone boulder (0.6m solid recovered). *Limestone boulder. Saved as bulk sample.*
		5.60 - 6.50		67						
		~~6.50~~	B				6.50	-4.60		Assumed back into clay based on penetration rate but nil recovered due to 0.3m gravel in bottom of barrel. *Probable CLAY nil recovery due to 300mm of gravel in barrel. Saved as bag sample*
		6.50 - 8.00		20						
		~~8.00~~	B				8.00	-6.10		Soft dark grey slightly silty CLAY, possibly becoming slightly gravelly below 12.75m (see vane result). *1.2m clay, sub sampled to tub 8.5-8.6, rest as bulk sample as liner had been split.*
		8.20 - 8.50	D							
		8.50	B							
		8.00 - 9.50		80						
		~~9.50 - 11.00~~	UT							*End of liner capped and sealed.*
			Type/Fl	TCR	SCR	RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M07** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125179.47 - 151782.41	Hole Type CP+RC
Location: Foynes Port		Level: 1.90 m CD	Scale 1:50
Client: RPS		Dates: 03/05/2017 - 04/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		9.50 - 11.00		100						
		11.00	B							*No recovery 11.0-12.5m. In run from 12.5-14.0: 0.3m clay overlying 0.4m gravel.*
		11.00 - 12.50		0						
		12.50 - 14.00		40			13.60	-11.70		Dense GRAVEL, very poor recovery. Material "slipping" from barrel so lost plus presumed washout of finer material.
		14.00 - 15.50		7						*No recovery.*
		15.50 - 17.00		53						*Medium to coarse GRAVEL (light grey limestone) assumed finer material not recovered.*
		17.00	B							
		17.00 - 18.50		40						
		18.50	B							
		18.50 - 20.00		27						
		20.00	B							

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No.
M07
Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125179.47 - 151782.41	Hole Type CP+RC
Location: Foynes Port		Level: 1.90 m CD	Scale 1:50
Client: RPS		Dates: 03/05/2017 - 04/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		20.00 - 21.50		20						Dense GRAVEL, very poor recovery. Material "slipping" from barrel so lost plus presumed washout of finer material.
		~~21.50~~	B							
		21.50 - 23.00		53						
		~~23.00~~	B							
		23.00 - 24.10		9						
							24.10	-22.20		End of Borehole at 24.100m

21 22 23 24 25 26 27 28 29 30

Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M08** Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125215E - 151824N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.40 m CD	Scale 1:50
Client:	RPS		Dates:	20/04/2017 - 22/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft, grey, slightly sandy, silty CLAY.
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 1.45	UT	Ublow=3				
		1.50	B					
		1.50	D					
		2.00 - 2.45	UT	Ublow=5				
		2.50	B					
		2.50	D					
		3.00	B					
		3.00	ES					
		3.00 - 3.45	UT	Ublow=5				
		3.50	B					
		3.50	D					
		4.00 - 4.45	UT	Ublow=6				
		4.50	B					
		4.50	D					
		4.75		HVP=28				
		5.00	ES					
		5.00	U					
		5.00	UT					
		5.00 - 6.00	P					
		6.25		HVP=24				
		6.60		HVP=10				
		6.70		HVP=20				
		6.80		HVP=21				
		7.00 - 7.49	D					
		7.00	SPT	N=0 (0,0/0,0,0,0)				
		7.50	B					
		7.50	D					
		8.50 - 8.95	UT	Ublow=11				
		9.00	B					
		9.00	D					
		10.00 - 10.95	D					
								Continued on Next Sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M08** Sheet 2 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125215E - 151824N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.40 m CD	Scale 1:50
Client:	RPS		Dates:	20/04/2017 - 22/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	SPT	N=0 (0,0/0,0,0,0)				Very soft, grey, slightly sandy, silty CLAY.
		10.50	B					
		10.50	D					
		11.50 - 11.95	UT	Ublow=11				
		12.00	B					
		12.00	D					
					12.80	-12.40		
		13.00 - 13.45	D					Soft, grey, slightly sandy, slightly silty CLAY with a little fine tabular gravel of black limestone.
		13.00	SPT	N=8 (0,0/0,2,2,4)				
		13.50	B					
		13.50	D					
		13.80	B		13.80	-13.40		
		13.80	D					SAND & GRAVEL, sand is medium to coarse, gravel is fine to coarse sub angular and sub rounded mainly of limestone.
		14.50	SPT	N=17 (2,3/4,4,4,5)				
		15.00	B					
		15.00	D					
					15.70	-15.30		SWITCH TO ROTARY CORE
		15.70 - 16.90		100				Very strong, massive, light grey, fine to medium grained boulder of Carboniferous Limestone. *BOULDER (T, S, RQD of complete boulder measured for record)*
					17.20	-16.80		
		16.90 - 18.40		100				Sandy fine to coarse sub angular to sub rounded GRAVEL. Gravel is predominantly black limestone with occasional light grey limestone and orange-brown sandstone.
					18.40	-18.00		
		18.40 - 19.90		93				Sandy, in parts slightly clayey, fine to coarse sub angular to sub rounded GRAVEL with low cobble content. Gravel is predominantly black limestone with occasional light grey limestone and orange-brown sandstone. Cobbles of light grey limestone. 20.2-20.6 boulder of light grey limestone.
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M08** Sheet 3 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125214.75 - 151824.40	Hole Type CP+RC
Location: Foynes Port		Level: 0.40 m CD	Scale 1:50
Client: RPS		Dates: 20/04/2017 - 22/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		19.90 - 21.40		87						Sandy, in parts slightly clayey, fine to coarse sub angular to sub rounded GRAVEL with low cobble content. Gravel is predominantly black limestone with occasional light grey limestone and orange-brown sandstone. Cobbles of light grey limestone. 20.2-20.6 boulder of light grey limestone.
		~~21.40~~	B				21.40	-21.00		No Recovery
		21.40 - 22.90		13						
		22.90 - 24.40		0						
		~~24.40~~	B				24.40	-24.00		Medium dense, fine to coarse GRAVEL. Gravel is with medium cobble content.
		24.40 - 25.90		100						
							25.90	-25.50		No Recovery
		25.90 - 27.40		53						
							26.60	-26.20		Fine to coarse sub angular to sub rounded GRAVEL of light grey limestone, assume fines washed out.
							26.90	-26.50		Slightly clayey SAND & GRAVEL. Gravel is fine to coarse sub angular to sub rounded of light grey and black limestone.
							27.40	-27.00		Sandy fine to coarse sub angular to sub rounded GRAVEL. Gravel is predominantly black limestone with occasional light grey limestone and orange-brown sandstone with low to medium cobble content. Ironstaining on some of the black limestone. At base some fresh pyrite noted.
		27.40 - 28.90		87						
		28.90 - 30.40		73						

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M08** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125214.75 - 151824.40	Hole Type CP+RC
Location: Foynes Port		Level: 0.40 m CD	Scale 1:50
Client: RPS		Dates: 20/04/2017 - 22/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							30.40	-30.00		Sandy fine to coarse sub angular to sub rounded GRAVEL. Gravel is predominantly black limestone with occasional light grey limestone and orange-brown sandstone with low to medium cobble content. Ironstaining on some of the black limestone. At base some fresh pyrite noted. End of Borehole at 30.400m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M09** Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125184E - 151810N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.47 m CD	Scale 1:50
Client:	RPS		Dates:	10/05/2017 - 11/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 0.50	B					Very soft grey silty CLAY
		0.00 - 0.50	D					
		0.50	B					
		0.50 - 1.00	D					
		1.00	ES					
		1.00 - 2.00	P					
		2.00	B					
		2.00	D					
		2.00 - 3.00	P					
		3.00	B					
		3.00	D					
		3.00	ES					
		3.00 - 4.00	P					
		4.00	B					
		4.00	D					
		4.50	U					
		4.50	UT					
		4.50 - 5.50	P					
		5.00	B					
		5.00	D					
		5.00	ES					
		6.50	B					
		6.50	D					
		6.50 - 6.95	SPTL S					
					8.00	-7.53		Soft grey, slightly fine sandy, silty CLAY.
		8.50	B					
		8.50	D					
		9.50 - 9.95	B					
		9.50 - 9.95	SPTL S					
		10.00	B					

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M09** Sheet 2 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125184E - 151810N	Hole Type CP+RC
Location:	Foynes Port		Level: 0.47 m CD	Scale 1:50
Client:	RPS		Dates: 10/05/2017 - 11/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D					Soft grey, slightly fine sandy, silty CLAY.
		11.00	B					
		11.50	B					
		11.50	D					
		12.50 - 12.95	B					
		12.50 - 12.95	SPTL S					
		13.00	B					
		13.00	D					
		13.50	UT					
		14.00	B		13.90	-13.43		Medium dense, fine to coarse SAND and fine to coarse subrounded and tabular GRAVEL with low cobble content. Gravel is mainly grey limestone (sub rounded) and black limestone (tabular) with lesser amounts of orange brown sandstone.
		15.50	B					
		17.00	B					
		18.20	B					
		18.20	B		18.20	-17.73		SWITCH TO ROTARY CORE
		18.20 - 18.70						Dense sandy fine to coarse sub angular, subrounded and tabular GRAVEL with medium cobble content. Gravel is predominantly grey limestone with lesser (tabular) black limestone and rare orange brown sandstone.
		18.70	B					
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M09** Sheet 3 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type CP+RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017 - 11/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		20.20	B							Dense sandy fine to coarse sub angular, subrounded and tabular GRAVEL with medium cobble content. Gravel is predominantly grey limestone with lesser (tabular) black limestone and rare orange brown sandstone.
		18.70 - 23.20								
		21.70	B							
		23.40 - 23.65								
		23.20 - 24.70		80						
		24.55 - 24.70								
		24.70 - 26.00		62						
		26.00	B							
		26.00 - 26.20		100						
		26.20 - 27.70		33						
		27.70 - 28.90		92						
		28.90 - 30.10		92						

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M09** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type CP+RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 10/05/2017 - 11/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							30.10	-29.63		Dense sandy fine to coarse sub angular, subrounded and tabular GRAVEL with medium cobble content. Gravel is predominantly grey limestone with lesser (tabular) black limestone and rare orange brown sandstone.
										End of Borehole at 30.100m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No.
M09B
Sheet 1 of 5

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 27/05/2017 - 28/05/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Open hole Boring (See BH M09 for details)

1
2
3
4
5
6
7
8
9
10

Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No.
M09B
Sheet 2 of 5

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 27/05/2017 - 28/05/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Open hole Boring (See BH M09 for details)

11
12
13
14
15
16
17
18
19
20

Remarks
Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M09B** Sheet 3 of 5

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 27/05/2017 - 28/05/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Open hole Boring (See BH M09 for details)
							22.70	-22.23		No recovery *Switched to Rotary Core*
		29.10 - 30.60		100	0	0	29.10	-28.63		Very dense, grey, occasionally brown, silty sandy GRAVEL of limestone and sandstone with low cobble and boulder content. Gravel is angular to subrounded, fine to coarse.

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M09B** Sheet 4 of 5

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 27/05/2017 - 28/05/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Very dense, grey, occasionally brown, silty sandy GRAVEL of limestone and sandstone with low cobble and boulder content. Gravel is angular to subrounded, fine to coarse.
		30.60 - 32.10		100	0	0				
		32.10 - 33.60		87	0	0				
		33.60 - 35.10		87	0	0				
		35.10 - 36.60		94	0	0				
		36.60 - 38.10		100	0	0	36.70	-36.23		Hard grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subangular, fine to coarse limestone. Sand is fine to medium.
		38.10 - 39.40		115	19	0	37.50	-37.03		Strong grey slightly weathered highly fractured LIMESTONE. Fractures are extremely closely spaced, randomly orientated, open, with sandy clay infill and rare quartz vein.
		39.40 - 40.50		0	0	0				

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Rotary Core Log

Borehole No. **M09B** Sheet 5 of 5

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125183.97 - 151810.44	Hole Type RC
Location: Foynes Port		Level: 0.47 m CD	Scale 1:50
Client: RPS		Dates: 27/05/2017 - 28/05/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		40.50 - 41.20		86	37	0				
		41.20 - 42.70		90	25	0				
		42.70 - 44.20		100	77	0				*Becoming stronger and more competent. Fractures extremely closely spaced to closely spaced, 20°, planar, rough with orange brown staining. 2nd set, very closely spaced, 70°, stepped, rough with orange brown staining and occasional sandy clay infill.*
		44.20 - 44.60 44.60 - 45.20	C C	80	60	0				
							45.20	-44.73		End of Borehole at 45.200m

41 42 43 44 45 46 47 48 49 50

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M10** Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125157E - 151798N	Hole Type CP+RC
Location:	Foynes Port		Level: 0.66 m CD	Scale 1:50
Client:	RPS		Dates: 14/05/2017 - 16/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	B					Soft to very soft grey silty CLAY with some fine sand
		0.00 - 0.50	D					
		0.50	B					
		0.50 - 1.00	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 2.00	P					
		2.00	B					
		2.00	D					
		2.00	ES					
		2.00 - 3.00	P					
		3.00	B					
		3.00	D					
		3.00	ES					
		3.00 - 4.00	P					
		4.50	B					
		4.50	D					
		5.25		HVP=37				
		6.50	D					
		6.75		HVP=42				
		7.50	D					
		7.50	SPTLS					
		7.50	SPT	0 (0,0/0,0,0,)				
		8.00	B					
		8.00	D					
		9.50	B					
		9.50	D					

1 2 3 4 5 6 7 8 9 10

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M10** Sheet 2 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125157E - 151798N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.66 m CD	Scale 1:50
Client:	RPS		Dates:	14/05/2017 - 16/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D					Soft to very soft grey silty CLAY with some fine sand	
		10.50	SPT	N=0 (0,0/0,0,0,0)					
		11.00	B						11
		11.00	D						
									12
		12.50	B		12.50	-11.84			
		12.50	D					Soft grey with white and black streaks silty gravelly CLAY, gravel is fine to coarse sub angular	
								some tiny conch shells present	13
		13.30	B						
		13.30	D						
		13.50	SPT	N=15 (2,2/3,4,4,4)					
		14.00	B		14.00	-13.34			14
		14.00	D					Medium dense brownish grey sandy GRAVEL, with some cobbles. Gravel is fine to coarse, angular to sub angular with some flat.	
		15.00	SPT	N=20 (3,4/4,6,5,5)					15
		15.50	B		15.50	-14.84			
								Medium dense to dense brownish grey sandy GRAVEL, with cobbles and boulders. Gravel is fine to coarse, angular to sub angular with some flat. Cobbles and boulders are sub angular to sub rounded.	16
		16.50	SPT	N=34 (6,7/7,8,10,9)					
		17.00	B						17
		18.00	SPT	N=31 (3,3/4,6,11,10)					18
		18.50	B						
									19
		19.50	SPT	N=50 (6,8/50 for 240mm)					
		20.00	B		20.00	-19.34			20

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M10** Sheet 3 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125157E - 151798N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.66 m CD	Scale 1:50
Client:	RPS		Dates:	14/05/2017 - 16/05/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results			Depth (m)	Level (m)	Legend	Stratum Description	
		21.00	SPT	N=50 (9,11/50 for 230mm)						Very dense blackish grey very sandy GRAVEL, with cobbles and boulders. Sand is coarse. Gravel is fine to coarse, angular. Cobbles and boulders are sub angular to sub rounded.	21
		21.40	B				21.40	-20.74		SWITCH TO ROTARY CORE Very dense blackish grey GRAVEL, with cobbles and boulders. Gravel is coarse, angular. Cobbles and boulders are sub angular to sub rounded. Gravels, cobbles and boulders are predominantly fine grained limestone.	22
		23.00	B								23
		21.40 - 26.00									24
		24.50	B								25
		26.00 - 27.50	C								26
		26.00 - 27.30		77							27
		27.30 - 27.50		100			27.20	-26.54		Strong, very thinly bedded, black, fine to medium grained, LIMESTONE, dicontinuities are closely spaced, open to wide, surfaces are planar rough and generally stained brownish orange, some infilling with silty gravel.	
		27.50 - 29.00	C								28
		27.50 - 29.00		87	49	16					
		29.00 - 30.50	C				29.00	-28.34		Highly fractured LIMESTONE rock as above, recovered as gravel and cobbles.	29
		29.00 - 30.50		80							
							29.90	-29.24			30
			Type/Fl	TCR	SCR	RQD					

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M10** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125156.98 - 151797.96	Hole Type CP+RC
Location: Foynes Port		Level: 0.66 m CD	Scale 1:50
Client: RPS		Dates: 14/05/2017 - 16/05/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							30.30	-29.64		Very dense blackish grey and grey GRAVEL. Gravel is coarse, sub angular to sub rounded.
		~~30.50 - 31.80~~	C							Very dense blackish grey GRAVEL, with cobbles. Gravel and cobbles are coarse, angular. Gravels and cobbles are predominantly fine grained limestone.
		30.50 - 31.80		100						
							31.30	-30.64		Very dense grey limestone GRAVEL, coarse, sub abgular to sub rounded.
							31.80	-31.14		*Limestone boulder at 31.7m*
		32.05 31.80 - 32.60	C							Fractured rock recovered as gravel and intact rock. Strong, very thinly bedded, black, fine to medium grained, LIMESTONE, dicontinuities are closely spaced, open to wide, surfaces are planar rough and generally stained brownish orange.
		32.87	C							
							34.10	-33.44		Fractured rock recovered generally as gravel and cobbles. Rock is very thinly bedded, black, fine to medium grained, LIMESTONE, dicontinuities are closely spaced, open to wide, surfaces are planar rough and generally stained brownish orange.
							35.80	-35.14		End of Borehole at 35.800m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M11** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125137E - 151793N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.84 m CD	Scale 1:50
Client:	RPS		Dates:	23/04/2017 - 25/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft, grey / dark grey silty to very silty CLAY
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 1.45	UT	Ublow=3				
		1.50	B					
		1.50	D					
		2.00 - 2.45	UT	Ublow=5				
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00 - 3.45	UT	Ublow=7				
		3.50	B					
		3.50	D					
		3.75	B		3.75	-2.91		
					3.85	-3.01		Attempted vane, invalid result. On cleaning pulled small amount of medium to coarse tabular GRAVEL of black limestone intermixed with dark grey clay.
								Soft grey/dark grey silty CLAY with a little sub angular tabular gravel of black limestone. Possibly represent discrete gravel rich pockets
		4.50	B					
		4.50	D					
		4.50 - 5.00	B					
		4.50	SPT	N=0 (1,0/0,0,0,0)				
		5.00	ES					
		5.00 - 5.45	UT	Ublow=9				
		5.50	B					
		5.50	D					
					6.00	-5.16		Soft grey/dark grey silty CLAY.
		6.25		HVP=34				
		6.50	B					
		6.50	D					
		6.50	U					
		6.50	UT					
		6.50 - 7.50	P					
		7.75		HVP=44				
		8.00 - 8.45	UT	Ublow=11				
		8.50	B					
		8.50	D					
		9.50	B					
		9.50	SPT	N=0 (0,0/0,0,0,0)				
		10.00	B					
								Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M11** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125137E - 151793N	Hole Type CP+RC
Location:	Foynes Port		Level:	0.84 m CD	Scale 1:50
Client:	RPS		Dates:	23/04/2017 - 25/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D					Soft grey/dark grey silty CLAY.
		11.00 - 11.45	UT	Ublow=11				
		11.50	B					
		11.50	D					
		12.50	B					
		12.50	SPT	N=0 (0,0/0,0,0,0)	12.60	-11.76		Change to firm grey CLAY with very small shell fragments and indistinctly laminated brown CLAY, probable original natural ground.
		13.00	B					
		13.00	D		13.20	-12.36		Sandy, fine to medium, occasionally coarse, sub angular to sub rounded GRAVEL.
		13.20	B					
		13.20	D					
		13.50	B					
		14.00	SPT	N=20 (5,4/5,5,5,5)				
		14.50	B					
		14.50	D					
		16.00	SPT	N=16 (5,2/3,3,5,5)				
		16.50	B					
		16.50	D					
		16.70 - 17.20	B		16.60	-15.76		SWITCH TO ROTARY CORE Sandy, fine to medium, occasionally coarse, sub rounded to sub angular GRAVEL of grey and black limestone with some sandstone.
		17.20 - 18.70		60				
		18.70 - 20.20		87				

Type/Fl	TCR	SCR	RQD

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M11** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125136.95 - 151793.25	Hole Type CP+RC
Location: Foynes Port		Level: 0.84 m CD	Scale 1:50
Client: RPS		Dates: 23/04/2017 - 25/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										Sandy, fine to medium, occasionally coarse, sub rounded to sub angular GRAVEL of grey and black limestone with some sandstone.
		20.20 - 21.70		67			21.40	-20.56		
										Fine, medium and coarse, angular GRAVEL and COBBLES of predominanly black limestone in a sandy, clayey matrix, assumed washed out in parts.
		21.70 - 23.20		80						*At 22.4m & 22.9m small cobbles of white limestone (fossil noted at 22.40m). A little fine gravel of orange brown sandstone present. Some ironstaining note on fracture surfaces of black limestone.*
		23.20 - 24.50		69						*Some light grey limestone, granite and sandstone gravel present. 24.3-24.5 cobble of black limestone.*
							24.50	-23.66		End of Borehole at 24.500m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M12** Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125146E - 151812N	Hole Type CP+RC
Location:	Foynes Port		Level:	-2.93 m CD	Scale 1:50
Client:	RPS		Dates:	18/05/2017 - 19/05/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	B					Soft to very soft grey very silty CLAY with some fine sand
		0.00 - 0.50	D					
		0.50	B					
		0.50 - 1.00	D					
		1.00	ES					
		1.00	UT	Ublow=3				
		1.50	B					
		1.50	D					
		2.00	D					
		2.00	SPT	N=0 (0,0/0,0,0,0)				
		2.50	B					
		2.50	D					
		3.00	ES					
		3.00	UT	Ublow=7				
		3.50	B					
		3.50	D					
		3.75		HVP=27				
		4.00	P					
		5.00	ES					
		5.25		HVP=37				
		5.50	B					
		5.50	D					
		6.00	D					
		6.00	SPT	N=0 (0,0/0,0,0,0)				
		6.50	B					
		6.50	D					
		7.50	UT	Ublow=9				
		8.00	B		8.00	-10.93		
		8.00	D					Soft very sandy CLAY
		9.50	B		9.50	-12.43		
		9.50	D					Soft to very soft grey very silty CLAY with some fine sand and cobbles
								Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M12** Sheet 2 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125146E - 151812N	Hole Type CP+RC
Location:	Foynes Port		Level:	-2.93 m CD	Scale 1:50
Client:	RPS		Dates:	18/05/2017 - 19/05/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								Soft to very soft grey very silty CLAY with some fine sand and cobbles
		11.00	B		11.00	-13.93		
		11.00	D					Firm dark grey clayey SILT with thin fragments of timber and fine rootlets
		11.40	B		11.30	-14.23		Dense dark brown and black very sandy GRAVEL with some cobbles and rare boulder, sand is coarse, gravel is fine to coarse sub angular to sub rounded, cobbles brown, grey nd black are sub rounded, boulders are dark grey subangular.
		12.00	SPT	N=16 (3,3/3,5,4,4)				
		12.50	B					
		13.50	SPT	N=29 (4,6/6,7,9,7)				
		14.00	B					
					14.50	-17.43		Dense black sandy GRAVEL with cobbles and rare boulder, sand is coarse, gravel is fine to coarse sub angular to sub rounded, cobbles brown, grey and black are sub rounded, boulders are dark grey subangular.
		15.00	SPT	N=50 (7,11/50 for 210mm)				*cobble content increases*
		15.50	B					
		16.50	SPT	N=50 (7,12/50 for 280mm)				
		18.00	SPT	N=69 (24 for 135mm/69 for 155mm)				
		19.50	SPT	N=50 (6,12/50 for 230mm)				
					19.70	-22.63		SWITCH TO ROTARY CORE Very dense dark grey coarse subangular GRAVEL,
			Type/Fl	TCR / SCR / RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M12** Sheet 3 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125145.83 - 151811.68	Hole Type CP+RC
Location: Foynes Port		Level: -2.93 m CD	Scale 1:50
Client: RPS		Dates: 18/05/2017 - 19/05/2017	Logged By CB

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										with grey sub rounded cobbles and rare boulders of limestone
							22.50	-25.43		
		22.50 - 24.00		100	7	7				Very dense dark grey subrounded COBBLES with some boulders of limestone, boulders appear to be rounded
							24.00	-26.93		
		24.00 - 25.50		100	13	7				Very dense dark grey silty angular to subangular GRAVEL, with sub angular to sub rounded cobbles and boulders of limestone. *Boulder encountered at 25.1m to 25.5m.*
							25.50	-28.43		
		25.50 - 27.00		100	1	0				Very dense dark grey gravelly COBBLES with rare boulder, gravel is fine to coarse sub angular, cobbles are subrounded.
		27.00 - 28.50		100	39	27				
		28.28	C				28.00	-30.93		Strong, dark grey, highly fractured fine grained LIMESTONE
		28.50 - 30.00		100	33	7				
							30.00	-32.93		

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M12** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125145.83 - 151811.68	Hole Type CP+RC
Location: Foynes Port		Level: -2.93 m CD	Scale 1:50
Client: RPS		Dates: 18/05/2017 - 19/05/2017	Logged By CB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		30.00 - 31.50		93	27	7				Medium strong to strong, dark grey, highly fractured, laminated, fine grained, shaley LIMESTONE. Fractures predominantly sub horizontal, extremely closely spaced to closely spaced, planar, smooth. Frequent non intact zones of highly fractured weathered shale.
		31.50 - 33.00		100	40	13				
		32.94	C							
		33.00 - 34.50	C	100	100	33				
		33.71 33.79	C							
		34.50 - 36.00		0	0	0				
		34.50 - 36.20		18	8	0				
		36.20 - 37.70		33	7	0				
		37.70 - 39.00		100	15	38				
							39.00	-41.93		End of Borehole at 39.000m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M13** Sheet 1 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125216E - 151845N	Hole Type CP+RC
Location: Foynes Port		Level: -4.54 m CD	Scale 1:50
Client: RPS		Dates: 28/03/2017 - 29/03/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft grey silty CLAY
					1.00	-5.54		Very soft bluish grey slightly silty CLAY
		1.50	SPT	N=0 (0,0/0,0,0,0)	1.50	-6.04		Very soft bluish grey silty CAY with some fine sand
		2.10	P		2.10	-6.64		Very soft bluish grey slightly silty CLAY
		2.10	U					
		2.10	UT					
		3.50	SPT	N=0 (0,0/0,0,0,0)				
					6.50	-11.04		Soft bluish grey slightly silty CLAY with some gravel and conch shells, gravel is coarse, angular
					7.50	-12.04		Soft bluish grey slightly silty, gravelly CLAY, gravel is fine to coarse, angular to subrounded and some flat gravel,with rare cobbles. Subrounded gravel is light grey, angular and flat gravel is black
					7.80	-12.34		Medium dense black sandy GRAVEL, fine to coarse, angular, with some cobbles which are angular to subrounded some flat. Some gravels are white.
		8.50	SPT	N=25 (6,12/6,4,8,7)				
					8.80	-13.34		Firm light brownish grey silty gravelly CLAY with rare cobbles, gravels are angular to subrounded black, cobbles are subrounded black.
					9.00	-13.54		Medium dense black sandy GRAVEL, fine to coarse, angular, with some cobbles which are angular to subrounded some flat. Some gravels are white.
								Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M13** Sheet 2 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125216E - 151845N	Hole Type CP+RC
Location:	Foynes Port		Level: -4.54 m CD	Scale 1:50
Client:	RPS		Dates: 28/03/2017 - 29/03/2017	Logged By CB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								Medium dense black sandy GRAVEL, fine to coarse, angular, with some cobbles which are angular to subrounded some flat. Some gravels are white.
		10.80 - 12.30	C					
		10.80 - 12.30	C		10.80	-15.34		SWITCH TO ROTARY CORE
		10.80	SPT	N=0 (25 for 75mm/0 for 0mm)				LIMESTONE Boulder, surface is undulating rough, lightly stained
					11.50	-16.04		Medium dense black sandy GRAVEL, fine to coarse, angular, with some cobbles which are angular to subrounded some flat. Some gravels are white
		12.30 - 13.80	C		12.30	-16.84		Dense bluish grey GRAVEL, medium to coarse, angular, with some cobbles, angular, rare rounded, rare flat.
		13.80 - 15.30	C					*LIMESTONE Boulder approx. 0.6m length*
			100		14.10	-18.64		Strong thinly laminated black fine grained SILTSTONE, fractures are extremely closely spaced, ave. 15mm max. 20mm, planar smooth, tight, no surface staining or infilling
			33		15.00	-19.54		Very strong light grey medium grained LIMESTONE, no fractures, surface is undulating rough, no discolouring.
		15.30 - 16.80	C		15.40	-19.94		Very stiff to hard black gravelly SILT
		14.10 - 16.62		100				
					16.62	-21.16		
		16.62 - 16.80		100	16.68	-21.22		Very strong light grey medium grained LIMESTONE, no fractures, surface is undulating rough, no discolouring.
		16.80 - 18.30	C					Strong thinly laminated black fine grained SILTSTONE, rock is shattered, recovered as gravel coarse angular
					17.50	-22.04		
					17.62	-22.16		Very strong light grey medium grained LIMESTONE, no fractures, surface is undulating rough, no discolouring.
		16.62 - 19.80		100				Very stiff to hard black gravelly SILT
		18.30 - 19.80	C		18.30	-22.84		Dense black and grey GRAVEL with some cobbles, gravel is fine to coarse getting finer with depth, angular to subangular some flat; cobbles are grey subrounded. GRAVEL possible shattered SILTSTONE and LIMESTONE; cobbles were causing the core barrell to jam so drill had to be pulled out approx. every 300mm between which would cause the gravel and cobbles to mix and the finer gravels to settle to the bottom of the stratum in the barrell.
					19.25	-23.79		
			Type/Fl	TCR / SCR / RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M13** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125215.90 - 151844.61	Hole Type CP+RC
Location: Foynes Port		Level: -4.54 m CD	Scale 1:50
Client: RPS		Dates: 28/03/2017 - 29/03/2017	Logged By CB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		19.80 - 21.30		100			21.30	-25.84		Strong thinly laminated black fine grained SILTSTONE, fractures are very closely spaced, ave. 30mm max. 60mm, planar smooth, some light brown surface staining no infilling tight horizontal fracture surface; vertical fracture: undulating rough, partly open, light brown staining , at around 19.7m some soft black silty clay infilling
										End of Borehole at 21.300m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M14**

Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125172E - 151823N	Hole Type CP+RC
Location:	Foynes Port		Level: -4.09 m CD	Scale 1:50
Client:	RPS		Dates: 01/04/2017 - 03/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	B					Very soft grey silty CLAY
		1.00 - 1.50	UT					
		3.50	B		3.50	-7.59		Soft grey silty CLAY with some fine sand
		4.00	P		4.00	-8.09		Soft grey Silty CLAY
		5.00	B					
		5.50 - 6.00	UT					
		6.50 - 7.00	B					
		7.00 - 7.50	UT					
		8.00 - 8.50	B					
		8.50 - 9.00	UT					
		9.50	SPT	N=5 (2,1/1,1,1,2)	9.20	-13.29		Soft very Silty, Gravelly, CLAY. Gravel is fine angular and some flat

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M14** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125172E - 151823N	Hole Type CP+RC
Location: Foynes Port		Level: -4.09 m CD	Scale 1:50
Client: RPS		Dates: 01/04/2017 - 03/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		10.10 - 10.30	B		10.30	-14.39		Soft very Silty, Gravelly, CLAY. Gravel is fine angular and some flat
		11.00	SPT	N=40 (12,13/12,12,8,8)	11.00	-15.09		Dark grey Silty GRAVEL with some cobbles, gravel is fine to coarse angular and flat. Cobble is dark grey sub angular from coarse grained rock (Limestone)
		12.00 - 12.50	B		12.00	-16.09		Dense black sandy GRAVEL and cobbles. Gravel is fine to coarse angular to sub angular and flat cobbles that are grey, sub rounded and rough
		12.50	SPT	46 (5,5/46 for 194mm)				
		13.10	LB					
		14.00	SPT	45 (25 for 130mm/45 for 100mm)				
					15.70	-19.79		SWITCH TO ROTARY CORE Dark grey & black, occasionally light grey, medium to coarse, sub rounded to angular gravel of limestone and fine grained silty limestone with many cobbles and occasional boulders of the same material.
					17.20	-21.29		Cobble of dark grey grey fine silty limestone. Bedding (20-40mm) sub-vertical to core axis, open with ironstaining.
					18.70	-22.79		1.2m recovered. Between 19.15m & 19.20m cobble of dark grey silty limestone, bedding (<10mm) horizontal to core axis. Between 19.20m & 19.80m boulder of similar material but bedding (5-40mm) sub vertical to core axis with slight ironstaining.

Type/Fl	TCR	SCR	RQD

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M14** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125171.86 - 151822.81	Hole Type CP+RC
Location: Foynes Port		Level: -4.09 m CD	Scale 1:50
Client: RPS		Dates: 01/04/2017 - 03/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							20.20	-24.29		1.2m recovered. Between 19.15m & 19.20m cobble of dark grey silty limestone, bedding (<10mm) horizontal to core axis. Between 19.20m & 19.80m boulder of similar material but bedding (5-40mm) sub vertical to core axis with slight ironstaining.
		23.50	C							
										End of Borehole at 24.700m

21 22 23 24 25 26 27 28 29 30

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M15** Sheet 1 of 3

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125123E - 151815N	Hole Type CP+RC
Location:	Foynes Port		Level:	-3.40 m CD	Scale 1:50
Client:	RPS		Dates:	04/04/2017 - 06/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft to soft, grey, slightly silty CLAY.
		0.50	B					
		0.50	D					
		1.00	B					
		1.00	D					
		1.00	ES					
		1.00 - 1.45	UT					
		1.50	B					
		1.50	D					
		2.00	ES					
		2.00	UT					
		2.00 - 3.00	P					
		3.00	B					
		3.00	D					
		3.00	ES					
		3.50	B					
		3.50	D					
		4.00 - 4.45	UT		4.00	-7.40		
								Very soft to soft, grey, slightly silty CLAY.
		4.50	B					
		5.00	B					
		5.00	D					
		5.00	ES					
		5.00 - 5.45	UT					
		5.50	B					
		5.50	D					
		6.00	UT					
		6.00 - 7.00	P					
		7.00	B		7.00	-10.40		
		7.00	D					No Recovery
		7.50 - 7.95	UT					
		8.00	B					
		8.00	D					
		8.50 - 8.95	UT		8.50	-11.90		
								Short length (about 190mm) of 30mm diameter re-bar.
								Soft grey slightly silty CLAY with alittle sub rounded gravel of limestone. Traces of shell fragments noted within clay; possibly original natural ground
								UT sample taken at 8.50m
		9.50	B					
		9.50	D		9.70	-13.10		
		10.00 - 10.45	UT					Very dense, light and dark grey, fine to coarse, sandy, sub angular to angular GRAVEL of limestone and

Continued on Next Sheet

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M15** Sheet 2 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125123E - 151815N	Hole Type CP+RC
Location: Foynes Port		Level: -3.40 m CD	Scale 1:50
Client: RPS		Dates: 04/04/2017 - 06/04/2017	Logged By CL

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								siltstone/limestone with some to many cobbles and boulders of limestonse and siltstone/limestone.
		11.00 11.00	B D					
		11.50	SPT	N=24 (11,10/8,8,5,3)				
		12.50 12.50	B D					
		12.60 - 12.80 12.60	SPT	100 N=50 (25 for 90mm/50 for 75mm)	12.60	-16.00		SWITCH TO ROTARY CORE. Cobble caught in barrel
		12.80 - 14.30		60				0.90m recovered (assumed that sand layers had been washed out). Very dense medium to coarse subangular to subrounded GRAVEL predominantly of limestone with a little sandstone/siltstone, some to many cobbles of grey limestone with occasional cobbles of dark grey siltstone/limestone.
		14.30 - 15.80		60	14.30	-17.70		Disturbed sample, 0.90m recovered. Verys dense subangular to angular fine to coarse GRAVEL of limestone with a little sansdstone & siltstone. At top of sample overcored cobbles of dark grey limestone.
		15.80 - 17.30		0	15.80	-19.20		No recovery, CPT carried out at base, refusal.
		17.30 - 18.80		100	17.30 17.50 17.80 18.30 18.55 18.80	-20.70 -20.90 -21.20 -21.70 -21.95 -22.20		200mm COBBLE of grey limestone with bands of pyrites flakes. Very clayey subangular to angular GRAVEL of grey limestone to 17.80. Stiff slightly gravelly sandy dark grey/black CLAY. Very clayey subangular to angular GRAVEL of grey limestone to 17.80. Stiff slightly gravelly sandy dark grey/black CLAY.
		18.80 - 20.30		97				Firm to stiff, dark grey, slightly sandy, gravelly CLAY, with medium cobble content. Gravel is fine to coarse, suba angular to angular, predominantly limestone with lesser sandstone. Cobbles are of limestone.
			Type/Fl	TCR SCR RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M15** Sheet 3 of 3

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125123.41 - 151814.74	Hole Type CP+RC
Location: Foynes Port		Level: -3.40 m CD	Scale 1:50
Client: RPS		Dates: 04/04/2017 - 06/04/2017	Logged By CL

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							20.30	-23.70		Firm to stiff, dark grey, slightly sandy, gravelly CLAY, with medium cobble content. Gravel is fine to coarse, suba angular to angular, predominantly limestone with lesser sandstone. Cobbles are of limestone.
		20.30 - 21.80		100						Very dense, light and dark grey, fine to coarse sub angular to angular GRAVEL of limestone and siltstone/limestone with some to many cobbles and boulders of limestonse and siltstone/limestone. 20.90-21.30 & 21.45-21.60m limestone cobbles, cobble at base of run.
							21.80	-25.20		21.80-22.10m GRAVEL of S/S & L/S
							22.10	-25.50		22.10-22.30m L/S cobble
							22.30	-25.70		22.30-23.20m claybound gravel and cobbles.
		21.80 - 23.30		97						
							23.30	-26.70		Rockhead 23.3-23.4m.
							23.40	-26.80		Strong, non intact, black, fine grained, LIMESTONE. Highly fractured (possibly due to glaciation - plucking?).
		23.30 - 24.80		100	40	10				
							24.20	-27.60		*Highly fractured, fractures sub horizontal, sub angular & sub vertical, open & clean. Possibly related to glacial "plucking".*
										Strong, very thinly bedded, black, fine to medium grained, LIMESTONE. Recovered as solid core but fractured.
										Fractures horizontal, sub vertical & vertical, generally closed and clean.
		24.80 - 26.30		100	67	20				*Fractures sub horizontal and sub vertical, clean. Non intact.*
										Parallel closely spaced sub vertical fractures.
		26.50	C							*Fractures generally sub horizontal, accasionally sub vertical, clean.*
		26.53	C							
		26.30 - 27.80		100	83	27				
							27.80	-31.20		End of Borehole at 27.800m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Borehole Log

Borehole No. **M16** Sheet 1 of 2

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125202E - 151845N	Hole Type CP+RC
Location:	Foynes Port		Level: -6.56 m CD	Scale 1:50
Client:	RPS		Dates: 16/06/2017 - 17/06/2017	Logged By LB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								Very soft, dark grey, slightly silty CLAY.
		1.00	ES					
		1.50	B					
		1.50	D					
		2.50 - 2.95	UT					
		3.00	ES					
		3.50	B					
		3.50	D					
		3.50 - 3.95	UT					
		4.00 - 5.00	P					
		5.00	ES		5.00	-11.56		Very soft, dark grey, slightly silty CLAY with some fine sand.
					6.00	-12.56		Very soft, dark grey with blackish organic streaks, slightly silty CLAY with some fine sand. Occasional rootlets.
		6.50 - 6.95	UT		6.50	-13.06		Very soft, dark grey with light grey mottles, slightly silty CLAY with some fine sand and rare gravel and shell fragments.
		7.00	B					
		7.00	D		7.10	-13.66		Very soft, dark grey, slightly silty gravely CLAY with some fine sand. Gravel is fine to coarse, angular.
					7.50	-14.06		Soft, dark grey, slightly silty gravely sandy CLAY with some cobbles. Gravel is fine to coarse, angular. Cobbles are sub-rounded.
		8.00 - 8.45	SPTL S		8.00	-14.56		Loose, dark grey, fine to coarse GRAVEL and coarse SAND. Gravel is sub-angular to angular.
					8.50	-15.06		Medium dense, grey, gravelly coarse SAND with some cobbles. Cobbles and Gravels are sub-angular.
		9.19	C		9.00	-15.56		SWITCH TO ROTARY CORE
		9.00 - 10.30	UT	89 / 58 / 38				No recovery
		9.64	C					Very strong, thinly laminated, light grey, medium grained LIMESTONE. Fractures are closely, surfaces are rough undulating, sandy soil infilling.
		10.00	B					
			Type/Fl	TCR / SCR / RQD				

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M16** Sheet 2 of 2

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125201.80 - 151844.62	Hole Type CP+RC
Location: Foynes Port		Level: -6.56 m CD	Scale 1:50
Client: RPS		Dates: 16/06/2017 - 17/06/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		10.00	D				10.30	-16.86		Very strong, thinly laminated, light grey, medium grained LIMESTONE. Fractures are closely, surfaces are rough undulating, sandy soil infilling.
		11.00 - 11.45 10.30 - 11.80	SPTL S	100	29	27				Strong, thinly laminated, grey, fine medium to coarse grained LIMESTONE. Fractures are closely, surfaces are rough undulating and open with clay infilling.
		11.80 - 13.30 13.00 - 13.45	UT	99	0	0	11.80	-18.36		
		13.50 13.30 - 13.90 13.50	B D	50	0	0	13.30 13.60	-19.86 -20.16		No recovery Dense, very light grey slightly clayey GRAVEL with some cobbles, sub-angular.
		13.90 - 14.80 14.50 - 15.60	SPTL S	100	23	12	13.90	-20.46		
		15.00 15.00 14.80 - 16.30 15.80 15.80	B D B D	100	9	0	14.80	-21.36		
		16.50 16.50 16.80 16.30 - 17.80 17.30	B D B B	99	25	0	16.30	-22.86		
		17.80 - 18.50		100	7	0	17.80	-24.36		Strong, thinly laminated, very dark grey, fine grained, LIMESTONE. Fractures are extremely closely to closely spaced, roughly planar, aperture tight to moderately wide black clay infilling.
							18.50	-25.06		End of Borehole at 18.500m

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

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Borehole Log

Borehole No. **M16b**

Sheet 1 of 4

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords:	125203E - 151848N	Hole Type CP+RC
Location:	Foynes Port		Level:	-6.75 m CD	Scale 1:50
Client:	RPS		Dates:	18/06/2017 - 19/06/2017	Logged By LB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft, dark grey, slightly silty CLAY.
					6.00	-12.75		Very soft, dark grey with brown mottled, slightly fine sandy CLAY with occasional cobbles and rare rootlets.
					7.40	-14.15		Soft, dark grey with white mottles, slightly sandy CLAY with occasional cobbles. Gravels are angular, cobbles are sub-angular. Rare rootlet and tiny shells.
					8.00	-14.75		Medium dense, dark grey, coarse sandy clayey COBBLES and GRAVELS. Gravels are sub-angular and cobbles are angular. Occasional gravels are reddish.
					8.50	-15.25		Loose, dark grey, coarse sandy, sub-angular GRAVEL with occasional cobbles. Gravel is fine to coarse, cubic, flat and elongated. Cobbles are sub-angular.
					9.00	-15.75		SWITCH TO ROTARY CORE No recovery

Type/Fl	TCR	SCR	RQD

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M16b** Sheet 2 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125203.45 - 151847.55	Hole Type CP+RC
Location: Foynes Port		Level: -6.75 m CD	Scale 1:50
Client: RPS		Dates: 18/06/2017 - 19/06/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										No recovery
		13.50 - 13.80		100			13.50	-20.25		Medium dense, light grey to grey, sub-angular, medium to coarse GRAVEL.
		13.80 - 14.90		100	14	9	13.80	-20.55		Very strong, thinly laminated, dark grey, fine medium grained LIMESTONE. Fractures are closely, rough undulating and partially open aperture. Occasional black clay infilling.
		14.90 - 16.40		100	30	17	14.90	-21.65		Very strong, thinly laminated, dark grey, fine medium grained LIMESTONE. Fractures are closely, rough undulating and tight to partially open aperture. Occasional black clay infilling.
		16.40 - 17.90		90	0	0	16.40	-23.15		No recovery
							16.55	-23.30		Very strong, thinly laminated, dark grey, fine grained LIMESTONE. Fractures are very closely, smooth undulating, apertures are partly open. Soft black clay infilling.
							17.15	-23.90		Dense, black, clayey GRAVEL. Gravel is fine and angular.
							17.30	-24.05		Very strong, thinly laminated, dark grey, fine grained LIMESTONE. Fractures are very closely, smooth undulating, apertures are very tight. Soft black clay infilling.
		17.90 - 19.40		98	14	0	17.90	-24.65		No recovery
							17.93	-24.68		Strong, dark grey, fine grained LIMESTONE. Fractures are very closely to closely, rough undulated, apertures from tight to partly open. Soft black clay infilling
							19.40	-26.15		No recovery
							19.50	-26.25		Strong, dark grey, fine grained LIMESTONE. Fractures are very closely, rough undulated, apertures are tight to moderately wide. Very soft

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M16b** Sheet 3 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125203.45 - 151847.55	Hole Type CP+RC
Location: Foynes Port		Level: -6.75 m CD	Scale 1:50
Client: RPS		Dates: 18/06/2017 - 19/06/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		19.40 - 20.90		93	0	0				black clay infilling and occasional staining surface.
							20.90	-27.65		No recovery
		20.90 - 22.40		95			21.60	-28.35		High fractured limestone recovered as cobbles. Fissured breaks into blocks along unpolished discontinuities. Dark grey, gravelly COBBLES with numerous tiny pyrite nodules. Gravel and cobbles are angular, rare gravels are whitish. Occasional yellow staining surface and occasional very soft black clay infilling.
							22.40	-29.15		
		22.40 - 23.90		80			22.70	-29.45		No recovery Very weathering limestone recovered as gravel. Dense, dark grey, occasional orange mottled, slightly sandy clayey GRAVEL. Gravels are medium to coarse and angular.
							23.90	-30.65		
		23.90 - 25.40		93			24.00	-30.75		No recovery High fractured limestone recovered as gravel. Fissured breaks into blocks along unpolished discontinuities. Dark grey slightly silty clayey sandy course GRAVEL. Rare gravels are yellow brownish. Gravel and Cobbles are angular.
		25.40 - 26.90		100			25.40	-32.15		High fractured limestone recovered as gravel. Dense, fissured: breaks into blocks and laminae. Dark grey occasional yellow mottled. Clayey sandy GRAVEL with occasional cobbles. Gravels are sub-angular to angular and cobbles are angular.
		26.90 - 28.40		100			26.90	-33.65		High fractured limestone recovered as cobbles. Fissured: Break into blocks along unpolished discontinuities. Dark angular cubic and flat GRAVEL and COBBLE with numerous tiny pyrite nodules. Gravel and cobbles are cubic and flat.
							28.40	-35.15		No recovery
		28.40 - 29.90		80			28.70	-35.45		High fractured limestone recovered as cobble and gravel. Dense, fissured: Breaks into blocks along unpolished discontinuities. Dark grey sandy clayey angular COBBLE and GRAVEL with numerous tiny pyrite nodules. Some green yellowish surface staining.
							29.90	-36.65		

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Rotary Core Log

Borehole No. **M16b** Sheet 4 of 4

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 125203.45 - 151847.55	Hole Type CP+RC
Location: Foynes Port		Level: -6.75 m CD	Scale 1:50
Client: RPS		Dates: 18/06/2017 - 19/06/2017	Logged By LB

Well	Water Strikes	Depth (m)	Type /Fl	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							30.20	-36.95		No recovery
		29.90 - 31.40		93	11	11				High fractured limestone recovered as cobble and gravel. Dense, fissured: Breaks into blocks along unpolished discontinuities. Dark grey slightly sandy angular COBBLE and GRAVEL with numerous tiny pyrite nodules. Some yellow surface staining.
							31.40	-38.15		End of Borehole at 31.400m

31 32 33 34 35 36 37 38 39 40

Remarks

Vertical datum: Chart datum. Horizontal datum: Irish grid reference coordinates system.

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Trial Pit Log

TrialPit No: TP01
Sheet 1 of 1

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526352.64 - 651954.76 Level: 4.26
Location:	Foynes Port	Dimensions (m):	Date: 31/03/2017 Scale: 1:25
Client:	RPS	Depth: 4.50	Logged: CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.16		TOPSOIL
							Soft grey brown mottled slightly sandy slightly gravelly CLAY.
	0.50	B		0.50	3.76		
	0.50	ES					Soft grey with brown mottling slightly sandy slightly gravelly SILTwith occasional lenses of fine Sand and plant remains.
	0.50	T					
	0.50	HVP	100				
	1.00	B					
	1.00	ES					
	1.00	T					
	1.00	HVP	100				
	2.00	T					
	2.00	HVP	90				
	2.20	B					
▼	3.90	B					
▼	3.90	ES					
▼	4.00	HVP	50				
				4.50	-0.24		End of Pit at 4.50m

1 2 3 4 5

Remarks: Trial Pit sidewalls collapsing from 0.2m BGL. Groundwater seepage at 4.0m BGL - Slight.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 100, 2.0 m - 90, 4.0 m - 50.

Stability:

AGS

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Trial Pit Log

TrialPit No: TP02
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526295.85 - 651703.52 Level: 4.68	Date 31/03/2017
Location: Foynes Port		Dimensions (m):	Scale 1:25
Client: RPS		Depth 4.50	Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.58		TOPSOIL
							Soft grey brown mottled slightly sandy slightly gravelly CLAY
	0.50	B					
	0.50	T					
	0.50	HVP	100	0.60	4.08		
							Soft to firm grey with brown mottling slightly sandy silty CLAY with plant remains and sea shell.
	1.00	B					
	1.00	ES					
	1.00	T					
	1.00	HVP	110				
				2.10	2.58		Soft to firm grey sandy SILT with fragments of sea shell.
	3.00	HVP	90				
	3.50	B					
▼	4.00	HVP	50				
	4.50	ES		4.50	0.18		End of Pit at 4.50m
	4.50	T					
	4.50	HVP	60				

1 2 3 4 5

Remarks: Trial Pit sidewalls are stable.Groundwater seepage at 4.0m BGL - Slight.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 110, 3.0 m - 90, 4.0 m - 50, 4.5 m - 60.

Stability:

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Trial Pit Log

TrialPit No: TP03
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526513.41 - 651710.11 Level: 4.78	Date 31/03/2017
Location: Foynes Port		Dimensions (m): Depth 4.50	Scale 1:25
Client: RPS			Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.68		TOPSOIL
	0.50	ES					Soft to firm grey brown mottled slightly sandy slightly gravelly CLAY.
	0.50	T					
	0.50	HVP	100				
	0.80	B					
	0.80	ES					
	1.00	HVP	90				
	1.30	T		1.30	3.48		Soft grey sandy SILT with fragments of sea shell.
	3.00	B					
	3.00	ES					
	3.00	HVP	60				
▼	4.00	T					
	4.00	HVP	70				
	4.50	HVP	50	4.50	0.28		End of Pit at 4.50m

1 2 3 4 5

Remarks: Trial Pit sidewalls collasping from 0.0 m BGL.Groundwater seepage at 4.0m BGL - Slight.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 90, 3.0 m - 60, 4.0 m - 70, 4.5 m - 50.

Stability:

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Trial Pit Log

TrialPit No: TP04
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526109.79 - 651492.96 Level: 6.26	Date 31/03/2017
Location: Foynes Port		Dimensions (m): Depth 2.50	Scale 1:25
Client: RPS			Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	6.16		TOPSOIL Soft brown slightly sandy slightly gravelly CLAY.
	0.50 0.50 0.60	T HVP B	100	0.50	5.76		Soft to firm orange brown slightly sandy slightly gravelly CLAY.
	1.00 1.00 1.00	ES T HVP	90	0.80	5.46		Firm to stiff grey sandy slightly gravelly CLAY with occasional cobbles and boulders.
	1.50 1.50	B HVP	80				
	2.00	T		2.00	4.26		Dense grey slightly clayey gravelly SAND with occasional cobbles and boulders
	2.30 2.30	B ES					
				2.45 2.50	3.81 3.76		OBSTRUCTION - Possible Rock. End of Pit at 2.50m

Remarks: Trial Pit sidewalls are stable.No groundwater encountered in Trial Pit.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 90, 1.5 m - 80.Refusal at 2.5 m due to probable rock.

Stability:

AGS

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Trial Pit Log

TrialPit No: TP05
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526309.75 - 651509.86 Level: 5.72	Date 31/03/2017
Location: Foynes Port		Dimensions (m): Depth 2.20	Scale 1:25
Client: RPS			Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	5.62		TOPSOIL
							Soft grey brown slightly sandy slightly gravelly CLAY.
	0.50	B		0.50	5.22		
	0.50	ES					Soft to firm orange brown slightly sandy slightly gravelly CLAY with rare cobbles.
	0.50	T					
	0.50	HVP	90				
	0.80	B		0.80	4.92		
	0.80	ES					Firm grey sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders and rare lenses of gravelly Sand.
	1.00	HVP	90				
	1.40	B					
	1.50	HVP	80	1.50	4.22		
							Stiff grey slightly sandy slightly gravelly CLAY with frequent sub angular to angular cobbles and boulders.
	2.00	B					
	2.00	ES					
				2.15	3.57		OBSTRUCTION - Possible Rock.
				2.20	3.52		End of Pit at 2.20m

Remarks: No groundwater encountered in Trial Pit.Trial Pit sidewalls collasping 0.2 m BGL.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 90, 1.0 m - 90, 1.5 m - 80.Refusal at 2.2 m due to probable rock.

Stability:

AGS

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Trial Pit Log

TrialPit No: TP06
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526431.22 - 651405.28 Level: 4.55	Date 31/03/2017
Location: Foynes Port		Dimensions (m):	Scale 1:25
Client: RPS		Depth 1.90	Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.45		TOPSOIL
	0.50 0.50	T HVP	110				Soft to firm grey brown mottled slightly sandy slightly gravelly CLAY.
	0.80	B		0.80	3.75		Firm grey black mottled sandy slightly gravelly CLAY with occasional angular to sub angular cobbles and rare boulders.
▼	1.00 1.00 1.00	ES T HVP	100	1.10	3.45		Firm to stiff grey brown slightly sandy slightly gravelly CLAY with frequent sub angular to sub rounded cobbles and boulders and occasional lenses of fine Sand.
▽				1.85 1.90	2.70 2.65		OBSTRUCTION: Possible Rock. End of Pit at 1.90m

1 2 3 4 5

Remarks: Groundwater encountered at 1.3 m BGL in Trial Pit. Very fast ingress. 1.1m BGL after 5 mins.Trial Pit sidewalls collasping 1.0 m BGL.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 110, 1.0 m - 100.Refusal at 1.9 m due to possible rock and water.

Stability:

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Trial Pit Log

TrialPit No: TP07
Sheet 1 of 1

Project Name:	Foynes Port - Jetty Phase 2	Project No.: 17022	Co-ords: 526626.38 - 651529.75 Level: 4.65
Location:	Foynes Port	Dimensions (m):	Date: 31/03/2017 Scale: 1:25
Client:	RPS	Depth: 4.50	Logged: CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.55		TOPSOIL
							Soft to firm grey brown mottled slightly sandy slightly gravelly CLAY.
	0.50	ES					
	0.50	T					
	0.50	HVP	100				
	1.00	B					
	1.00	ES					
	1.00	HVP	120				
	1.50	T					
				1.70	2.95		Soft to firm grey sandy SILT with fragments of sea shell.
	2.00	B					
	2.50	HVP	70				
	3.50	T					
	3.50	HVP	60				
	3.80	B					
	3.80	ES					
	4.50	HVP	60	4.50	0.15		End of Pit at 4.50m

1 2 3 4 5

Remarks: Slight groundweater seepage from sidewall observed at 4.0 m BGL in Trial Pit.Trial Pit sidewalls are stable.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 120, 2.5 m - 70, 3.5 m - 60, 4.5 m - 60.

Stability:

AGS

GDG GAVIN & DOHERTY GEOSOLUTIONS

Trial Pit Log

TrialPit No: TP08
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526409.73 - 651241.42 Level: 4.93	Date 31/03/2017
Location: Foynes Port		Dimensions (m): Depth 2.50	Scale 1:25
Client: RPS			Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15	4.78		TOPSOIL
	0.50	ES					Soft to firm grey brown mottled slightly sandy slightly gravelly silty CLAY with ocassional angular cobbles and rare boulders.
	0.50	T					
	0.50	HVP	90				
				0.70	4.23		Firm grey brown orange mottled slightly sandy slightly gravelly CLAY with occasional angular to sub angular cobbles and occasional lenses of gravelly Sand.
	0.80	B					
	1.00	HVP	100				
	1.50	T					
▼	2.00	B		2.00	2.93		Firm to stiff grey slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders.
	2.00	ES					
				2.45	2.48	key key key	OBSTRUCTION: Possible Rock.
				2.50	2.43		End of Pit at 2.50m

Remarks: Groundwater encountered at 2.0 m BGL in Trial Pit. Fast ingress. Trial Pit sidewalls are stable.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 90, 1.0 m - 100.Refusal at 1.9 m due to probable rock and water.

Stability:

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Trial Pit Log

TrialPit No: TP09
Sheet 1 of 1

Project Name: Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526382.83 - 651215.42 Level: 4.25	Date 31/03/2017
Location: Foynes Port		Dimensions (m): Depth 1.80	Scale 1:25
Client: RPS			Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.15		TOPSOIL
							Soft to firm grey brown mottled slightly sandy slightly gravelly silty CLAY.
	0.50	ES		0.50	3.75		
	0.50	T					Firm to stiff grey slightly sandy slightly gravelly CLAY with rare angular to sub angular cobbles.
	0.50	HVP	90				
	1.00	B					
	1.00	HVP	110				
▼	1.30	T					
▽				1.50	2.75		Stiff grey slightly sandy slightly gravelly CLAY with frequent sub angular to sub rounded cobbles and rare boulders.
				1.75	2.50		
	1.80	B		1.80	2.45		OBSTRUCTION: Possible Rock.
	1.80	ES					End of Pit at 1.80m

1
2
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5

Remarks: Groundwater encountered at 1.5 m BGL in Trial Pit. Very fast ingress. 1.3m BGL after 5 mins.Trial Pit sidewalls collasping 1.4 m BGL.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 90, 1.0 m - 110.Refusal at 1.8 m due to possible rock and water.

Stability:

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GDG GAVIN & DOHERTY GEOSOLUTIONS

Trial Pit Log

TrialPit No: TP10
Sheet 1 of 1

Project Name:	Foynes Port - Jetty Phase 2	Project No. 17022	Co-ords: 526253.00 - 651079.00 Level: 4.83	Date 31/03/2017
Location:	Foynes Port		Dimensions (m):	Scale 1:25
Client:	RPS		Depth 4.70	Logged CCostigan

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10	4.73		TOPSOIL
							Soft grey brown mottled slightly sandy slightly gravelly CLAY.
	0.50	ES					
	0.50	T					
	0.50	HVP	100	0.60	4.23		
	0.60	B					Soft grey with brown mottling slightly sandy SILTwith plant remains and fragments of sea shell.
	1.00	ES					
	1.00	T					
	1.00	HVP	90				
	1.30	B					
				2.00	2.83		Soft to firm sandy SILT with fragments of sea shell.
	2.50	T					
	2.50	HVP	80				
	3.50	B					
	3.50	T					
	3.50	HVP	50				
	4.50	HVP	50				
	4.70	B		4.70	0.13		
	4.70	ES					End of Pit at 4.70m

1 2 3 4 5

Remarks: Slight groundwater seepage observed from sidewall at 4.4m BGL in Trial Pit.Trial Pit sidewalls are stable.Trial Pit backfilled upon completion.Shear Vane Results at 0.5 m - 100, 1.0 m - 90, 2.5 m - 80, 3.5 m - 50, 4.5 m - 50.

Stability:

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APPENDIX 2

LABORATORY TEST RESULTS

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 35579

Client's Reference:

Report Date: **08-08-2017**

Client **Ground Investigation Ireland**
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin

Contract Title: **Foynes Port**

For the attention of: **Conor Finnerty**

Date Received: **15-06-2017**

Date Commenced: **15-06-2017**

Date Completed: **08-08-2017**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - * UKAS	91
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	61
Density by Immersion in Water or Water Displacement Method 1377 : 1990 Part 2 : 7.4 - @ Non Accredited Test	35
PSD Wet Sieve method 1377 : 1990 Part 2 : 9.2 - * UKAS	111
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) 1377 : 1990 Part 2 : 9.4 - * UKAS	1
PSD: Sedimentation by pipette carried out separately 1377 : 1990 Part 2 : 9.4 - * UKAS	3
Hand Shear Vane	26

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Quality Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 35579

Test Description	Qty
One-dimensional Consolidation 75mm or 50mm diameter specimens (5 days) 1377 : 1990 Part 5 : 3 - * UKAS	38
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) 1377 : 1990 Part 7 : 8 - * UKAS	13
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) 1377 : 1990 Part 7 :4 - * UKAS	28
CUD 100mm Consolidated undrained triaxial compression test on a Single Specimen with Multistage Loading with the measurement of pore water pressure including saturation and consolidation, test duration FOUR days. BS1377 : Part 8 : Clause 7 : 1990 - @ Non Accredited Test	10
Extra over items for test duration in excess of four days.	80
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Quality Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
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GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
LO4		B	0.50	-		Grey slightly fine gravelly sandy clayey SILT
LO4		B	2.00	-		Grey clayey SILT
LO4		B	5.50	-		Grey clayey SILT
LO4		B	7.00	-		Grey silty CLAY
LO4		B	10.00	-		Grey clayey SILT
LO4		B	14.50	-		Brown slightly sandy clayey SILT
LO5		B	0.50	-		Greyish brown clayey SILT
LO5		B	2.50	-		Greyish brown clayey SILT
LO5		B	5.00	-		Greyish brown clayey SILT
LO5		B	8.50	-		Greyish brown silty CLAY
LO5		B	11.50	-		Grey clayey SILT
LO5		B	13.00	-		Brown silty CLAY
LO5		B	15.50	-		Dark grey slightly fine gravelly clayey SILT
MO1		B	1.00	-		Greyish brown silty CLAY
MO1		B	3.50	-		Grey SILT/CLAY
MO1		B	5.50	-		Grey clayey SILT
MO1		B	10.00	-		Grey silty CLAY
MO1		B	13.00	-		Grey SILT/CLAY
MO1		B	13.50	-		Grey silty CLAY
MO1		B	16.00	-		Grey slightly fine to medium gravelly sandy silty CLAY
MO2		B	1.00	-		Grey SILT/CLAY
MO2		B	3.50	-		Grey silty CLAY
MO2		B	6.50	-		Grey SILT/CLAY
MO2		B	8.00	-		Grey silty CLAY

Operators	Checked	22/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	23/07/2017	Ben Sharp	

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2788

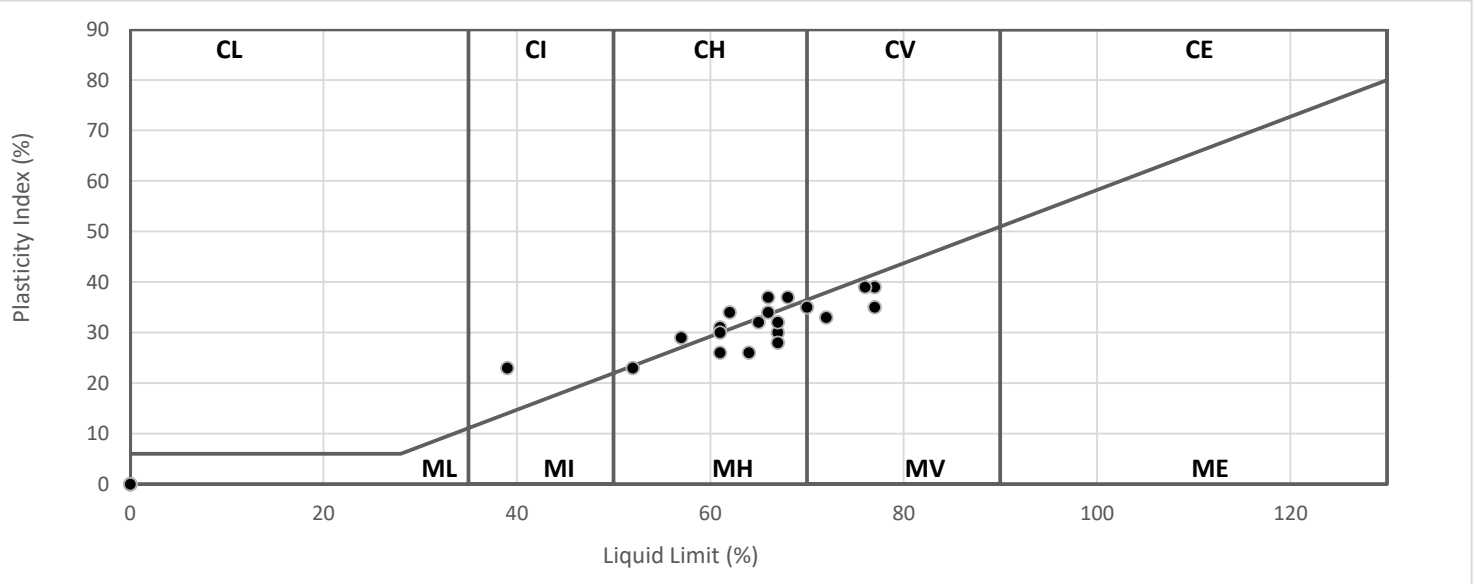
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)

Contract Number	**35579**
Site Name	**Foynes Port**

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
LO4		B	0.50	-		58	67	37	30	93	MH High Plasticity
LO4		B	2.00	-		61	64	38	26	100	MH High Plasticity
LO4		B	5.50	-		58	70	35	35	100	MH/V High/HighPlasticity
LO4		B	7.00	-		62	66	32	34	100	CH High Plasticity
LO4		B	10.00	-		60	77	38	39	100	MV Very High Plasticity
LO4		B	14.50	-		53	76	37	39	99	MV Very High Plasticity
LO5		B	0.50	-		61	72	39	33	100	MV Very High Plasticity
LO5		B	2.50	-		54	67	35	32	100	MH High Plasticity
LO5		B	5.00	-		62	77	42	35	100	MV Very High Plasticity
LO5		B	8.50	-		57	66	29	37	100	CH High Plasticity
LO5		B	11.50	-		41	61	35	26	100	MH High Plasticity
LO5		B	13.00	-		50	61	30	31	100	CH High Plasticity
LO5		B	15.50	-		37	67	39	28	95	MH High Plasticity
MO1		B	1.00	-		56	61	31	30	100	CH High Plasticity
MO1		B	3.50	-		29					
MO1		B	5.50	-		34	52	29	23	100	MH High Plasticity
MO1		B	10.00	-		57	65	33	32	100	MH High Plasticity
MO1		B	13.00	-		46					
MO1		B	13.50	-		52	62	28	34	100	CH High Plasticity
MO1		B	16.00	-		49	68	31	37	97	CH High Plasticity
MO2		B	1.00	-		62					
MO2		B	3.50	-		48	57	28	29	100	CH High Plasticity
MO2		B	6.50	-		30					
MO2		B	8.00	-		34	39	16	23	100	CI Intermediate Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	22/07/2017	Wayne Honey	W. Honey
DB	Approved	23/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
MO2		B	9.50	-		Grey SILT/CLAY
MO2		B	12.50	-		Grey clayey SILT
MO2		B	16.40	-		Brown sandy silty clayey fine to coarse GRAVEL
MO3		B	1.00	-		Grey SILT/CLAY
MO3		B	2.50	-		Greyish brown clayey SILT
MO3		B	7.00	-		Grey SILT/CLAY
MO3		B	9.50	-		Greyish brown silty CLAY
MO3		B	11.00	-		Grey SILT/CLAY
MO3		B	14.00	-		Greyish brown silty CLAY
MO4		B	1.50	-		Grey clayey SILT
MO4		B	7.00	-		Grey sandy clayey SILT
MO4		B	10.00	-		Brown slightly sandy clayey SILT
MO4		B	13.50	-		Brown slightly sandy SILT/CLAY
MO4		B	15.00	-		Grey clayey SILT
MO4		B	15.80	-		Brown fine to coarse gravelly sandy SILT/CLAY
MO4		B	17.30	-		Brown slightly sandy fine to coarse GRAVEL
MO5		B	2.50	-		Grey clayey SILT
MO5		B	5.50	-		Grey clayey SILT
MO5		B	6.50	-		Grey SILT/CLAY
MO5		B	12.50	-		Grey clayey SILT
MO5		B	14.70	-		Brown slightly sandy silty clayey fine to coarse GRAVEL
MO5		B	22.40	-		Brown slightly silty sandy fine to coarse GRAVEL
MO6		B	0.50	-		Grey SILT/CLAY
MO6		B	3.00	-		Grey silty CLAY

Operators	Checked	22/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	23/07/2017	Ben Sharp	

UKAS TESTING
2788

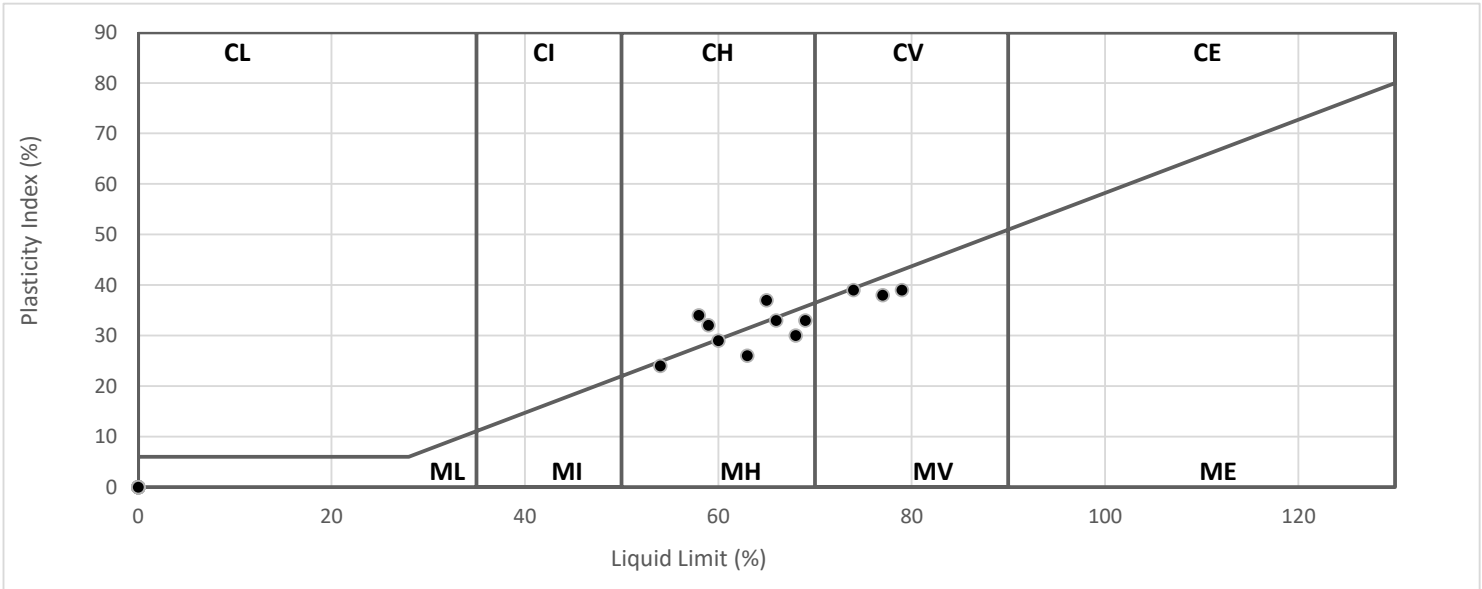
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)

Contract Number	**35579**
Site Name	**Foynes Port**

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
MO2		B	9.50	-		41					
MO2		B	12.50	-		49	69	36	33	100	MH High Plasticity
MO2		B	16.40	-		21					
MO3		B	1.00	-		50					
MO3		B	2.50	-		55	54	30	24	100	MH High Plasticity
MO3		B	7.00	-		28					
MO3		B	9.50	-		36	59	27	32	100	CH High Plasticity
MO3		B	11.00	-		37					
MO3		B	14.00	-		48	65	28	37	100	CH High Plasticity
MO4		B	1.50	-		50	60	31	29	100	MH High Plasticity
MO4		B	7.00	-		63	74	35	39	89	MV Very High Plasticity
MO4		B	10.00	-		66	66	33	33	100	MH High Plasticity
MO4		B	13.50	-		56					
MO4		B	15.00	-		58	77	39	38	100	MV Very High Plasticity
MO4		B	15.80	-		85					
MO4		B	17.30	-		6.7					
MO5		B	2.50	-		61	68	38	30	100	MH High Plasticity
MO5		B	5.50	-		65	79	40	39	100	MV Very High Plasticity
MO5		B	6.50	-		45					
MO5		B	12.50	-		53	63	37	26	100	MH High Plasticity
MO5		B	14.70	-		14					
MO5		B	22.40	-		5.6					
MO6		B	0.50	-		34					
MO6		B	3.00	-		50	58	24	34	100	CH High Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	22/07/2017	Wayne Honey	W. Honey
DB	Approved	23/07/2017	Ben Sharp	

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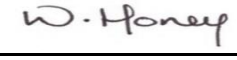
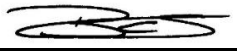
GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
MO6		B	9.50	-		Grey silty CLAY
MO6		B	12.50	-		Grey clayey SILT
MO6		B	14.00	-		Brown slightly silty sandy fine to coarse GRAVEL
MO7		B	2.00	-		Grey silty CLAY
MO7		B	6.50	-		Grey silty fine to coarse GRAVEL
MO7		B	18.50	-		Grey SILT/CLAY
MO8		B	1.00	-		Brown sandy clayey SILT
MO8		B	3.50	-		Brownish grey clayey SILT
MO8		B	9.00	-		Brownish grey silty CLAY
MO8		B	12.00	-		Brown clayey SILT
MO8		B	13.50	-		Brown slightly fine to coarse gravelly sandy SILT/CLAY
MO8		B	21.40	-		Brown slightly sandy fine to coarse GRAVEL
M10		B	0.00	-		Grey clayey SILT
M10		B	2.00	-		Grey SILT/CLAY
M10		B	4.50	-		Grey clayey SILT
M10		B	9.50	-		Grey slightly silty CLAY
M10		B	12.50	-		Grey clayey SILT
M10		B	13.30	-		Grey SILT/CLAY
M10		B	18.50	-		Grey SILT/CLAY
M11		B	1.50	-		Grey silty CLAY
M11		B	2.50	-		Grey clayey SILT
M11		B	4.50	-		Grey silty CLAY
M11		B	6.50	-		Grey slightly silty CLAY
M11		B	11.50	-		Grey slightly silty CLAY

Operators	Checked	22/07/2017	Wayne Honey	
RO/MH	Approved	23/07/2017	Ben Sharp	

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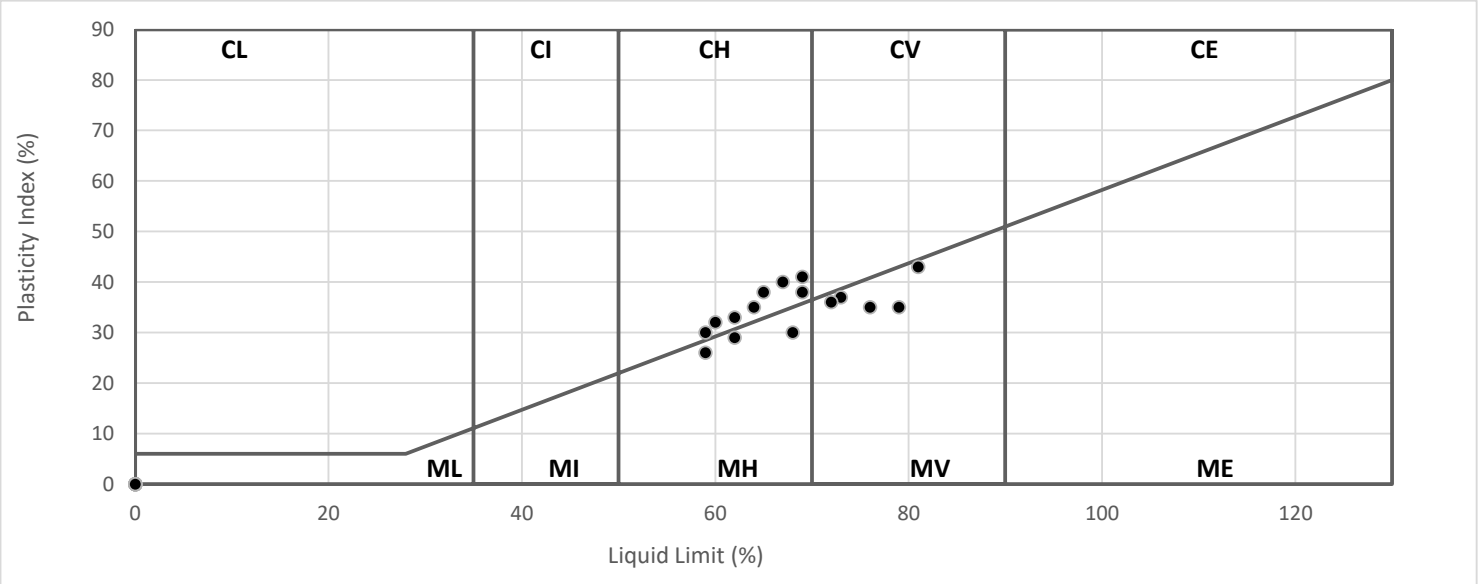
GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
MO6		B	9.50	-		42	67	27	40	100	CH High Plasticity
MO6		B	12.50	-		63	73	36	37	100	MV Very High Plasticity
MO6		B	14.00	-		26					
MO7		B	2.00	-		47	60	28	32	100	CH High Plasticity
MO7		B	6.50	-		2.5		NP		8	
MO7		B	18.50	-		2.5					
MO8		B	1.00	-		59	76	41	35	99	MV Very High Plasticity
MO8		B	3.50	-		57	62	33	29	100	MH High Plasticity
MO8		B	9.00	-		51	59	29	30	100	CH High Plasticity
MO8		B	12.00	-		58	72	36	36	100	MV Very High Plasticity
MO8		B	13.50	-		36					
MO8		B	21.40	-		5.6					
M10		B	0.00	-		69	79	44	35	100	MV Very High Plasticity
M10		B	2.00	-		51					
M10		B	4.50	-		58	68	38	30	100	MH High Plasticity
M10		B	9.50	-		39	65	27	38	100	CH High Plasticity
M10		B	12.50	-		61	81	38	43	100	MV Very High Plasticity
M10		B	13.30	-		55					
M10		B	18.50	-		5.6					
M11		B	1.50	-		53	69	31	38	100	CH High Plasticity
M11		B	2.50	-		49	59	33	26	100	MH High Plasticity
M11		B	4.50	-		43	62	29	33	100	CH High Plasticity
M11		B	6.50	-		38	64	29	35	100	CH High Plasticity
M11		B	11.50	-		51	69	28	41	100	CH High Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	22/07/2017	Wayne Honey	W. Honey
DB	Approved	23/07/2017	Ben Sharp	

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GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
M11		B	13.00	-		Grey clayey SILT
M11		B	14.50	-		Grey SILT/CLAY
M12		B	0.00	-		Grey clayey SILT
M12		B	1.50	-		Grey clayey SILT
M12		B	3.50	-		Grey clayey SILT
M12		B	5.50	-		Grey clayey SILT
M12		B	8.00	-		Grey silty CLAY
M12		B	11.40	-		Dark grey clayey SILT
M15		B	1.00	-		Grey sandy silty CLAY
M15		B	4.50	-		Brown sandy clayey SILT
M15		B	7.00	-		Brown sandy SILT/CLAY
M15		B	9.50	-		Brown slightly fine to medium gravelly sandy SILT/CLAY
M15		B	3.50	-		Grey SILT/CLAY
M15		B	5.00	-		Grey SILT/CLAY
M15		B	5.50	-		Grey clayey SILT
M15		B	12.50	-		Grey silty clayey fine to coarse sandy fine to coarse GRAVEL
M07		B	8.00	-		Brown slightly fine to medium gravelly sandy SILT/CLAY
M07		B	11.00	-		Grey silty CLAY
M11		B	9.50	-		Grey silty CLAY
				-		
				-		
				-		
				-		
				-		

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

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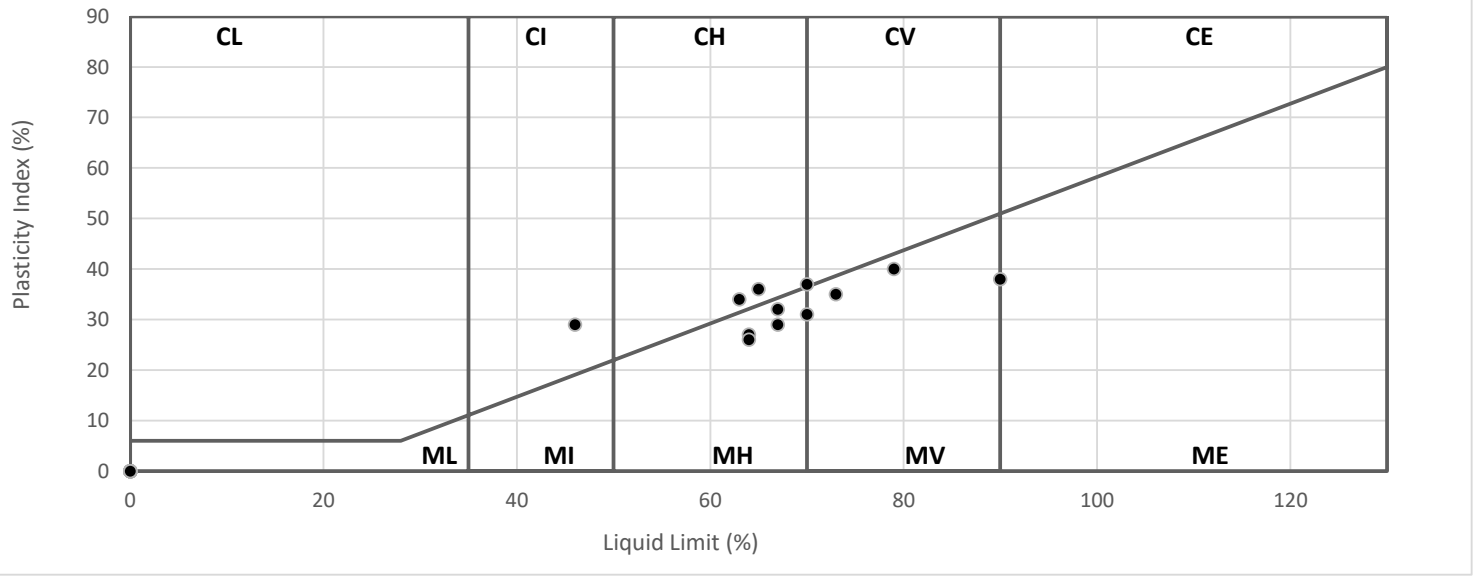
GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**35579**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
M11		B	13.00	-		59	64	37	27	100	MH High Plasticity
M11		B	14.50	-		6.8					
M12		B	0.00	-		63	70	39	31	100	MH/V High/HighPlasticity
M12		B	1.50	-		60	67	35	32	100	MH High Plasticity
M12		B	3.50	-		58	79	39	40	100	MV Very High Plasticity
M12		B	5.50	-		60	64	38	26	100	MH High Plasticity
M12		B	8.00	-		37	46	17	29	100	CI Intermediate Plasticity
M12		B	11.40	-		83	90	52	38	100	/E Very/Extremely High Plast
M15		B	1.00	-		57	70	33	37	99	CH/V High/HighPlasticity
M15		B	4.50	-		54	67	38	29	99	MH High Plasticity
M15		B	7.00	-		48					
M15		B	9.50	-		37					
M15		B	3.50	-		48					
M15		B	5.00	-		45					
M15		B	5.50	-		52	73	38	35	100	MV Very High Plasticity
M15		B	12.50	-		11					
M07		B	8.00	-		29					
M07		B	11.00	-		42	63	29	34	100	CH High Plasticity
M11		B	9.50	-		44	65	29	36	100	CH High Plasticity
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	07/08/2017	Wayne Honey	W. Honey
DB	Approved	08/08/2017	Ben Sharp	

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SUMMARY OF SOIL DENSITY TESTS
(BS 1377 : PART 2 : 7/8 : 1990)

Contract Number	**35579**
Site Name	**Foynes Port**

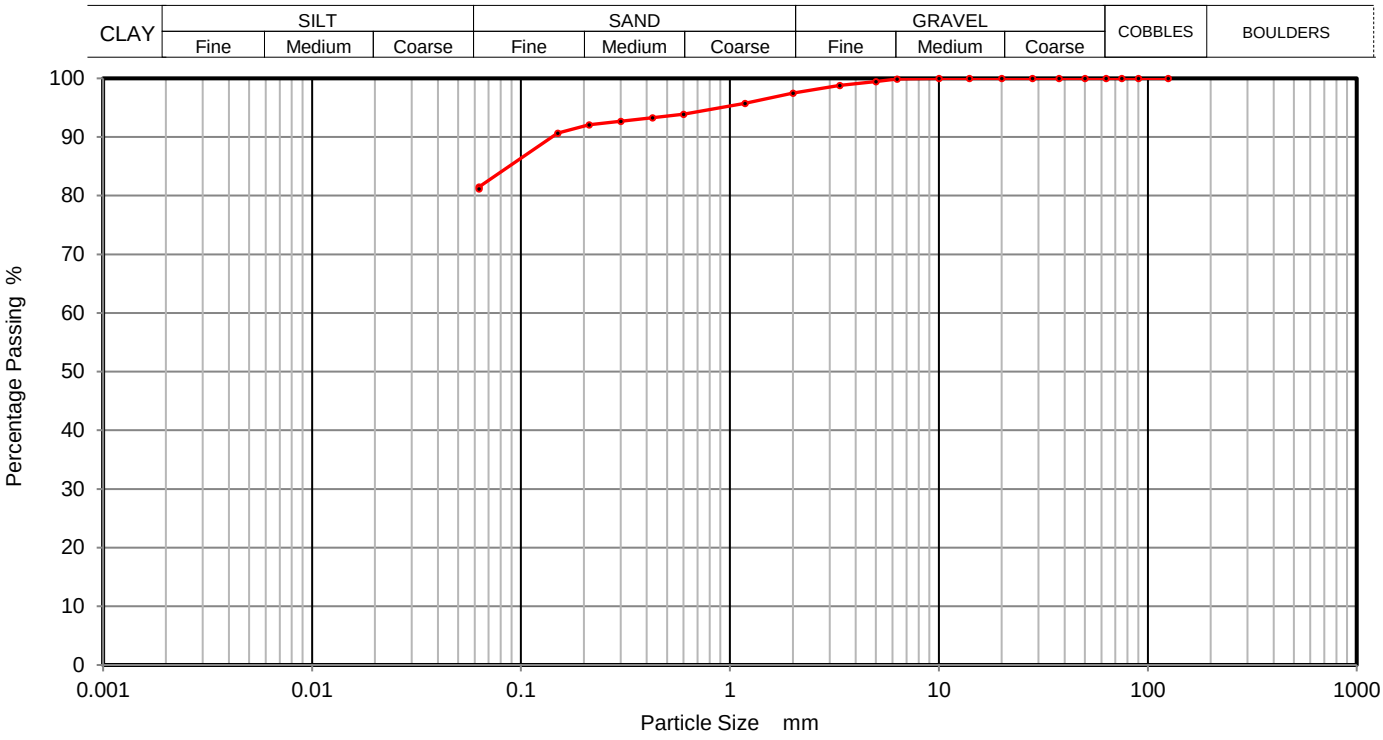
Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Compaction Method	Particle Density	Estimated Air Voids	Remarks
L04		UT	2.00	-		66	1.67	1.01	Natural			
L04		P	3.00	-		61	1.84	1.14	Natural			
L04		UT	6.50	-		35	1.60	1.18	Natural			
L05		UT	1.00	-		97	1.28	0.65	Natural			
L05		P	4.00	-		55	1.67	1.08	Natural			
L05		UT	11.00	-		57	1.72	1.10	Natural			
L05		UT	14.00	-		67	2.12	1.27	Natural			
M01		P	6.00	-		27	1.96	1.54	Natural			
M02		P	2.00	-		33	1.92	1.44	Natural			
M02		P	5.00	-		39	1.90	1.37	Natural			
M03		UT	1.00	-		51	1.77	1.17	Natural			
M03		UT	4.00	-		51	1.70	1.13	Natural			
M03		P	5.00	-		42	1.83	1.29	Natural			
M03		UT	9.00	-		27	1.34	1.06	Natural			
M03		UT	15.00	-		46	1.75	1.20	Natural			
M04		UT	3.50	-		45	1.51	1.04	Natural			
M04		P	4.00	-		49	1.75	1.17	Natural			
M04		UT	9.50	-		36	1.91	1.40	Natural			
M05		UT	3.00	-		103	1.67	0.82	Natural			
M05		UT	5.00	-		42	1.54	1.09	Natural			
M05		P	7.00	-		44	1.86	1.29	Natural			
M05		UT	9.00	-		50	1.89	1.26	Natural			
M05		UT	12.00	-		48	1.78	1.20	Natural			
M06		UT	7.50	-		43	1.86	1.30	Natural			
M06		P	8.50	-		35	1.76	1.30	Natural			
M06		UT	10.50	-		46	1.78	1.22	Natural			
M08		UT	2.00	-		53	1.76	1.15	Natural			
M08		UT	4.00	-		40	1.49	1.07	Natural			
M08		P	5.00	-		63	1.65	1.01	Natural			
M11		UT	3.00	-		45	1.48	1.02	Natural			
M11		P	6.50	-		33	1.86	1.40	Natural			
M11		UT	8.00	-		40	1.55	1.10	Natural			
M13		P	2.10	-		49	1.74	1.17	Natural			
M15		P	2.00	-		44	1.84	1.28	Natural			
M15		P	6.00	-		98	1.70	0.86	Natural			

Key	**Reported As**
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operators	Checked	02/08/2017	Wayne Honey	W. Honey
CA/JS	Approved	03/08/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	97		
1.18	96		
0.6	94		
0.425	93		
0.3	93		
0.212	92		
0.15	91		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	15
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

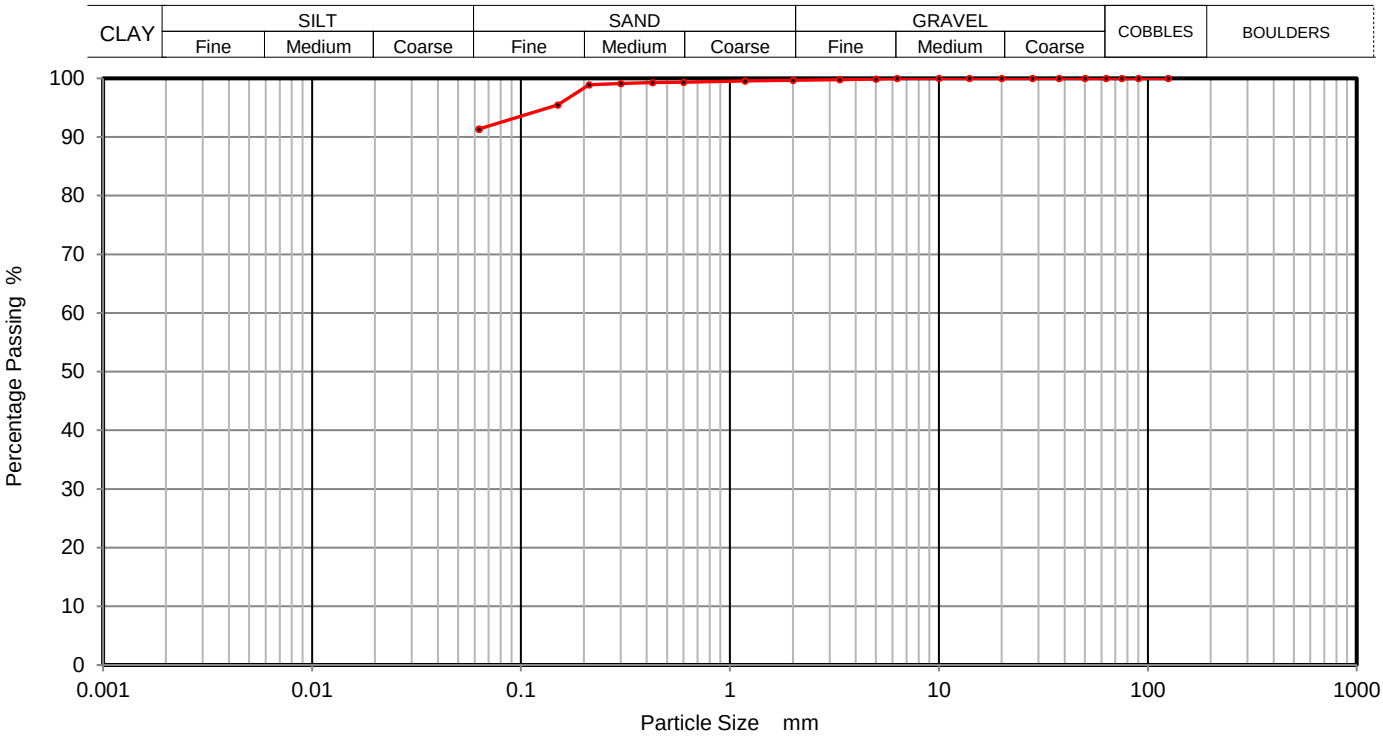
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine to coarse sandy SILT/CLAY	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	95		
0.063	91		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	9
Silt and Clay	91

Grading Analysis	
Uniformity Coefficient	

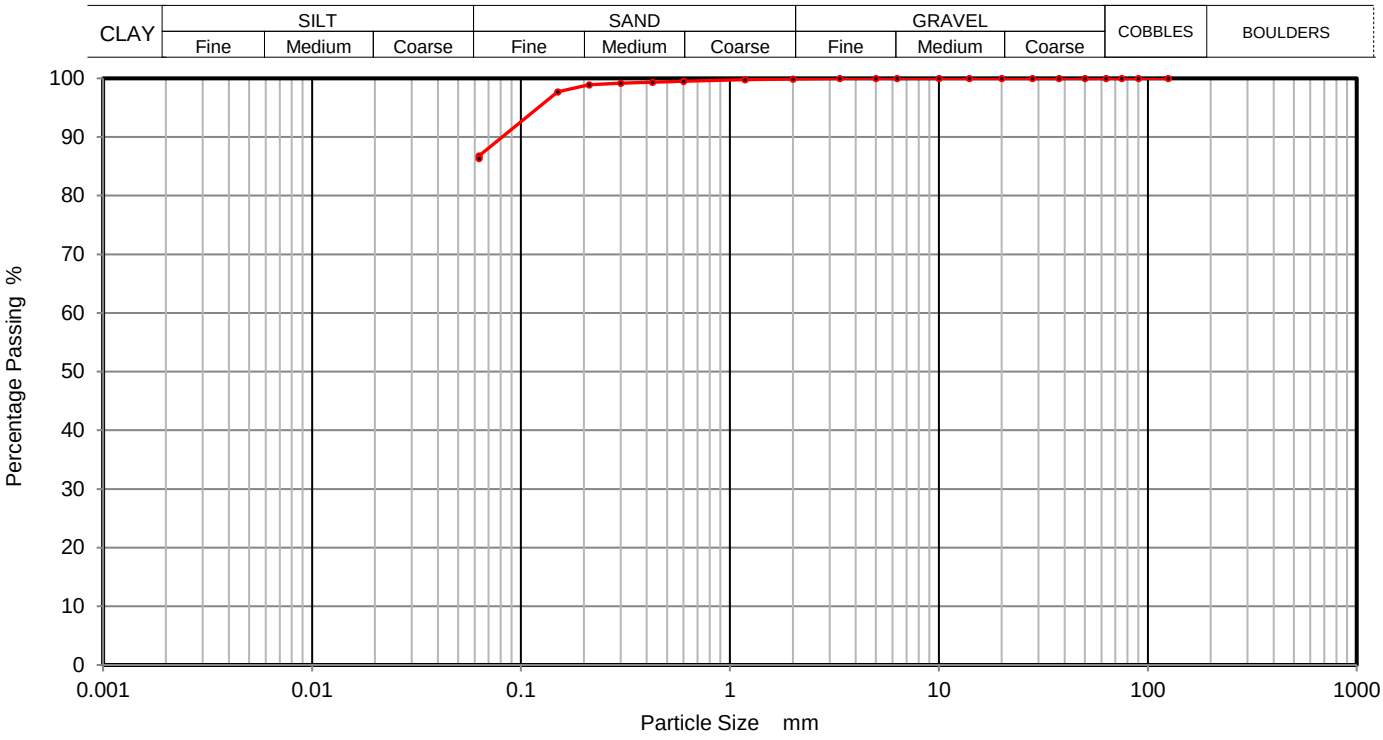
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine to coarse sandy SILT/CLAY	Depth Top	8.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

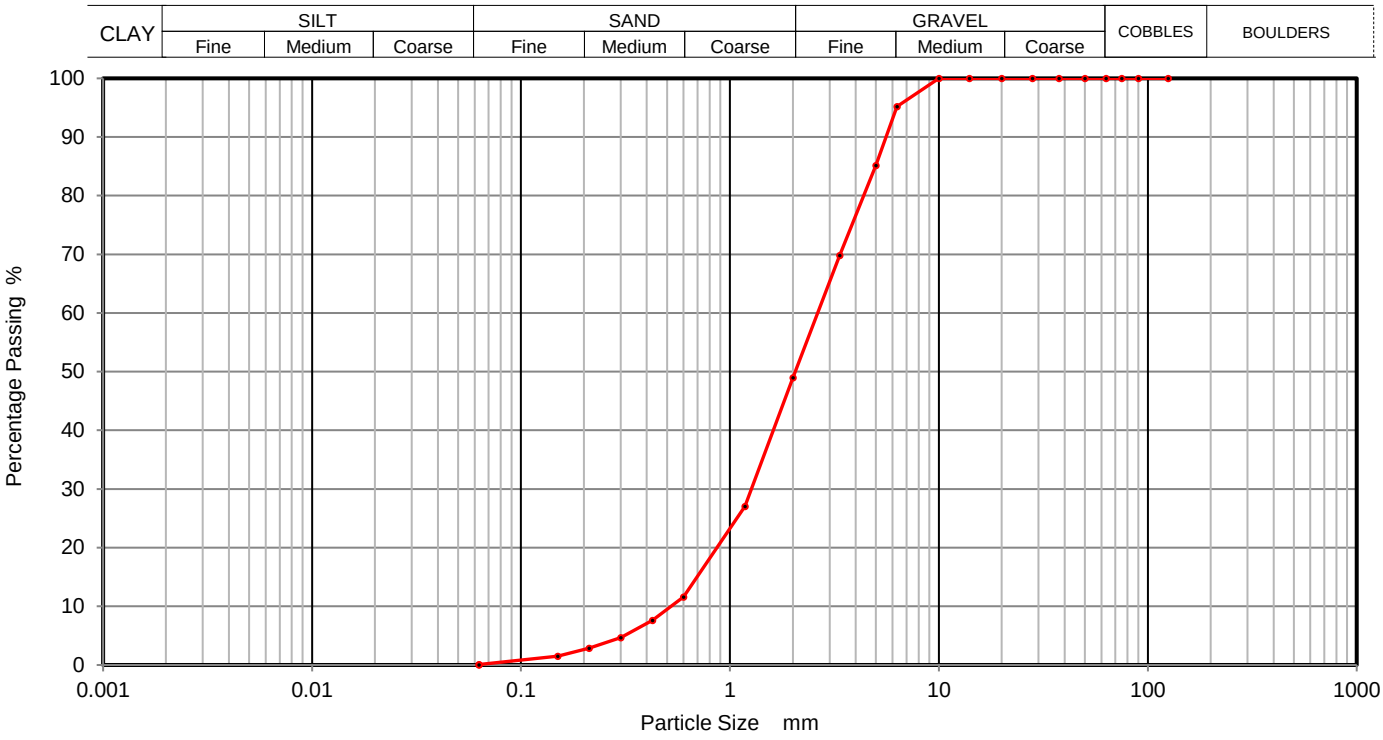
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy fine to medium GRAVEL	Depth Top	9.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	95		
5	85		
3.35	70		
2	49		
1.18	27		
0.6	12		
0.425	8		
0.3	5		
0.212	3		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	51
Sand	49
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

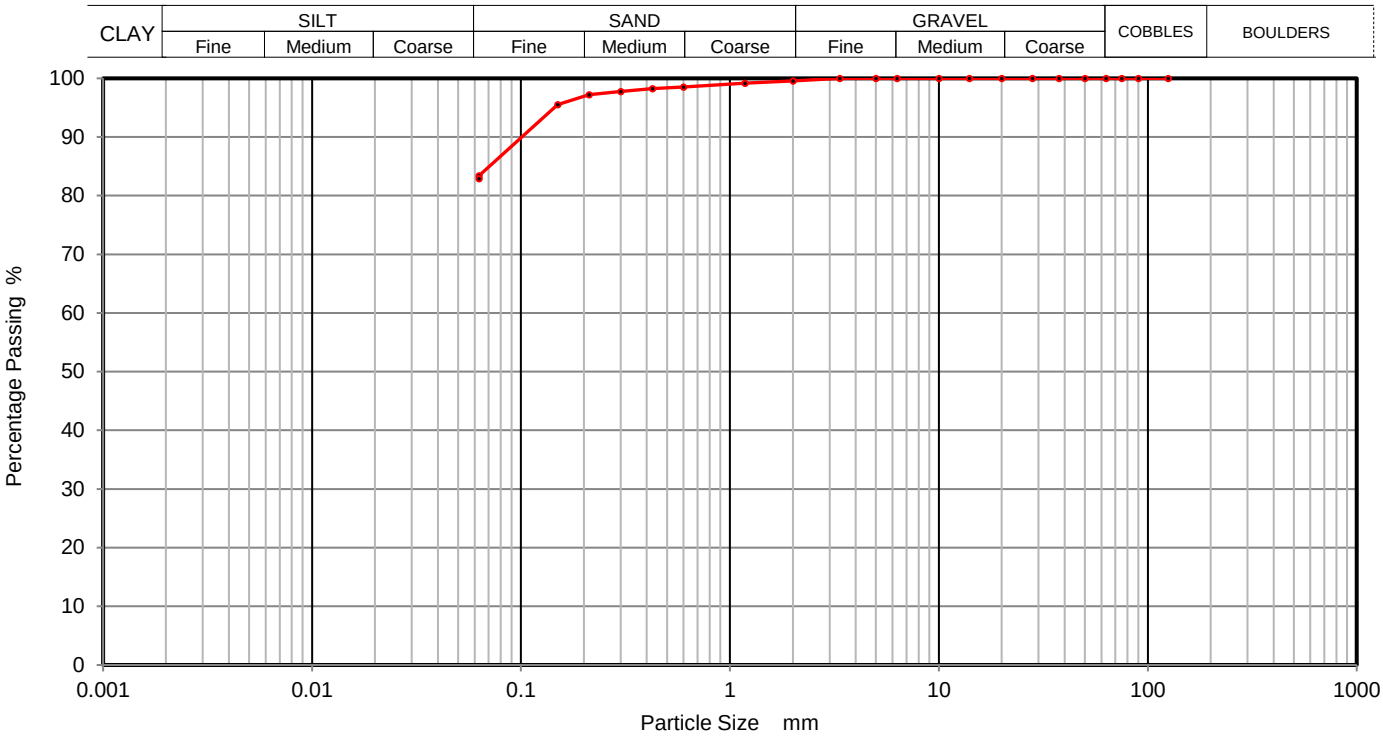
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	11.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

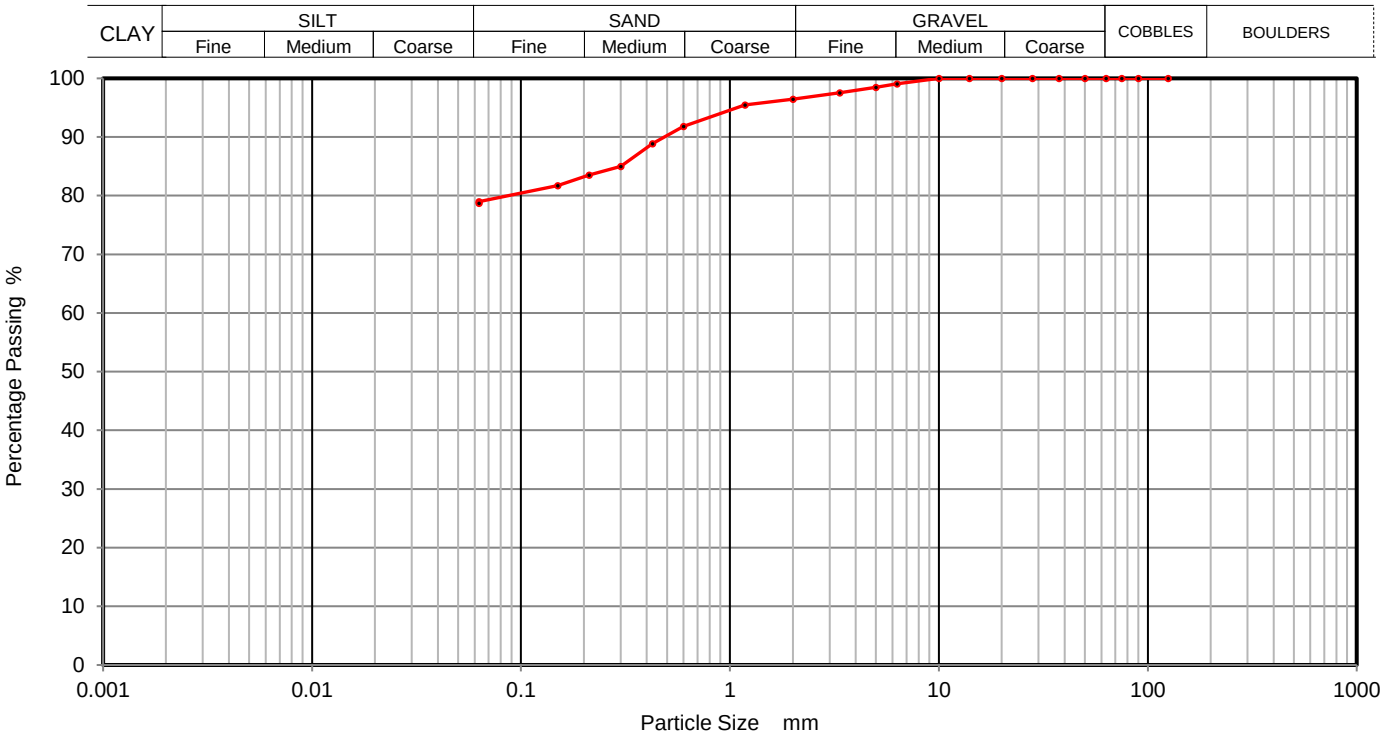
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	13.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	96		
1.18	95		
0.6	92		
0.425	89		
0.3	85		
0.212	84		
0.15	82		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	17
Silt and Clay	79

Grading Analysis	
Uniformity Coefficient	

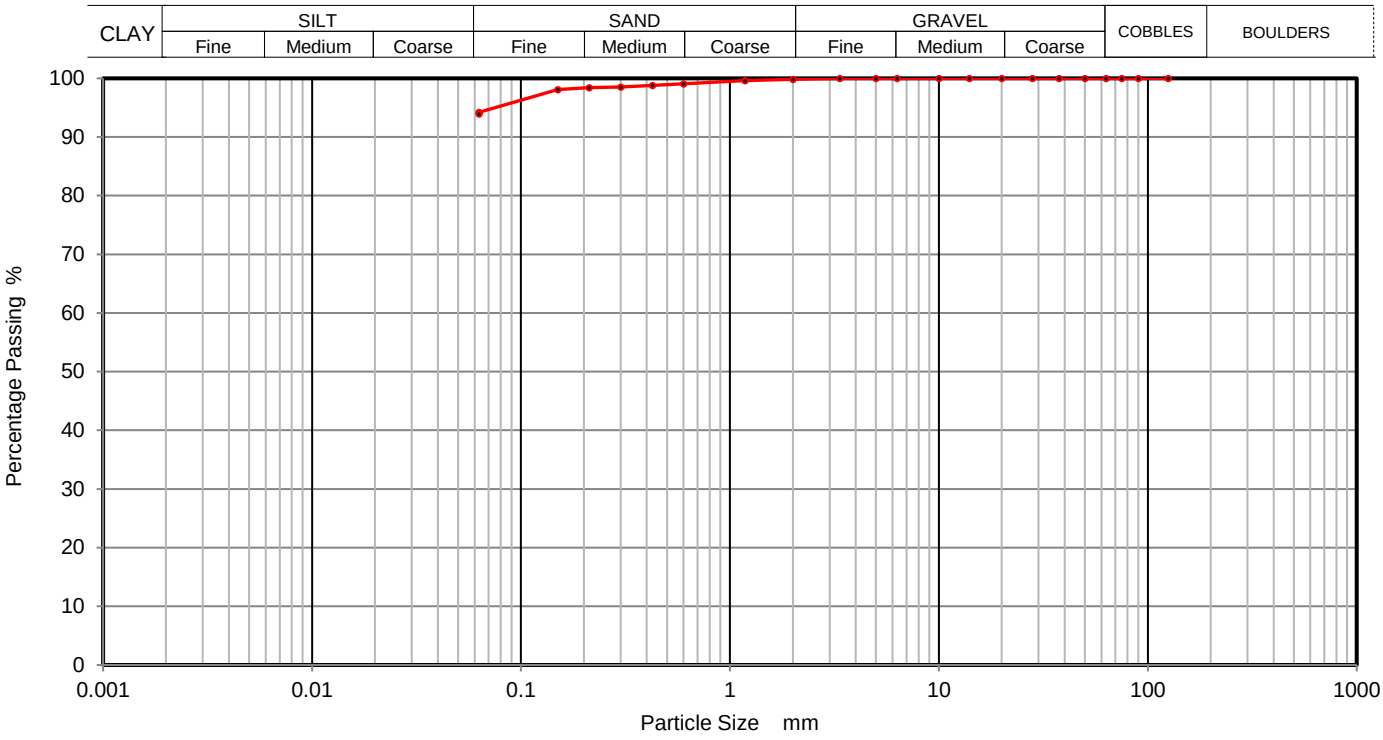
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	14.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	94		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	6
Silt and Clay	94

Grading Analysis	
Uniformity Coefficient	

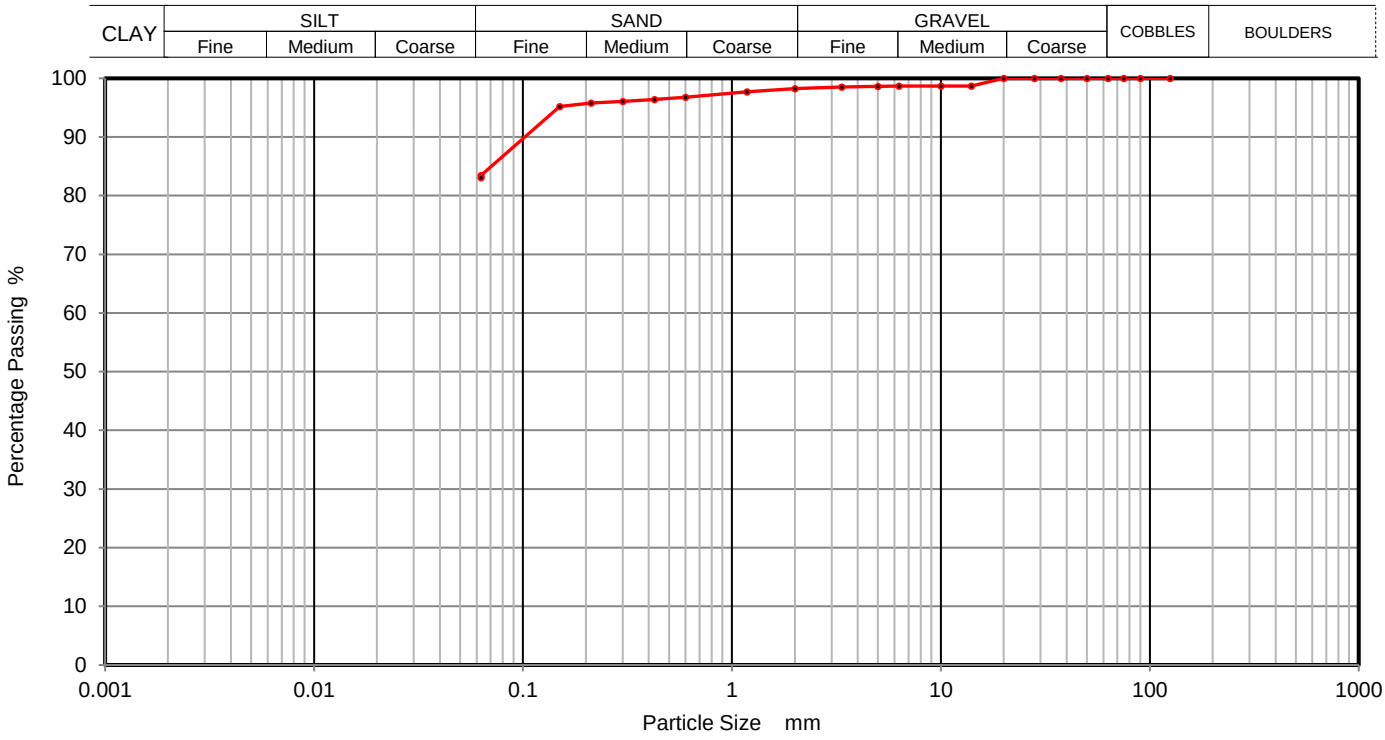
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	96		
0.3	96		
0.212	96		
0.15	95		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	15
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

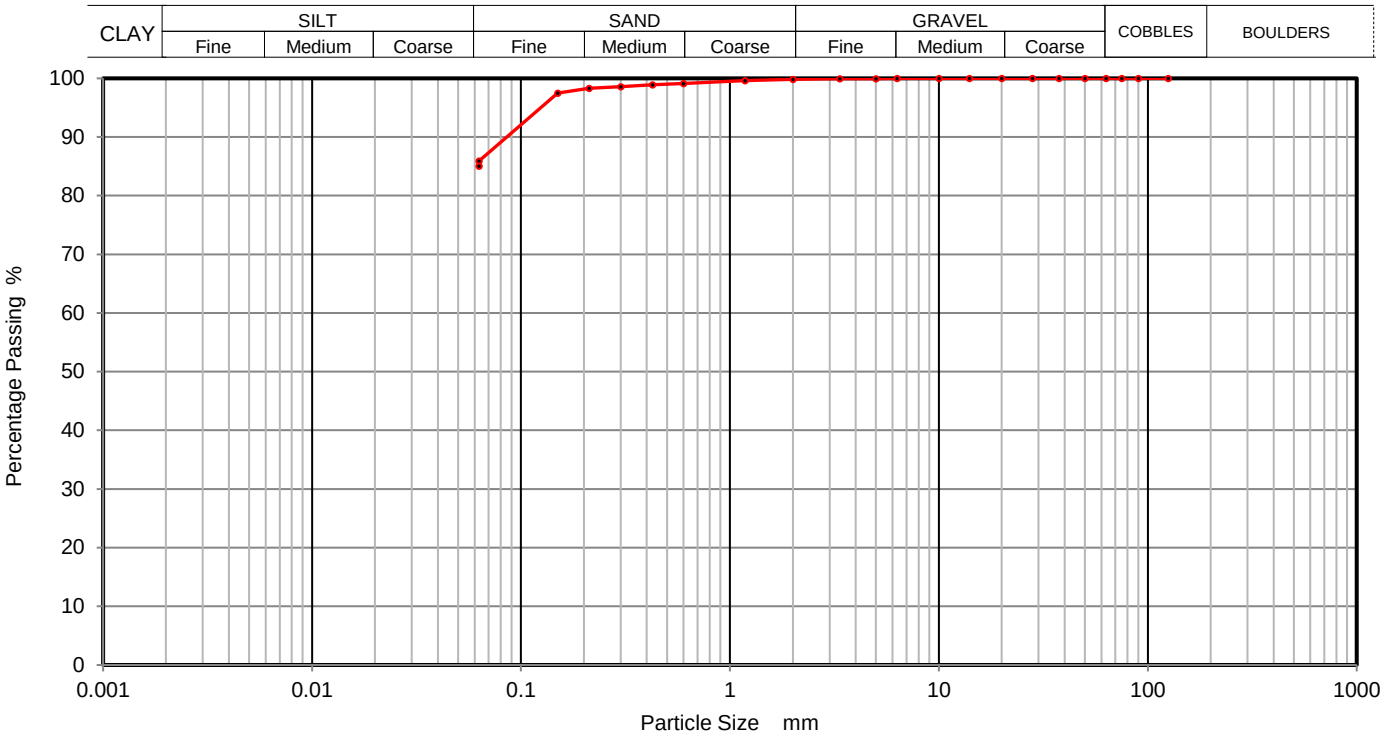
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	86		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	14
Silt and Clay	86

Grading Analysis	
Uniformity Coefficient	

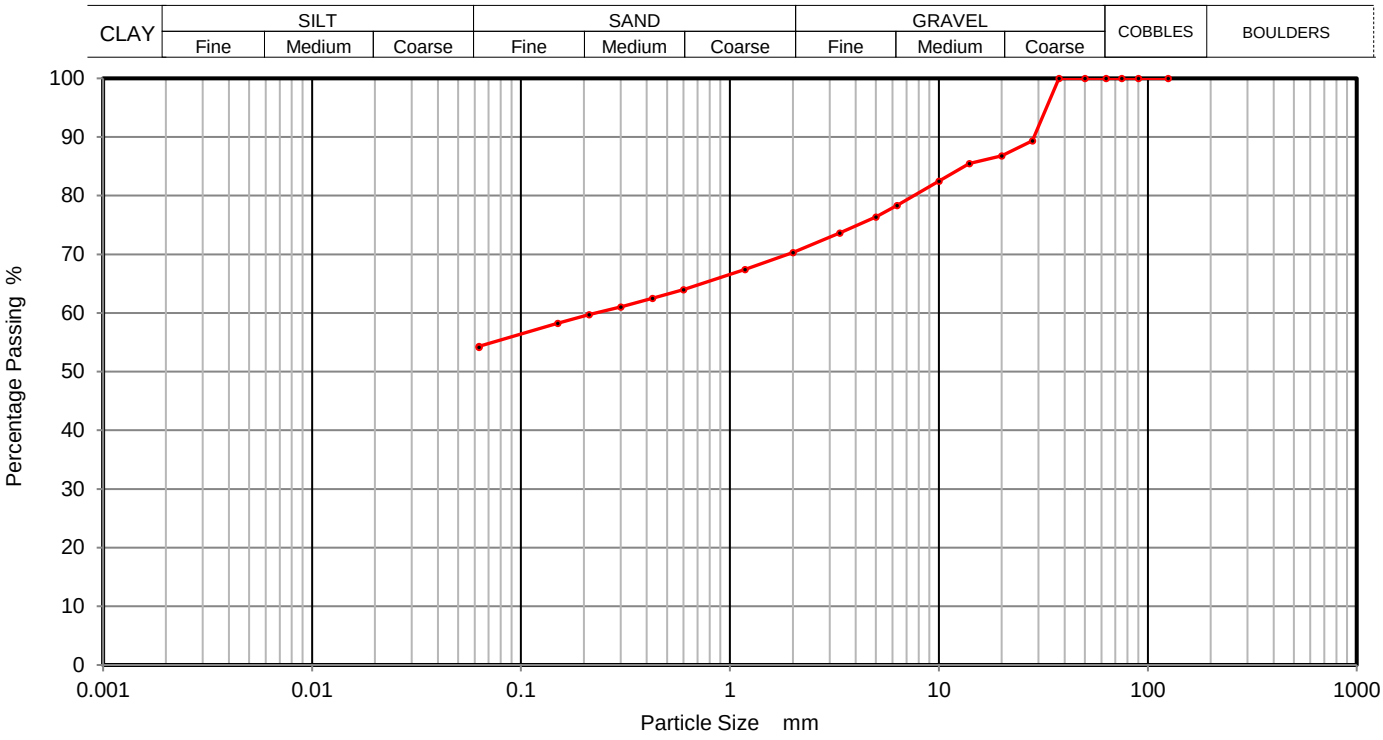
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy fine to coarse gravelly SILT/CLAY	Depth Top	6.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	89		
20	87		
14	85		
10	82		
6.3	78		
5	76		
3.35	74		
2	70		
1.18	67		
0.6	64		
0.425	63		
0.3	61		
0.212	60		
0.15	58		
0.063	54		

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	16
Silt and Clay	54

Grading Analysis	
Uniformity Coefficient	

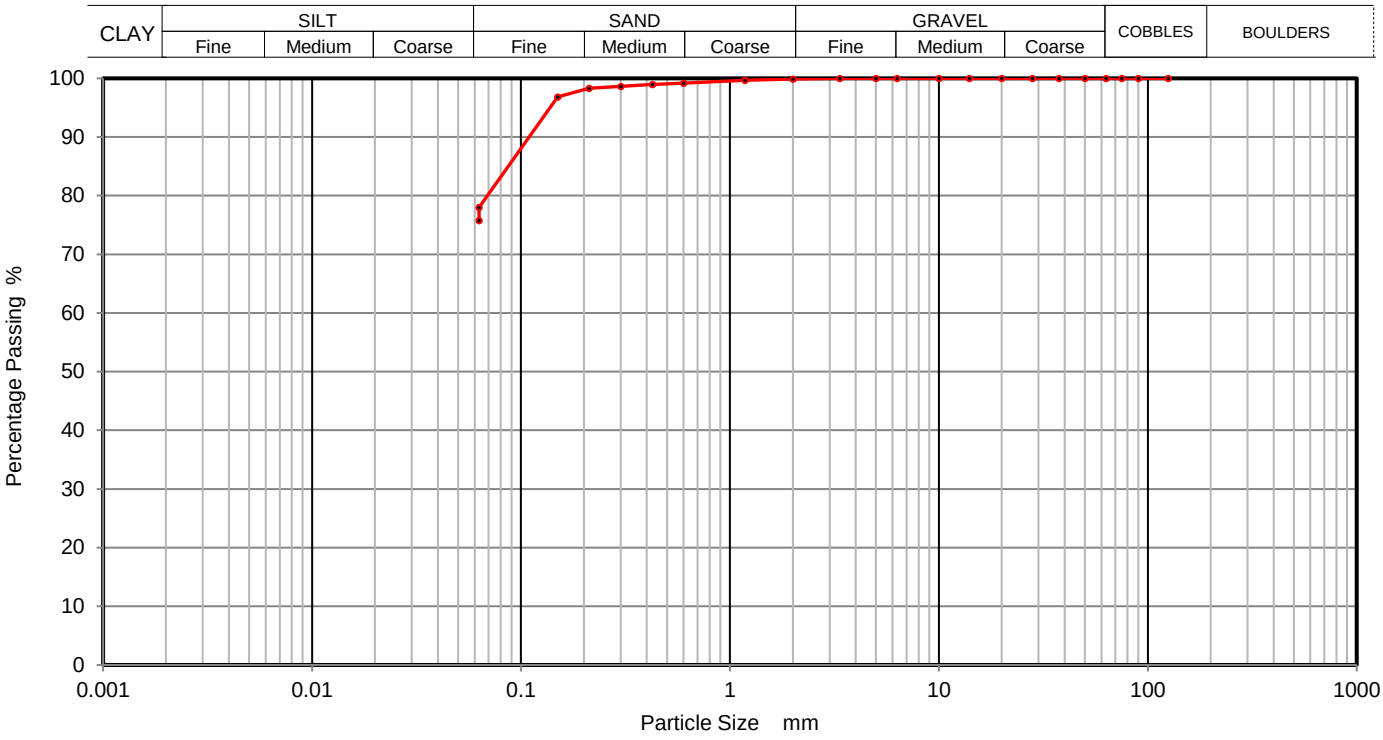
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	78		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	22
Silt and Clay	78

Grading Analysis	
Uniformity Coefficient	

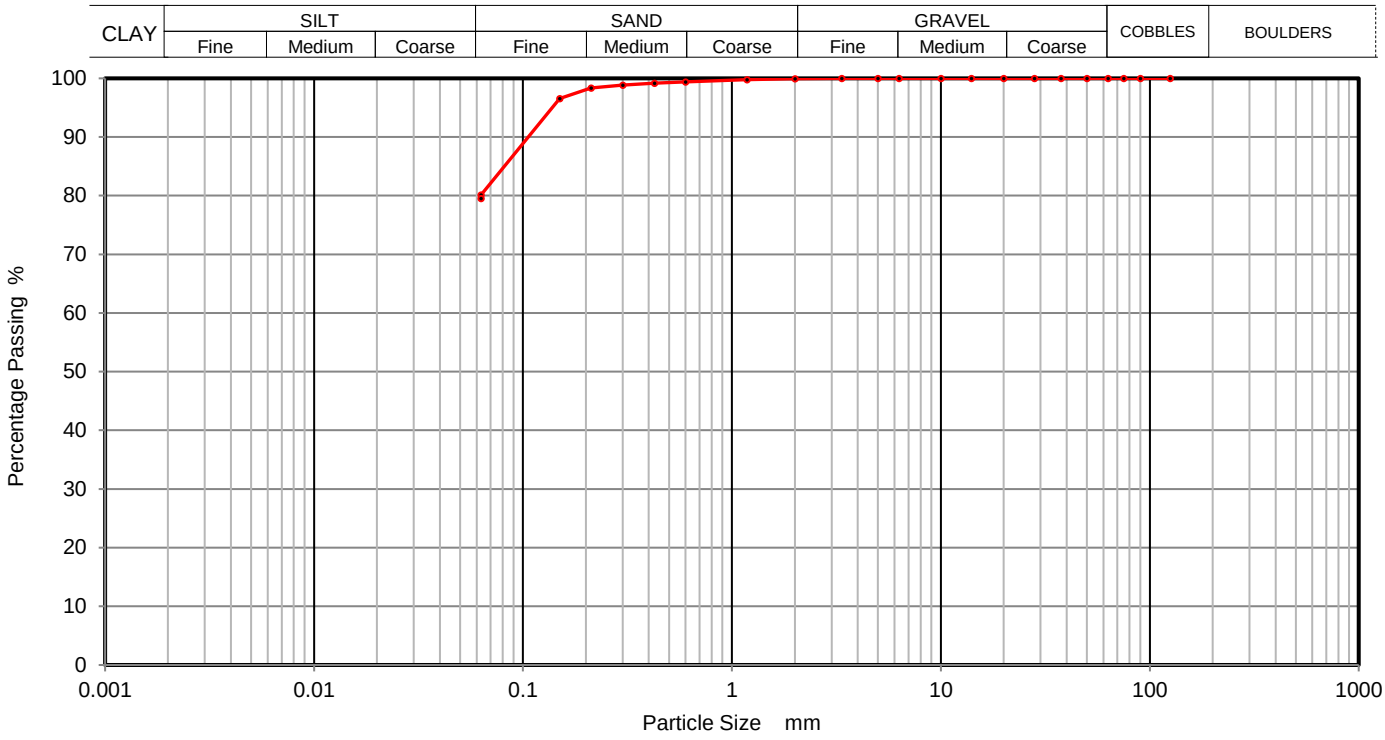
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	9.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	20
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

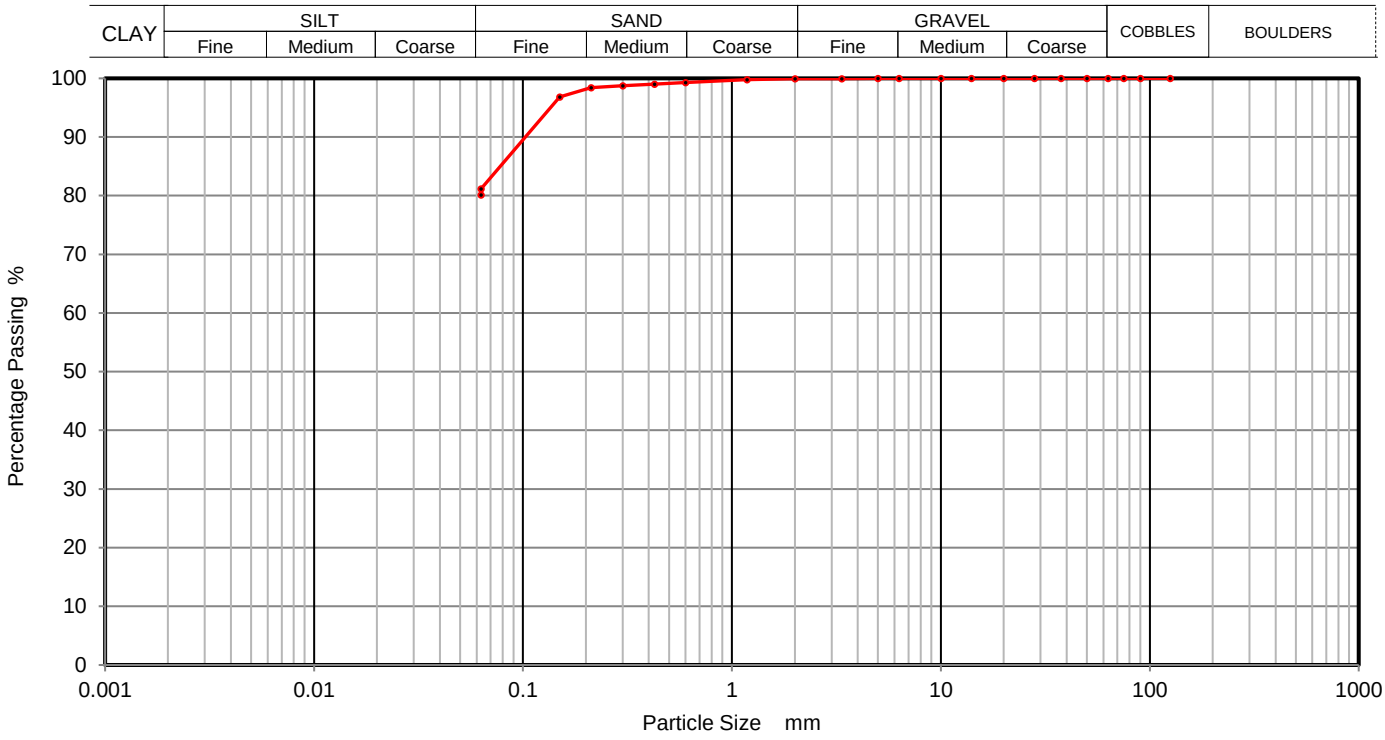
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	81		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	19
Silt and Clay	81

Grading Analysis	
Uniformity Coefficient	

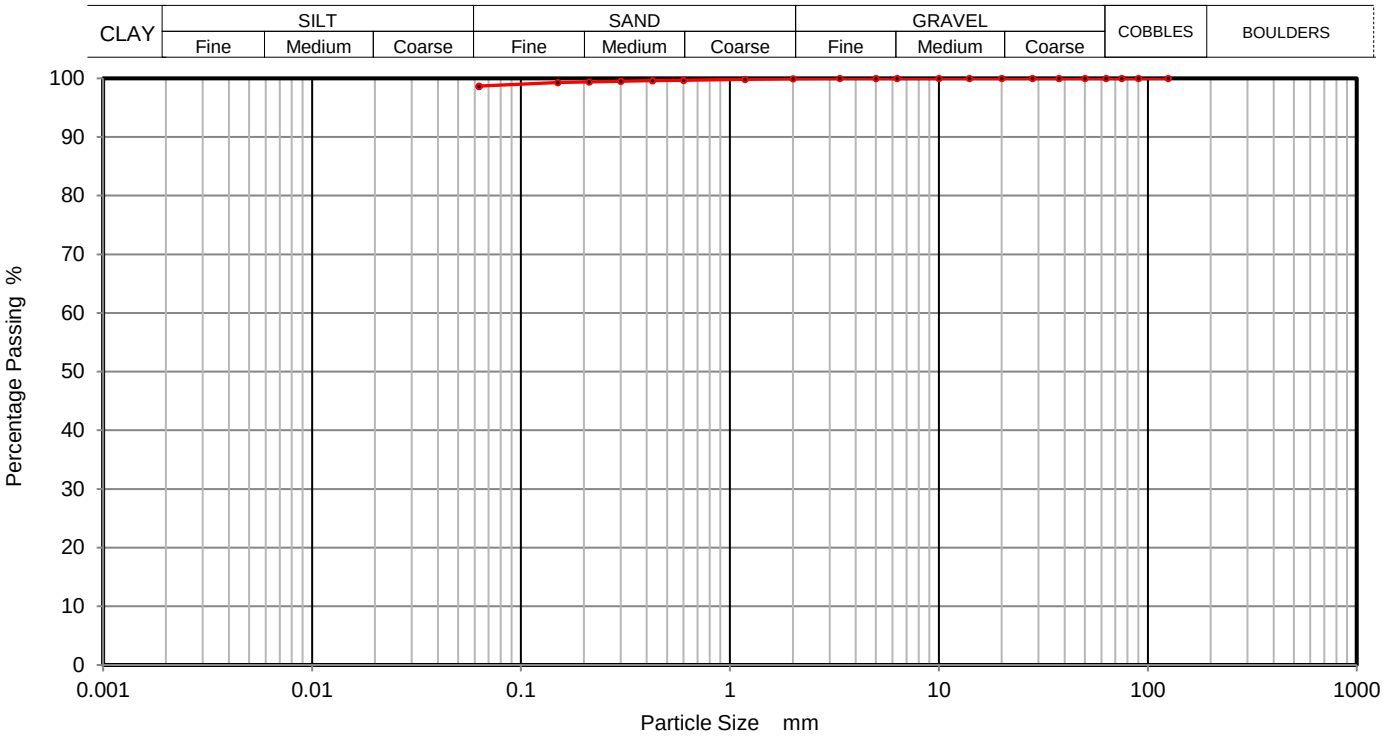
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	12.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

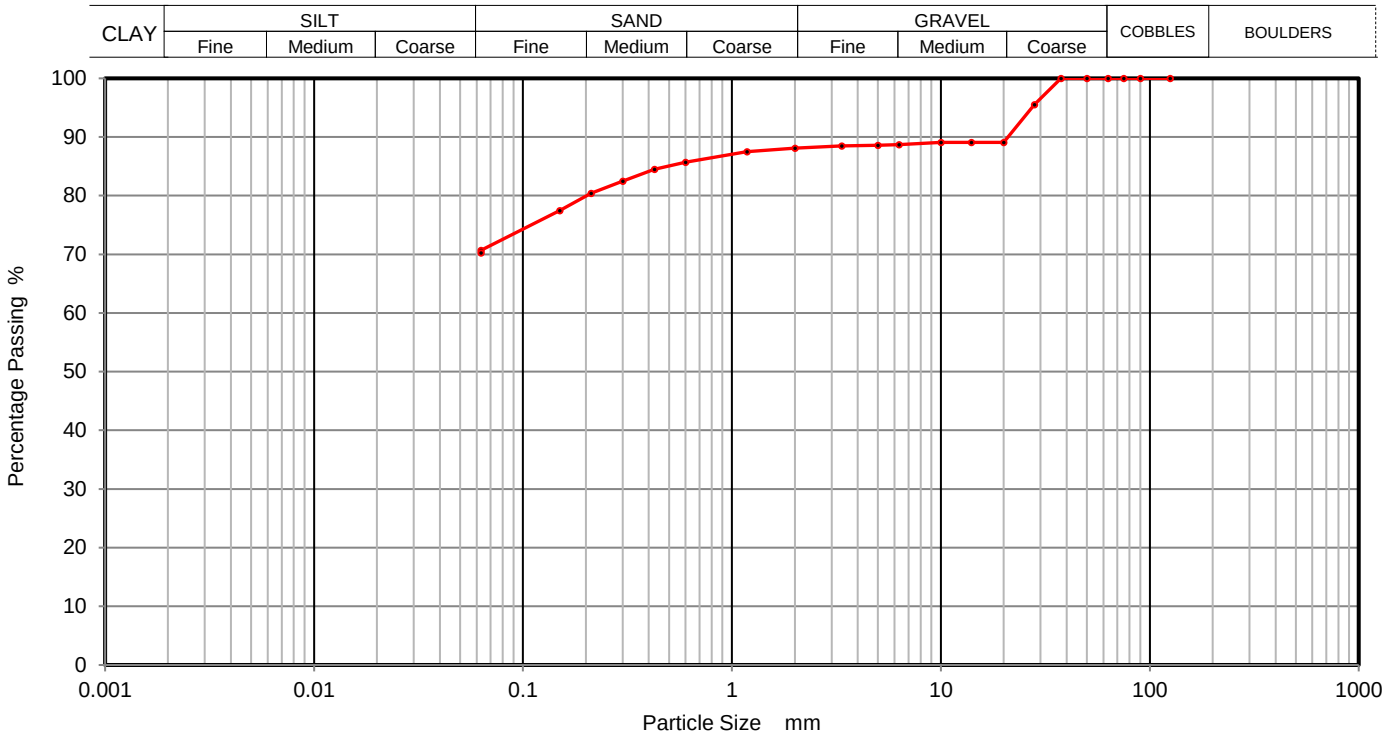
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse gravelly fine to coarse sandy SILT/CLAY	Depth Top	14.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	89		
14	89		
10	89		
6.3	89		
5	89		
3.35	88		
2	88		
1.18	87		
0.6	86		
0.425	84		
0.3	82		
0.212	80		
0.15	77		
0.063	71		

Sample Proportions	% dry mass
Cobbles	0
Gravel	12
Sand	17
Silt and Clay	71

Grading Analysis	
Uniformity Coefficient	

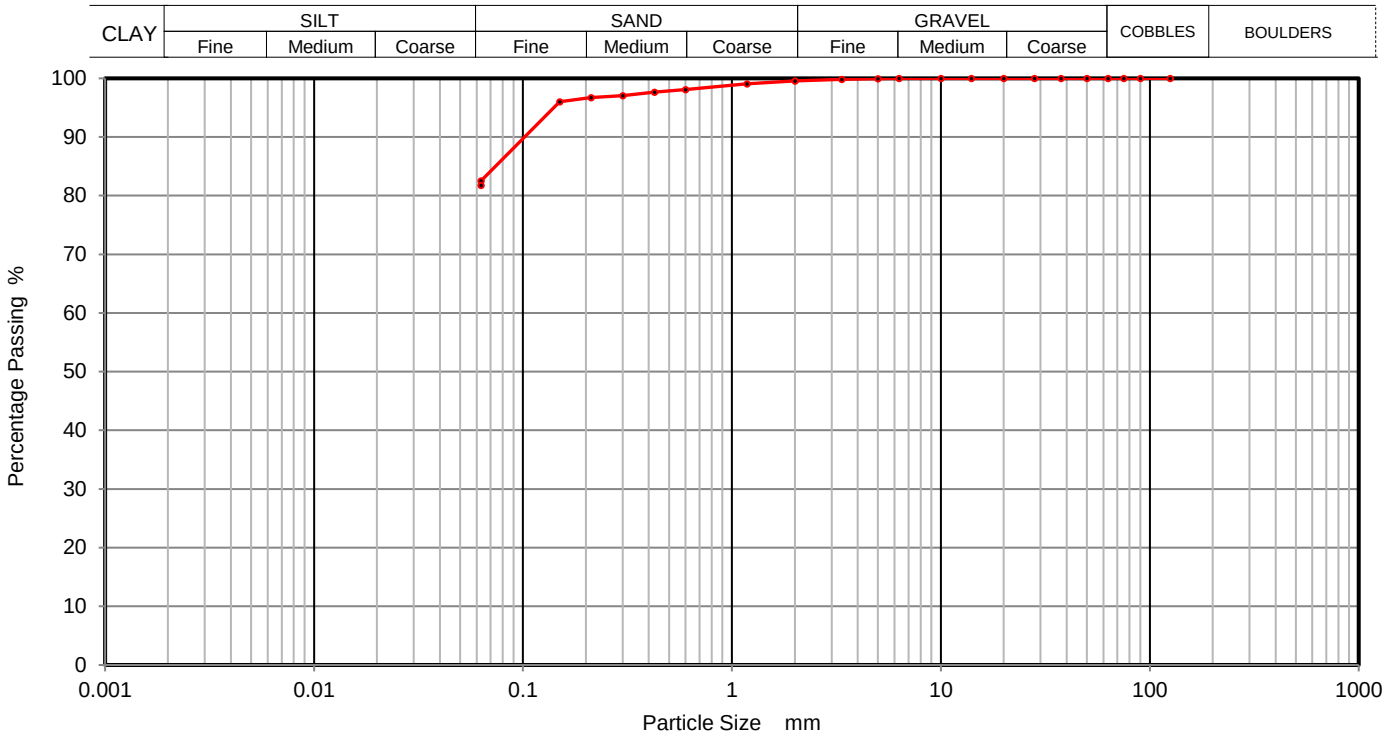
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	97		
0.15	96		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

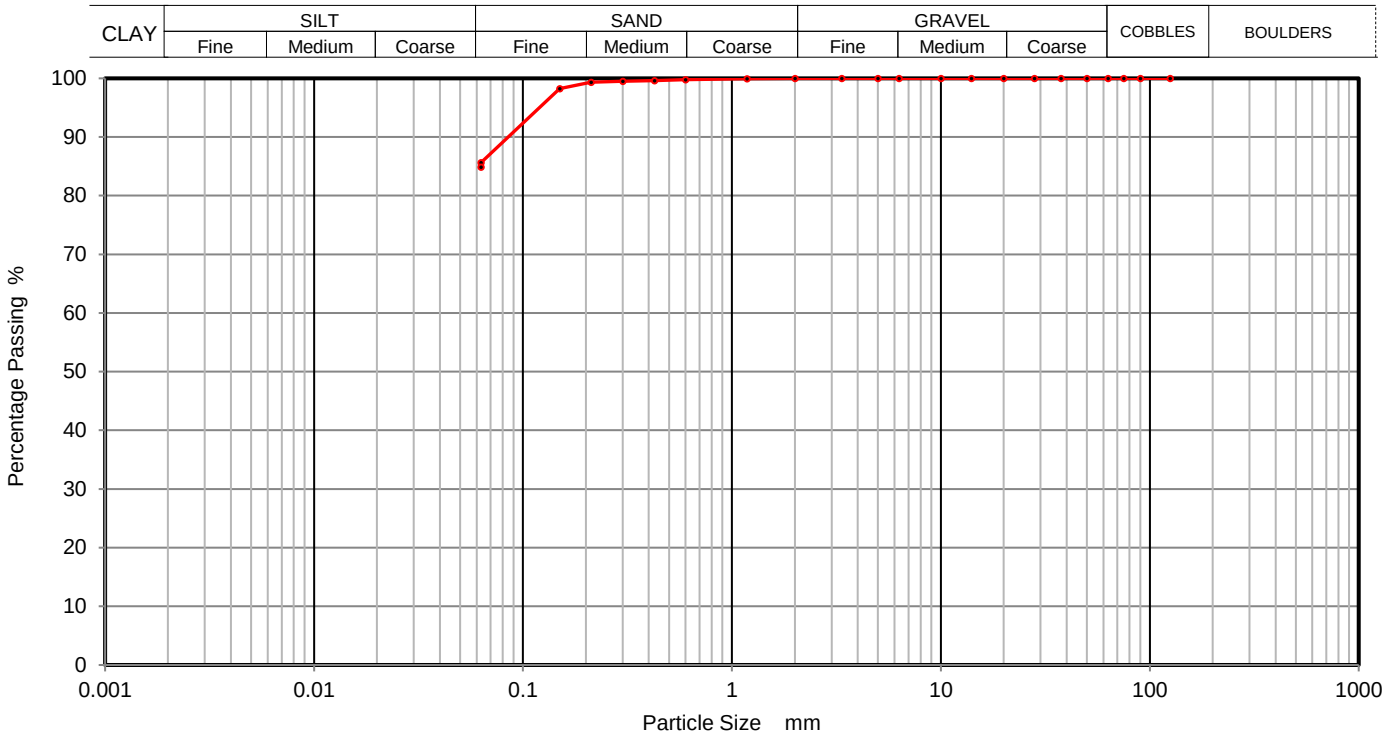
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	98		
0.063	86		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	14
Silt and Clay	86

Grading Analysis	
Uniformity Coefficient	

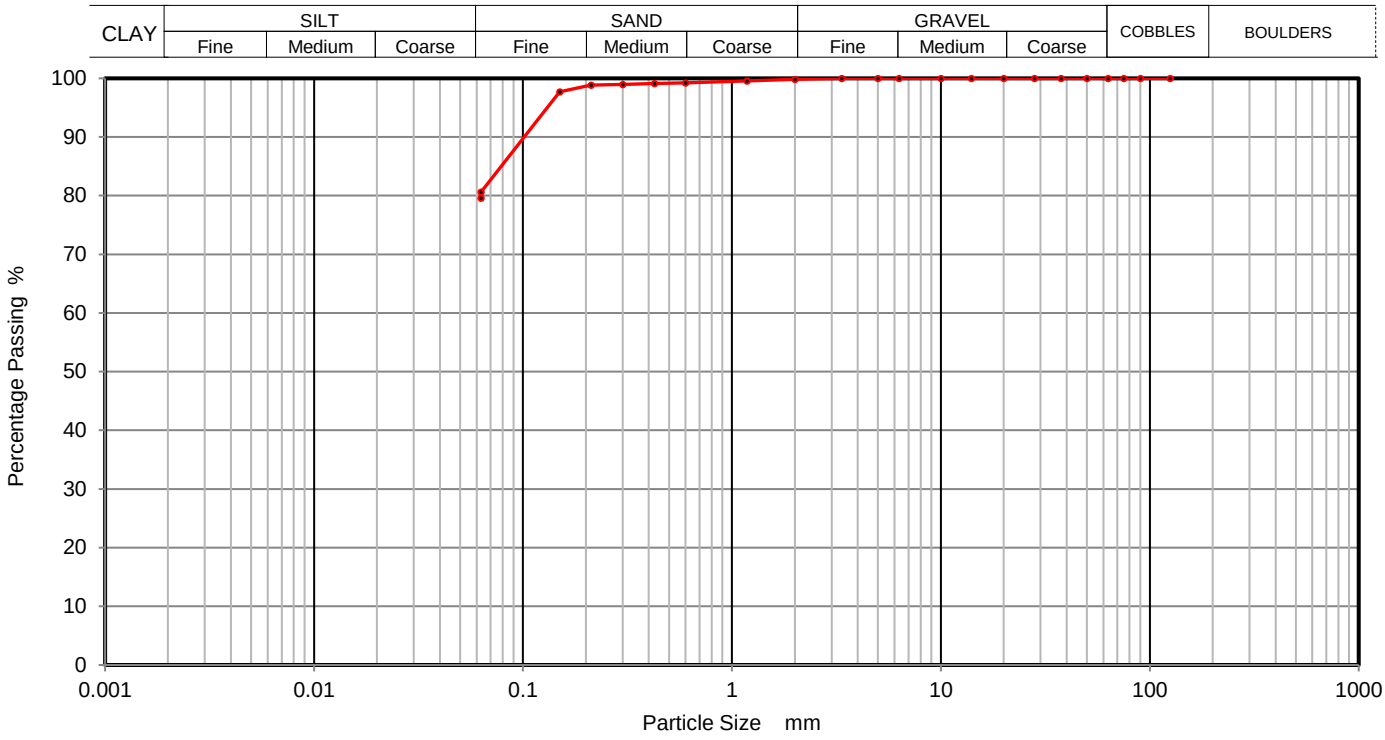
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY	Depth Top	2.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	81		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	19
Silt and Clay	81

Grading Analysis	
Uniformity Coefficient	

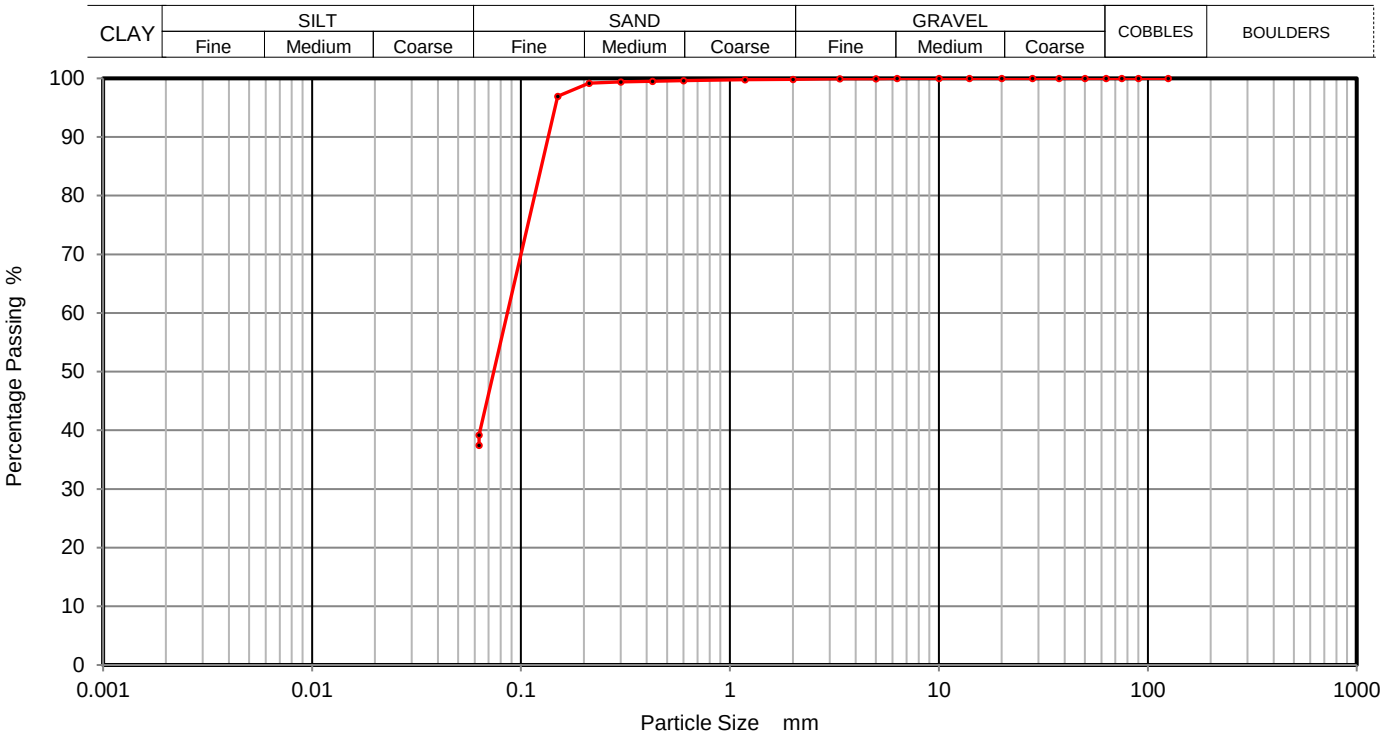
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown silty clayey fine to medium SAND	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	97		
0.063	39		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	61
Silt and Clay	39

Grading Analysis	
Uniformity Coefficient	

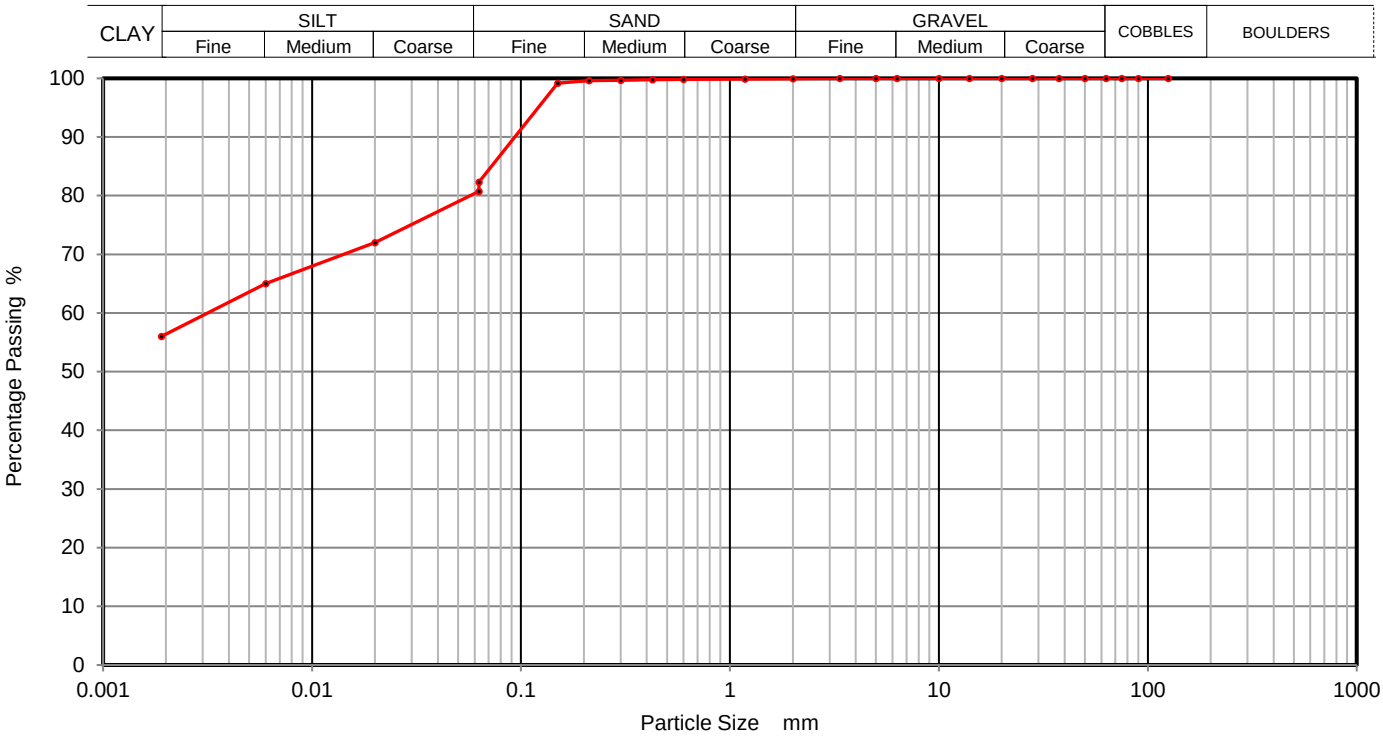
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to medium sandy silty CLAY	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	72
90	100	0.0060	65
75	100	0.0019	56
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	99		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	18
Silt	26
Clay	56

Grading Analysis	
Uniformity Coefficient	

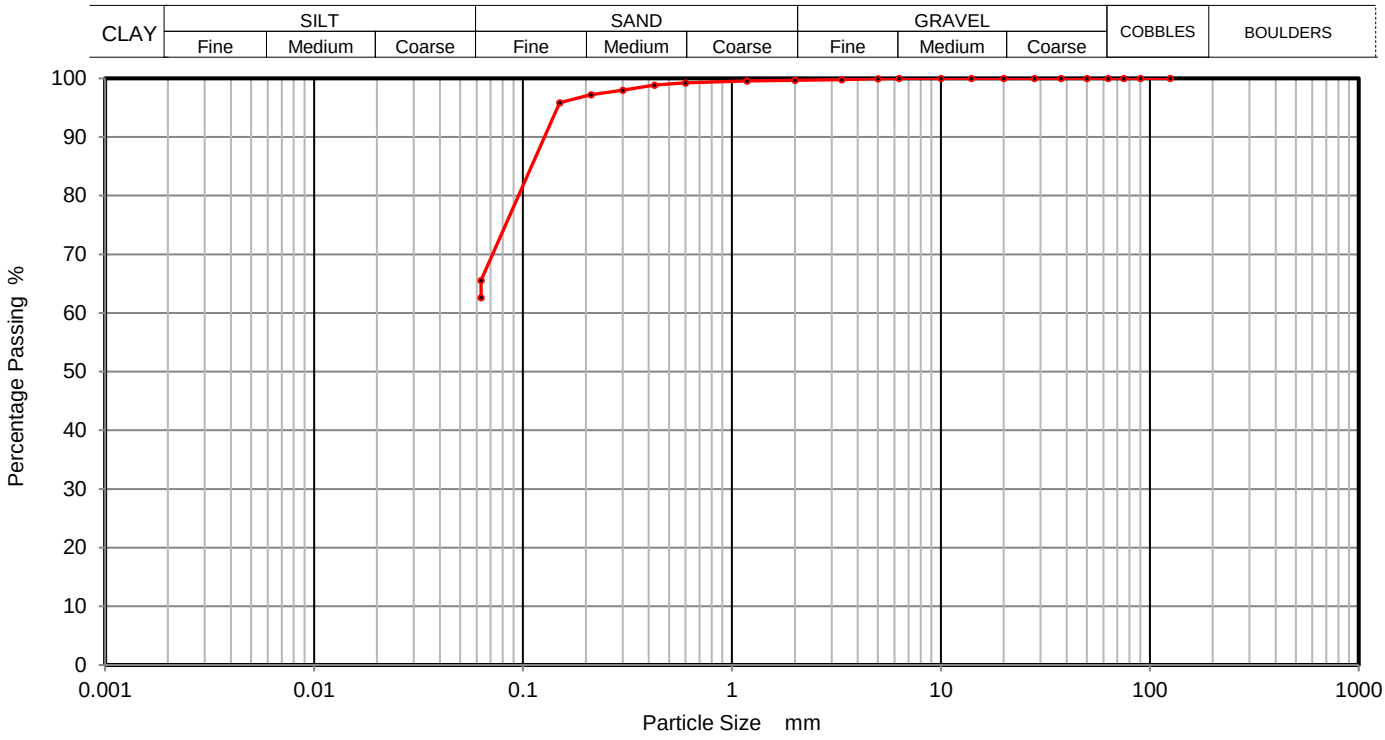
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	9.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	97		
0.15	96		
0.063	66		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	34
Silt and Clay	66

Grading Analysis	
Uniformity Coefficient	

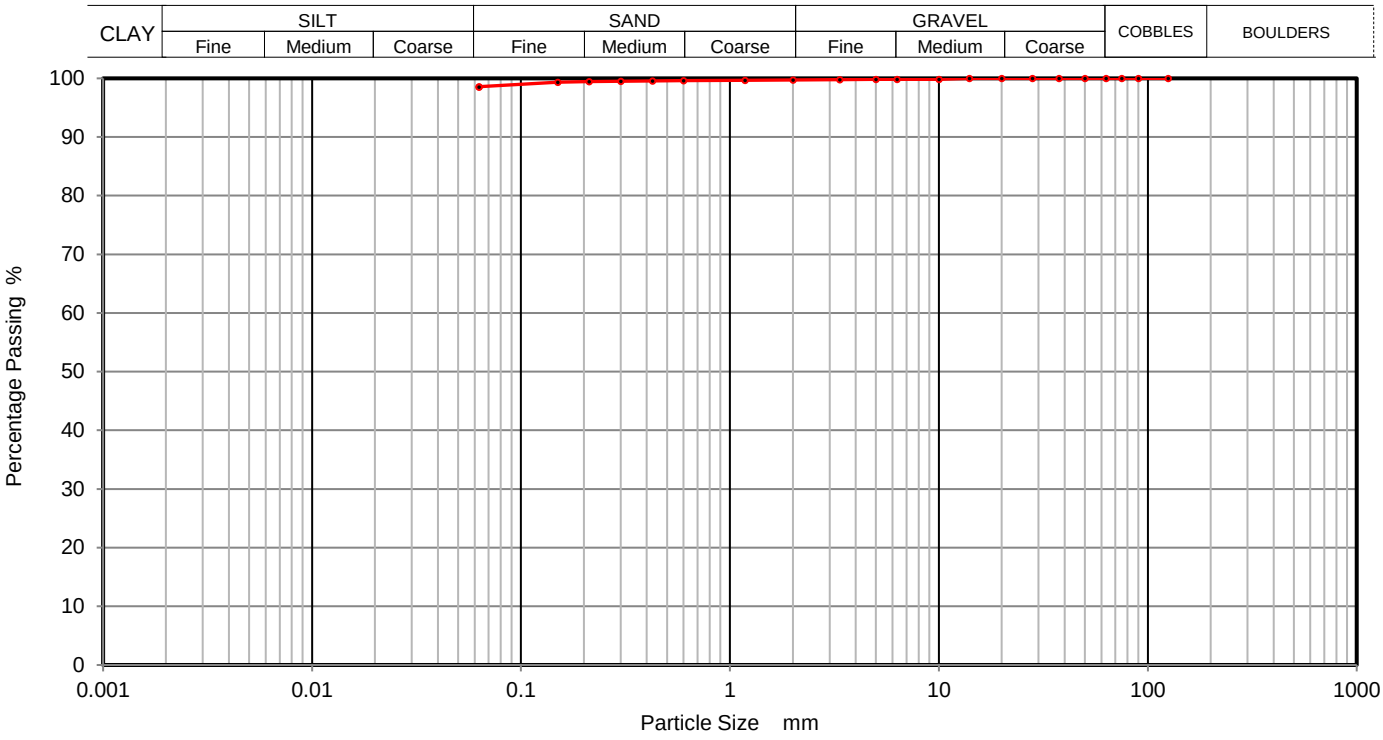
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium sandy SILT/CLAY	Depth Top	10.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

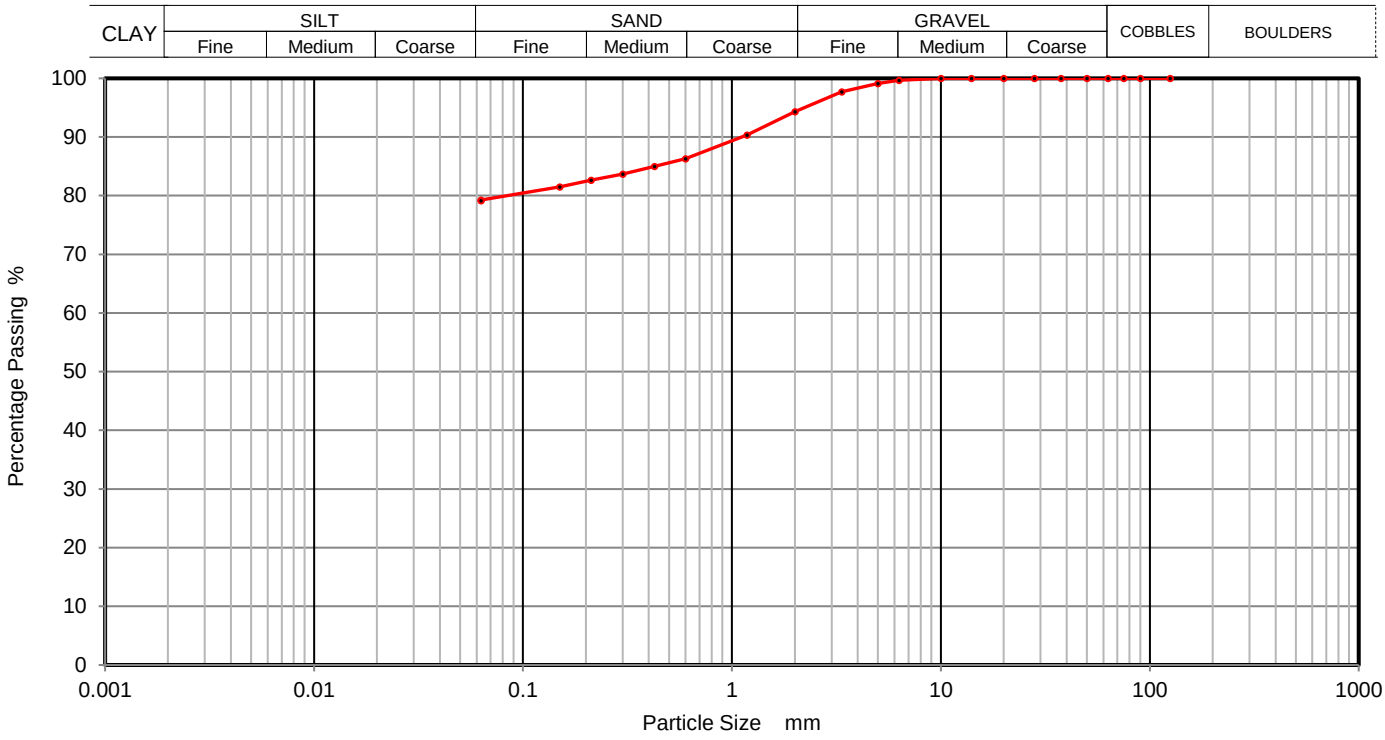
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	12.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	98		
2	94		
1.18	90		
0.6	86		
0.425	85		
0.3	84		
0.212	83		
0.15	82		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	6
Sand	15
Silt and Clay	79

Grading Analysis	
Uniformity Coefficient	

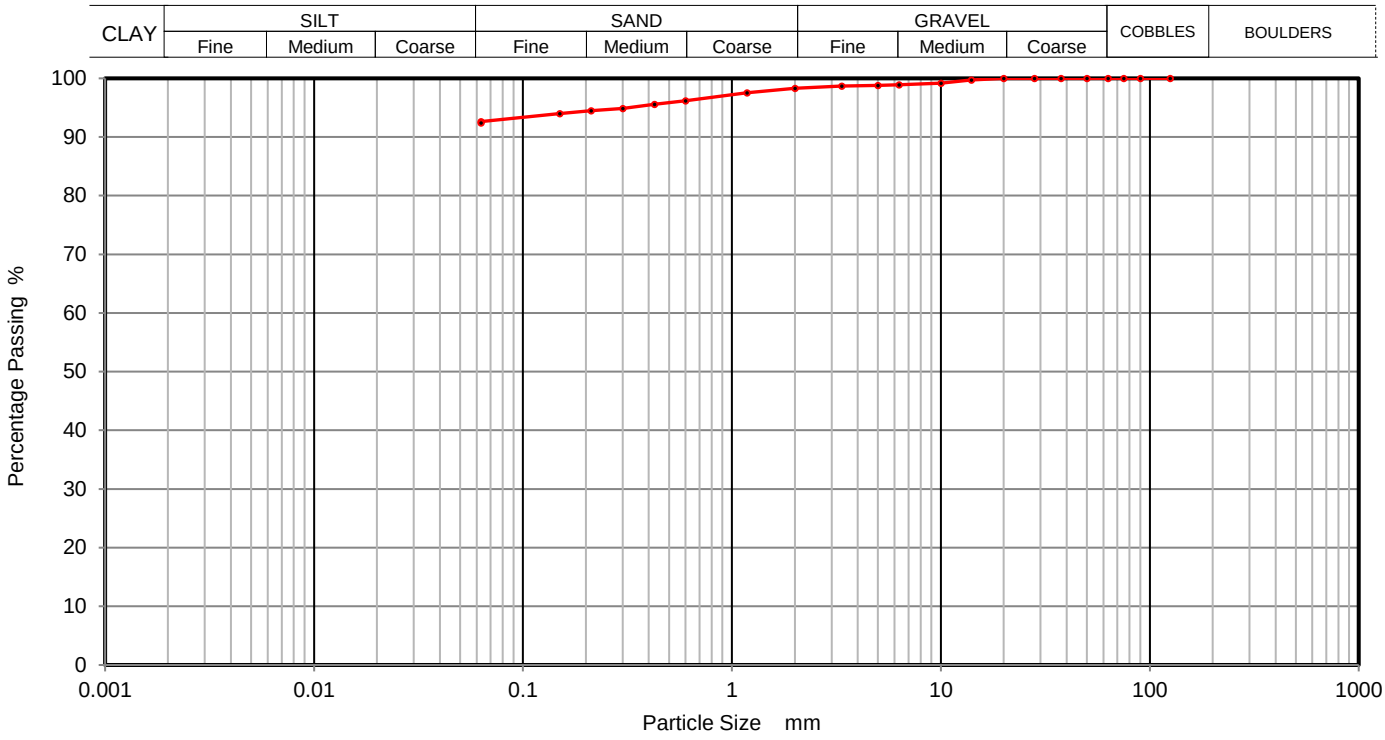
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine to medium gravelly slightly fine to coarse sandy SILT/CLAY	Depth Top	15.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	96		
0.425	96		
0.3	95		
0.212	94		
0.15	94		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	5
Silt and Clay	93

Grading Analysis	
Uniformity Coefficient	

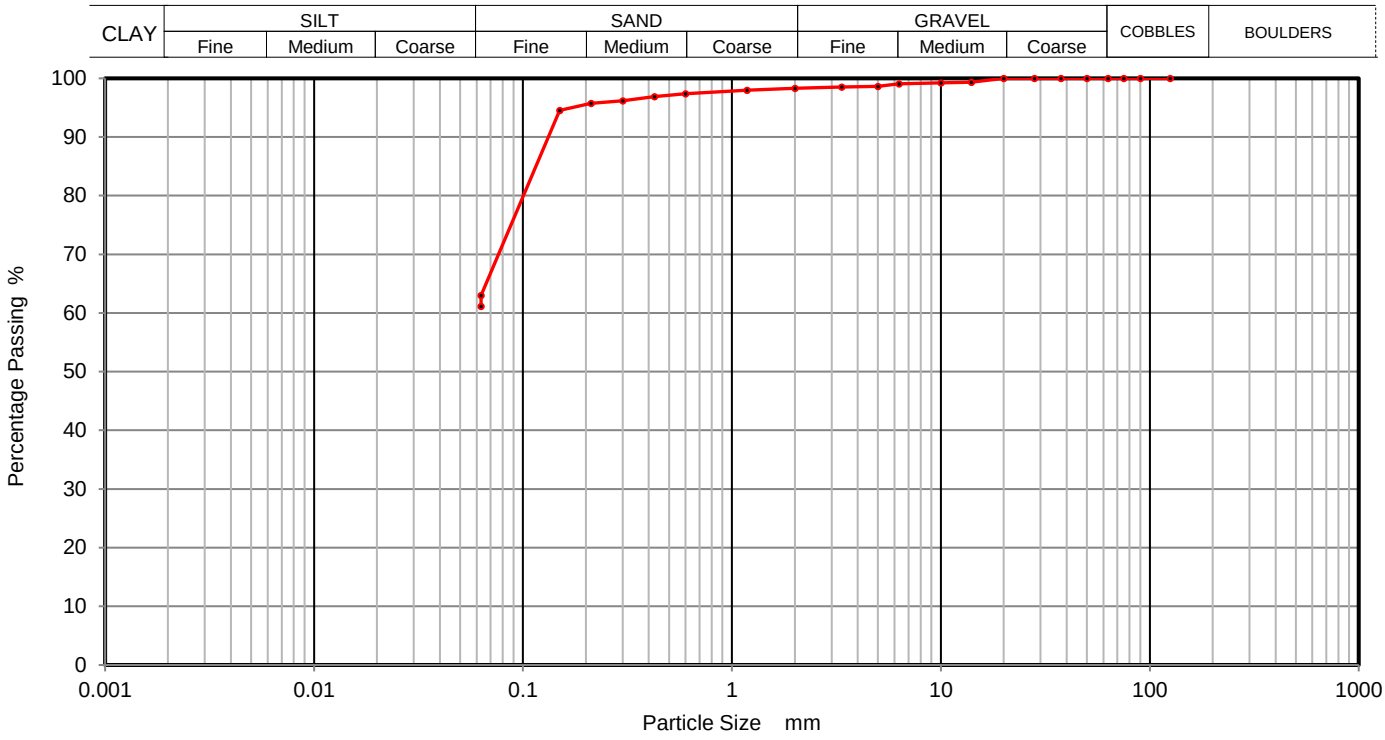
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	16.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	96		
0.212	96		
0.15	95		
0.063	63		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	35
Silt and Clay	63

Grading Analysis	
Uniformity Coefficient	

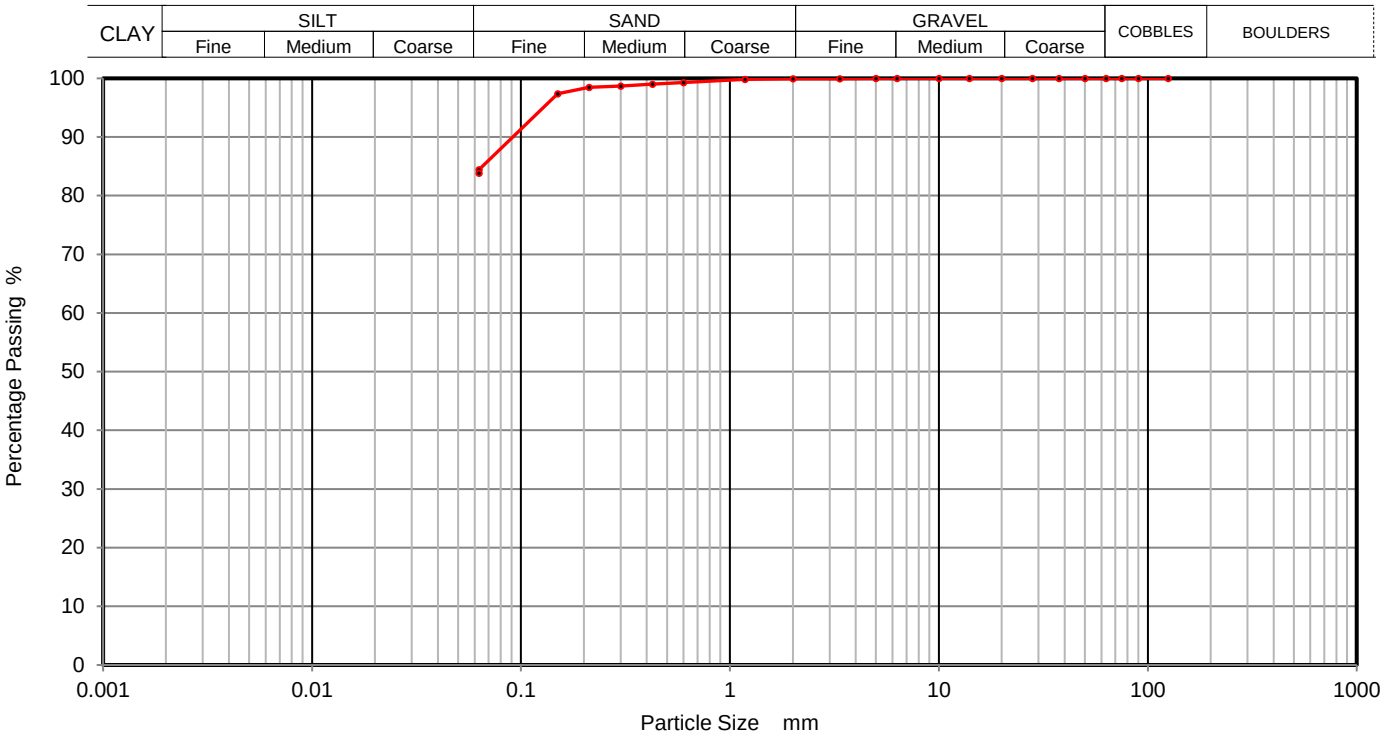
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

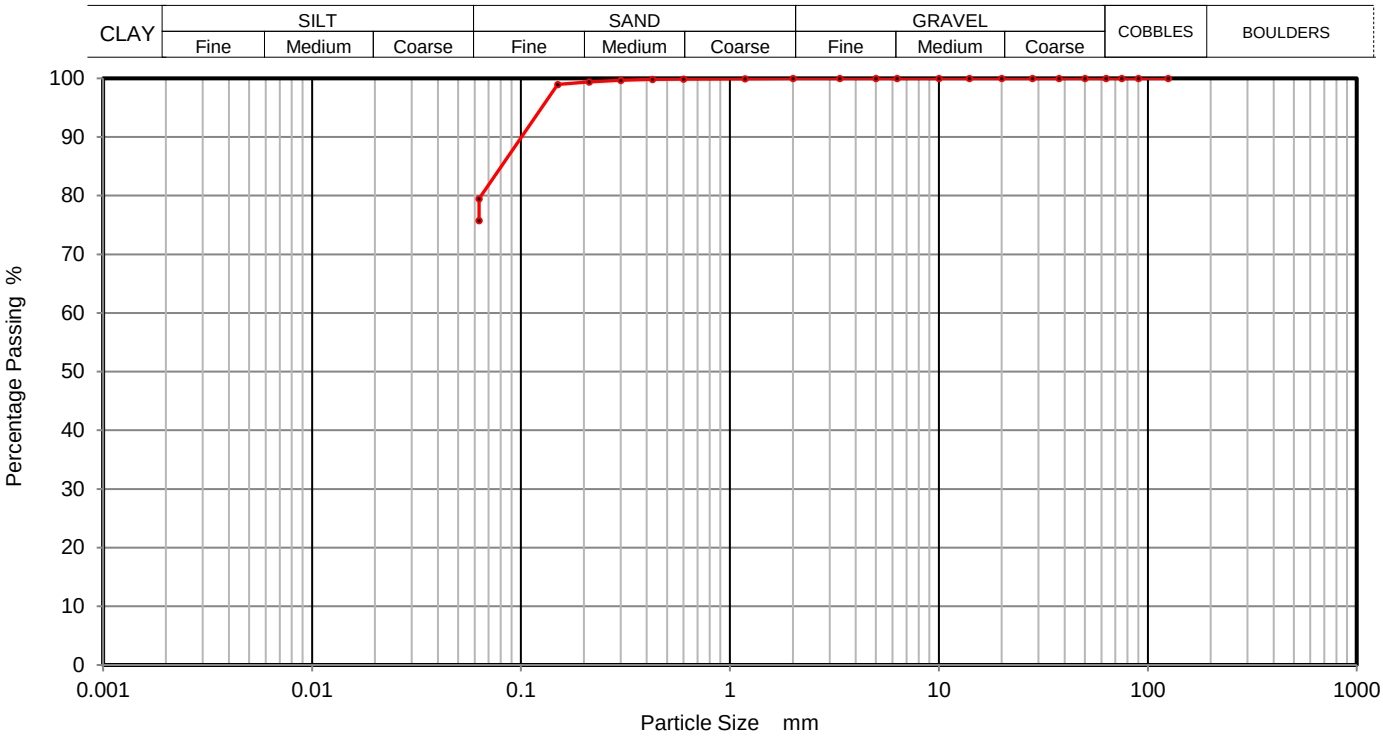
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to medium sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	99		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	20
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

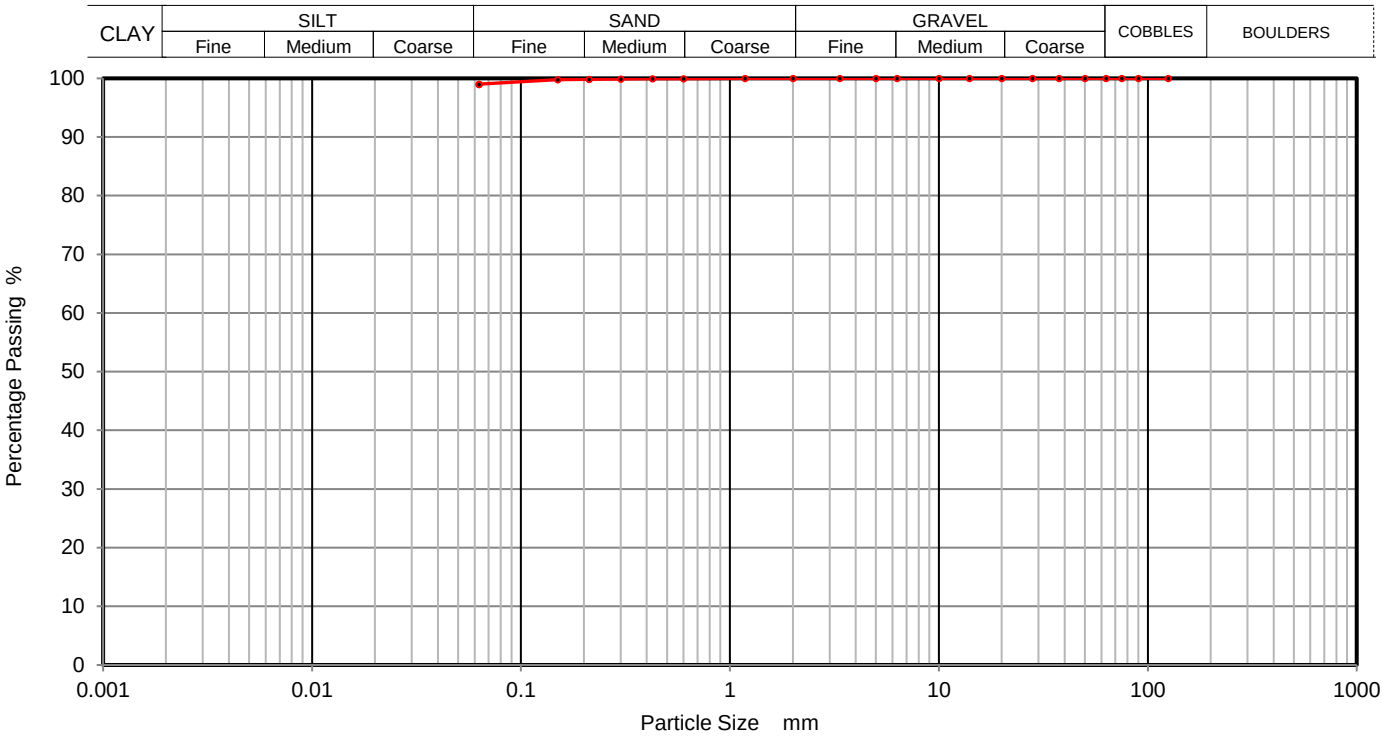
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine sandy SILT/CLAY	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

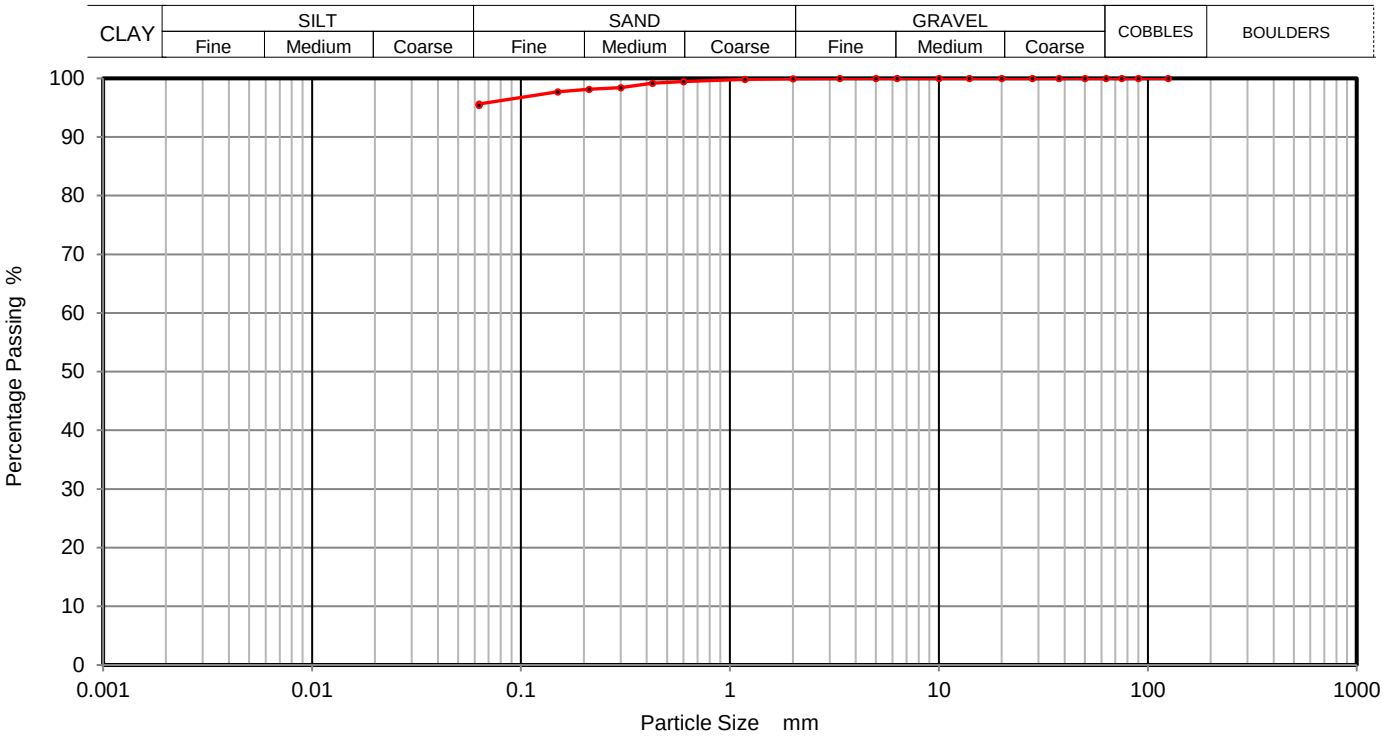
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Brown/grey slightly fine to medium sandy SILT/CLAY	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	98		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	4
Silt and Clay	96

Grading Analysis	
Uniformity Coefficient	

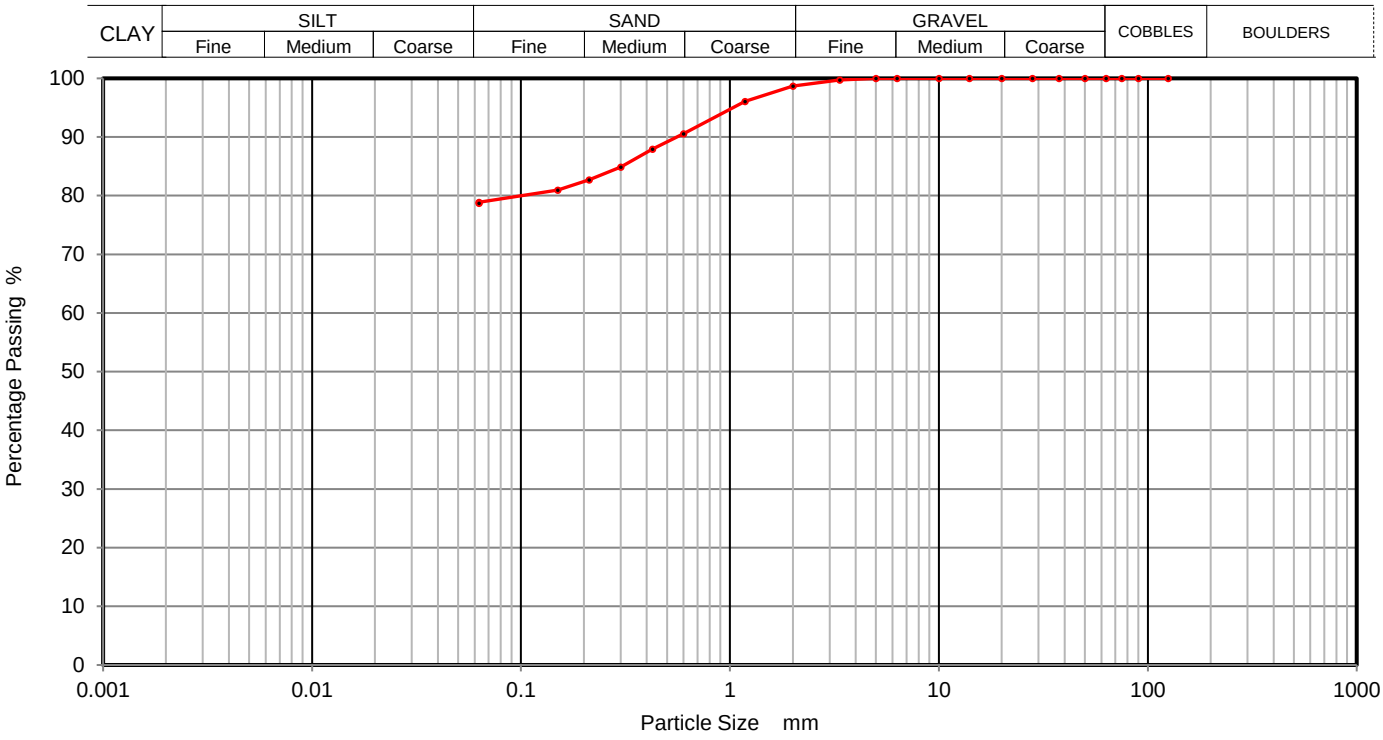
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	15.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	96		
0.6	91		
0.425	88		
0.3	85		
0.212	83		
0.15	81		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	20
Silt and Clay	79

Grading Analysis	
Uniformity Coefficient	

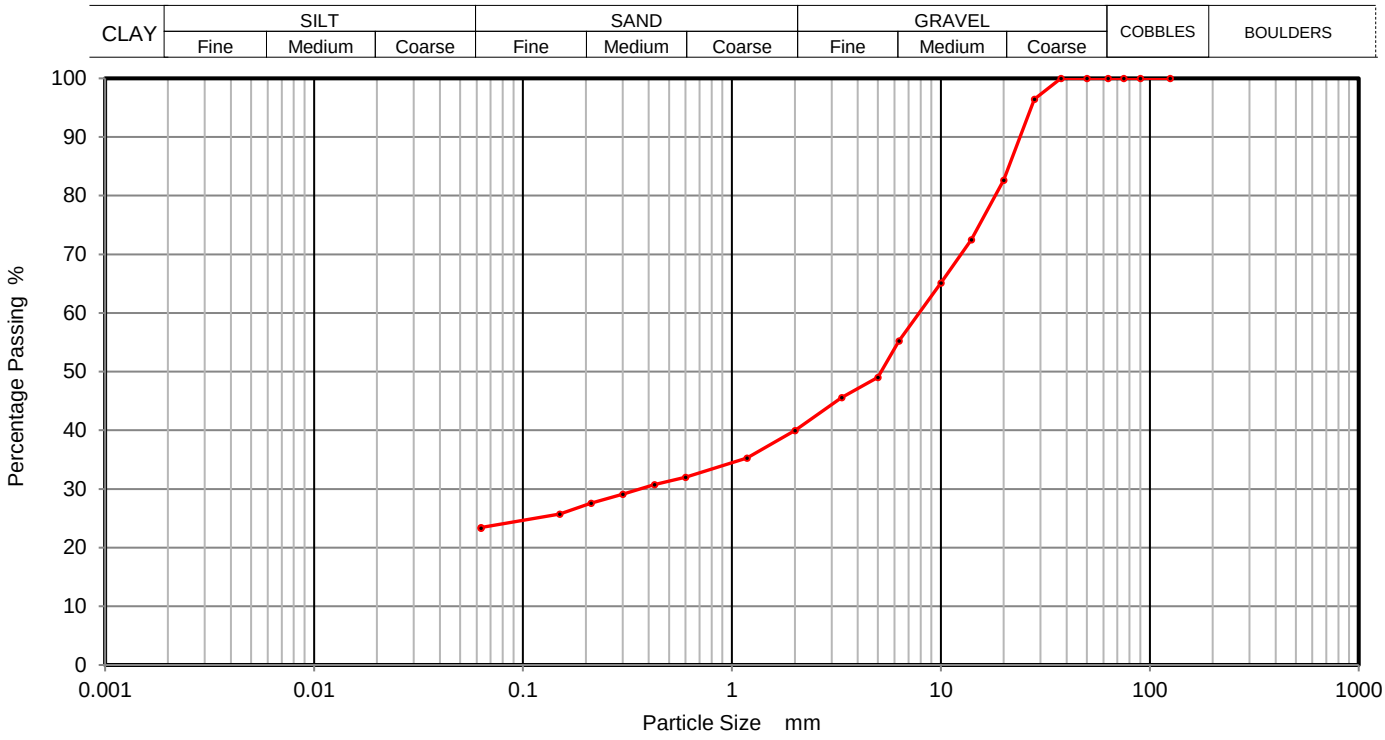
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL	Depth Top	16.40
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	83		
14	72		
10	65		
6.3	55		
5	49		
3.35	46		
2	40		
1.18	35		
0.6	32		
0.425	31		
0.3	29		
0.212	28		
0.15	26		
0.063	23		

Sample Proportions	% dry mass
Cobbles	0
Gravel	60
Sand	17
Silt and Clay	23

Grading Analysis	
Uniformity Coefficient	

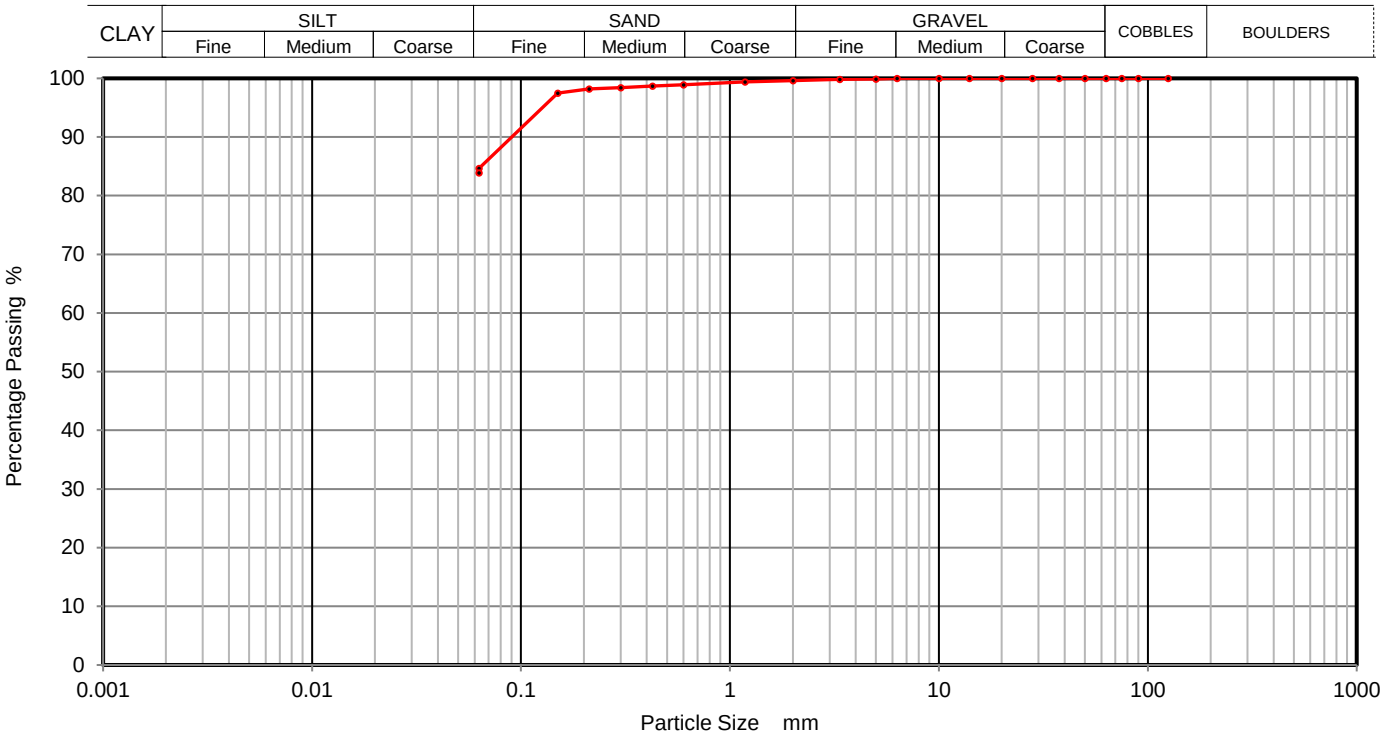
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	98		
0.063	85		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	15
Silt and Clay	85

Grading Analysis	
Uniformity Coefficient	

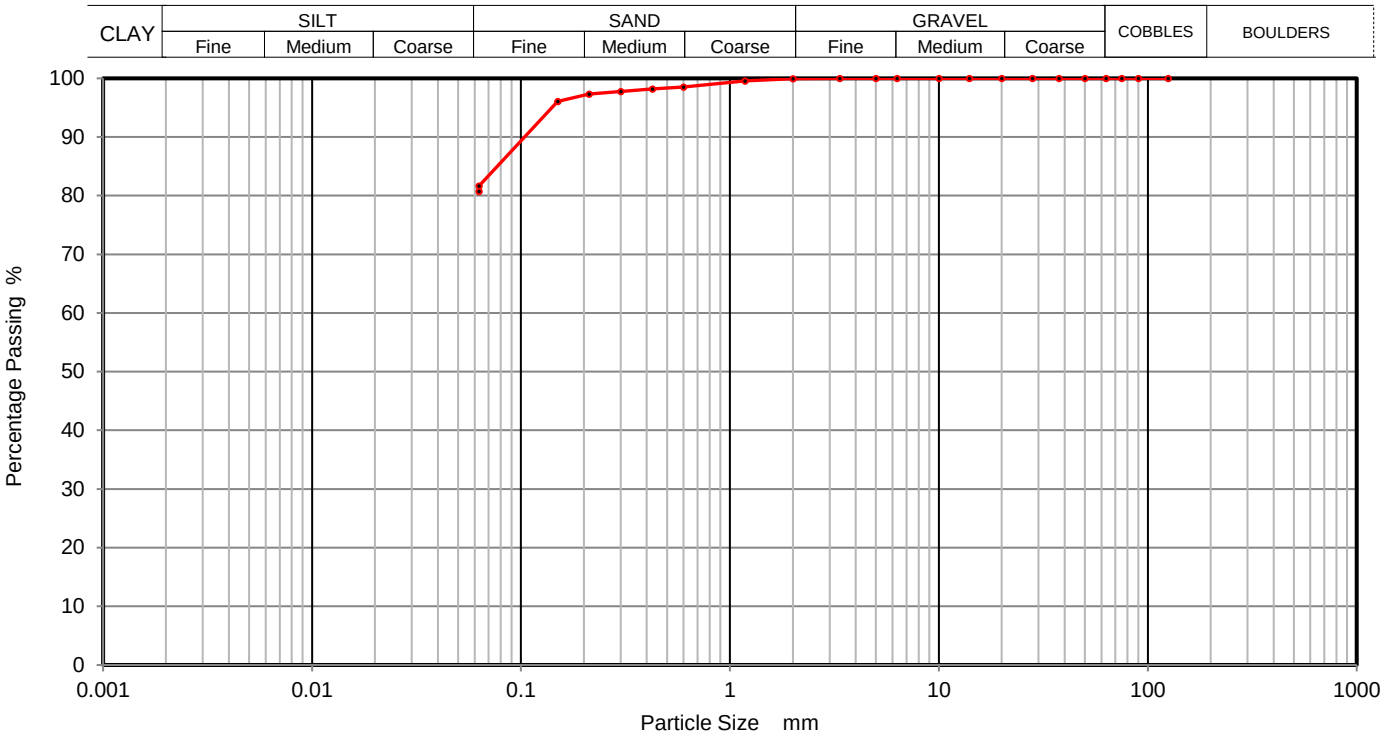
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	18
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

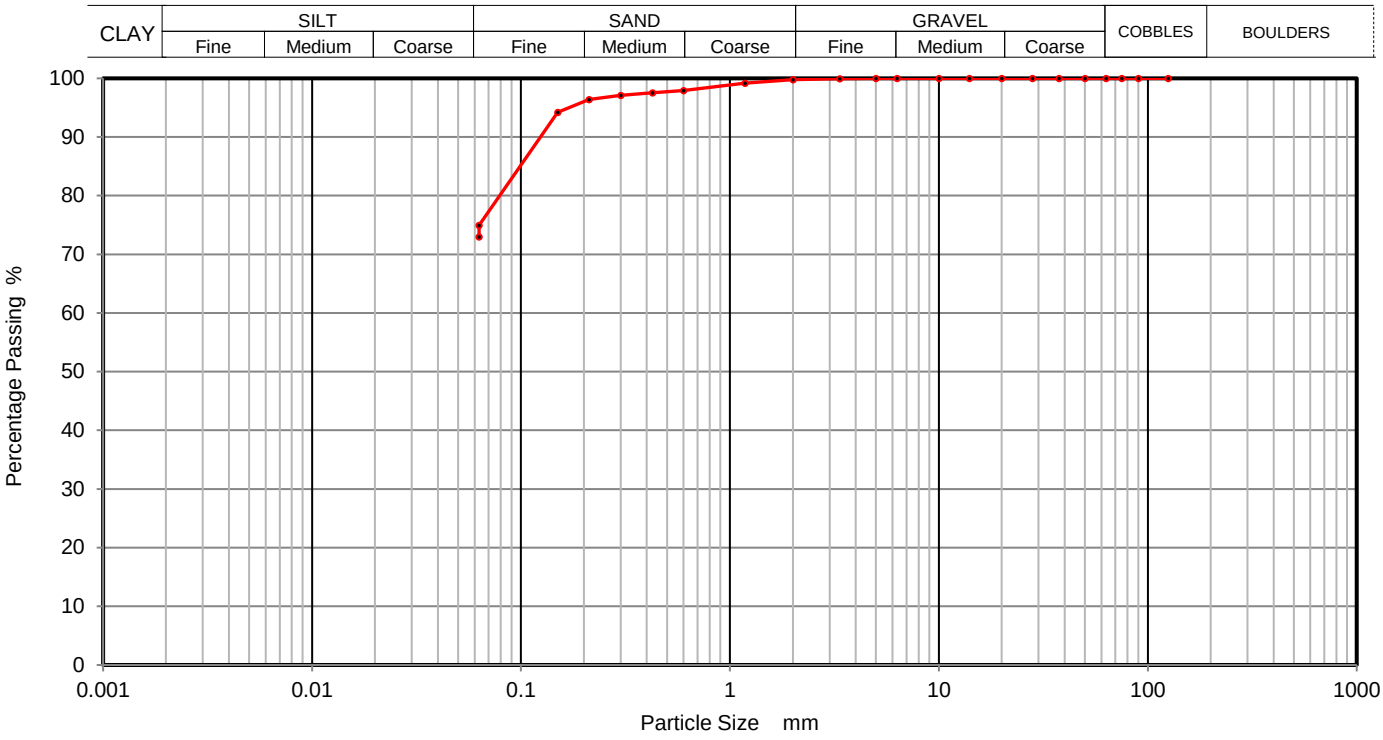
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	3.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	96		
0.15	94		
0.063	75		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	25
Silt and Clay	75

Grading Analysis	
Uniformity Coefficient	

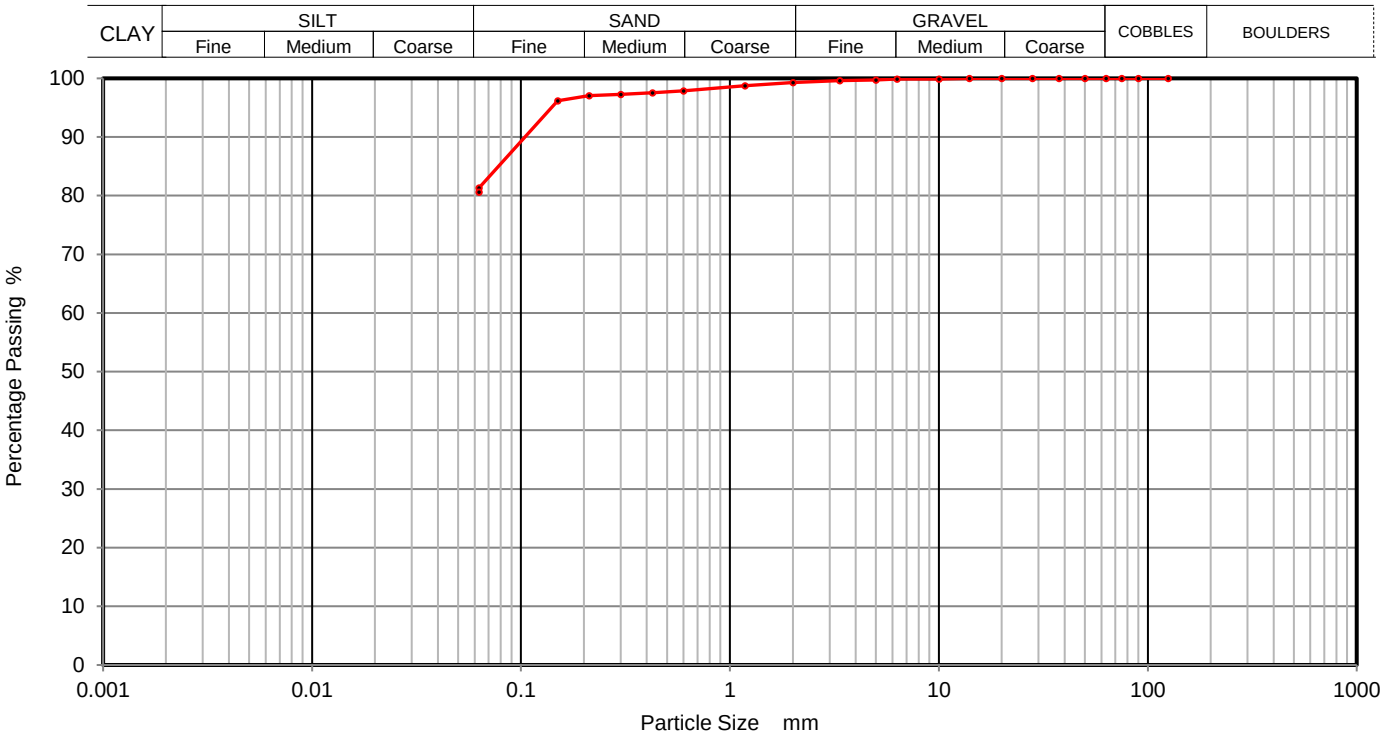
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	97		
0.15	96		
0.063	81		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	18
Silt and Clay	81

Grading Analysis	
Uniformity Coefficient	

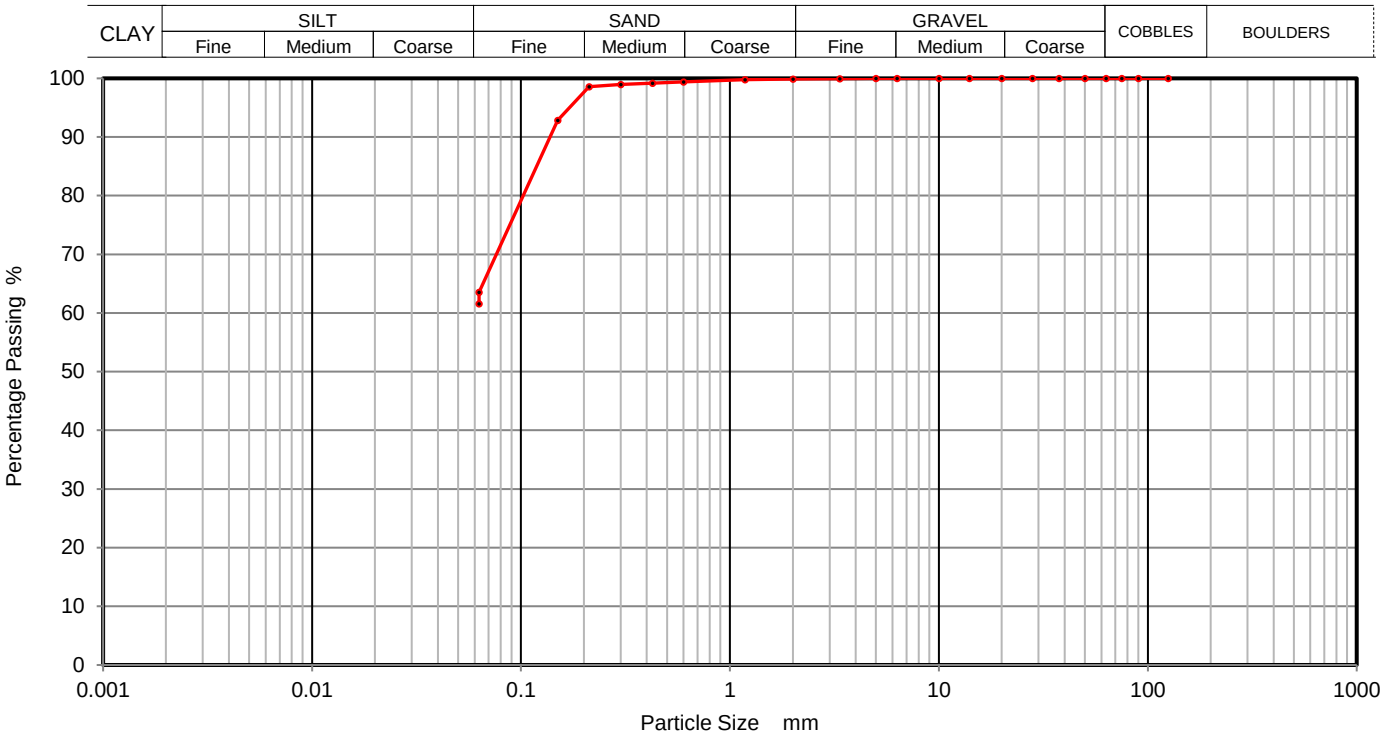
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	93		
0.063	64		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	36
Silt and Clay	64

Grading Analysis	
Uniformity Coefficient	

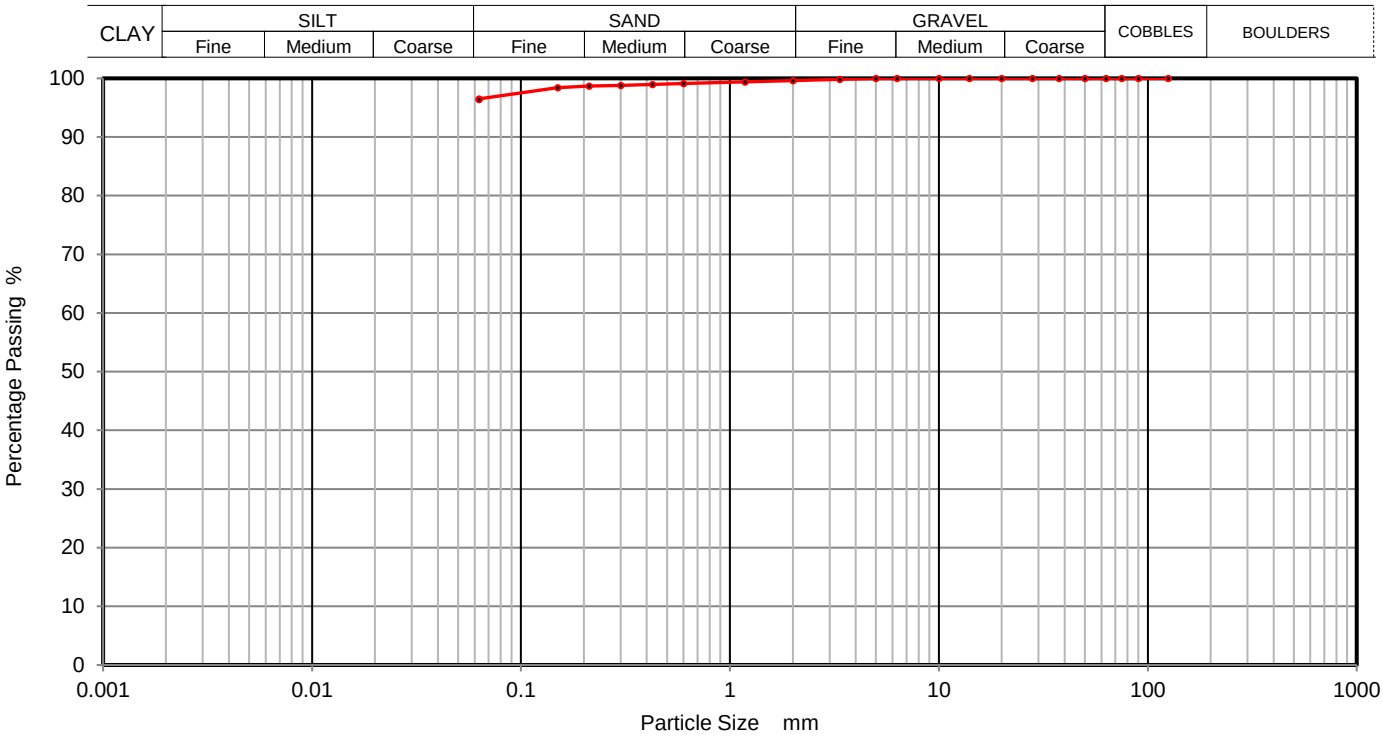
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	12.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	97		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	3
Silt and Clay	97

Grading Analysis	
Uniformity Coefficient	

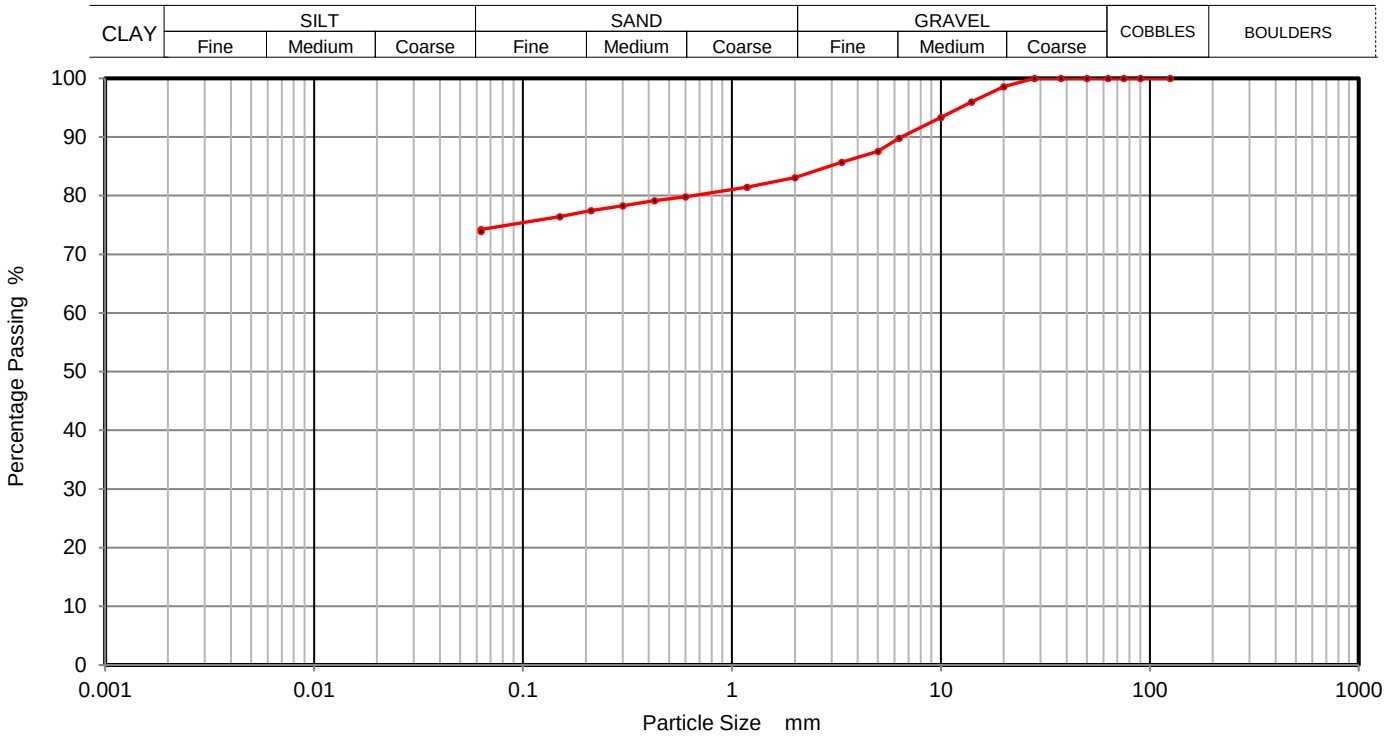
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse gravelly SILT/CLAY	Depth Top	15.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	96		
10	93		
6.3	90		
5	88		
3.35	86		
2	83		
1.18	81		
0.6	80		
0.425	79		
0.3	78		
0.212	77		
0.15	76		
0.063	74		

Sample Proportions	% dry mass
Cobbles	0
Gravel	17
Sand	9
Silt and Clay	74

Grading Analysis	
Uniformity Coefficient	

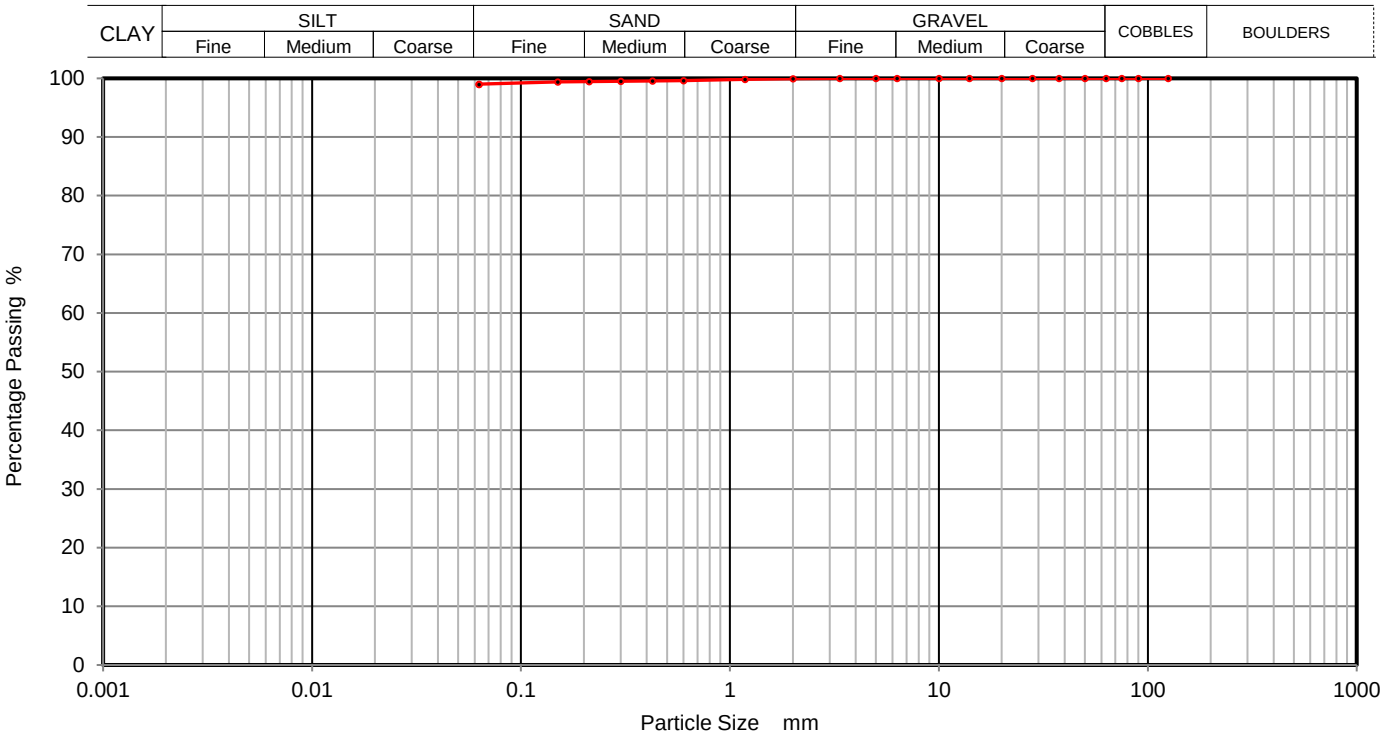
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

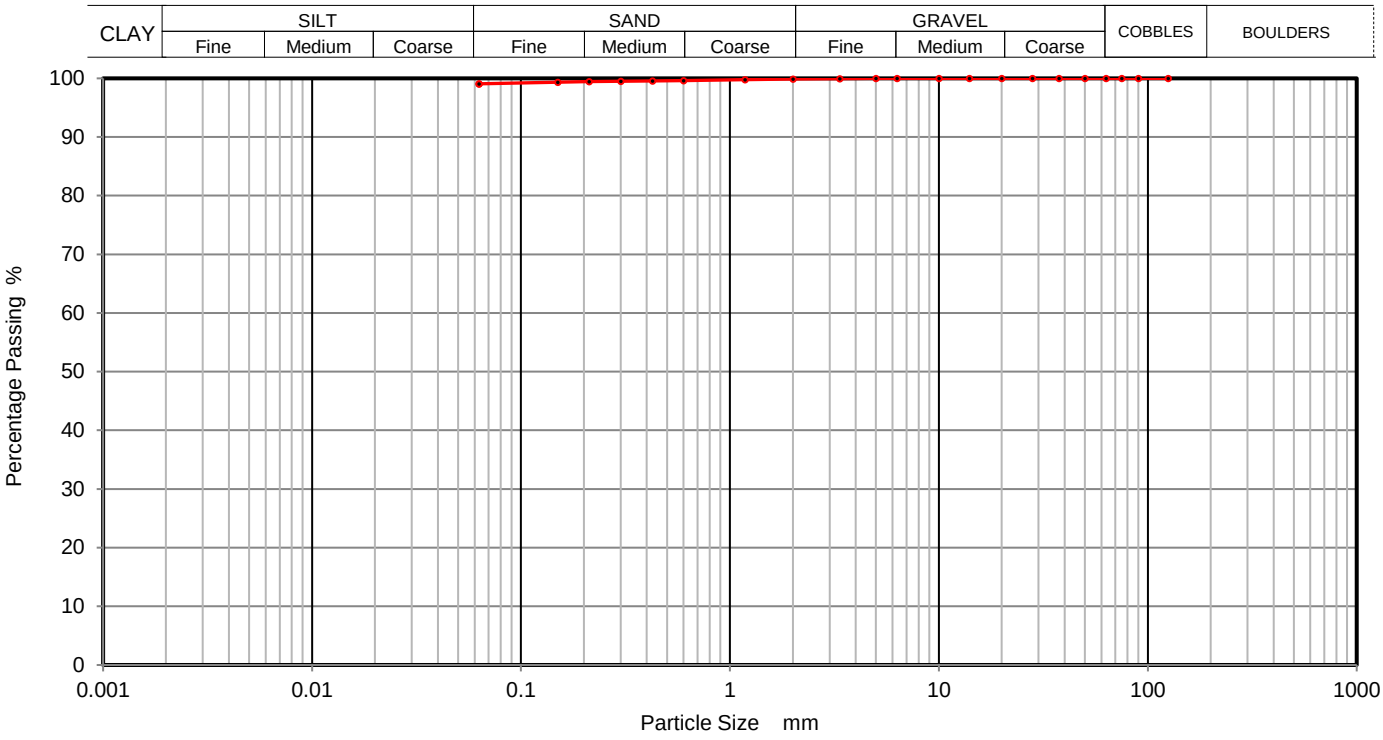
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	13.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

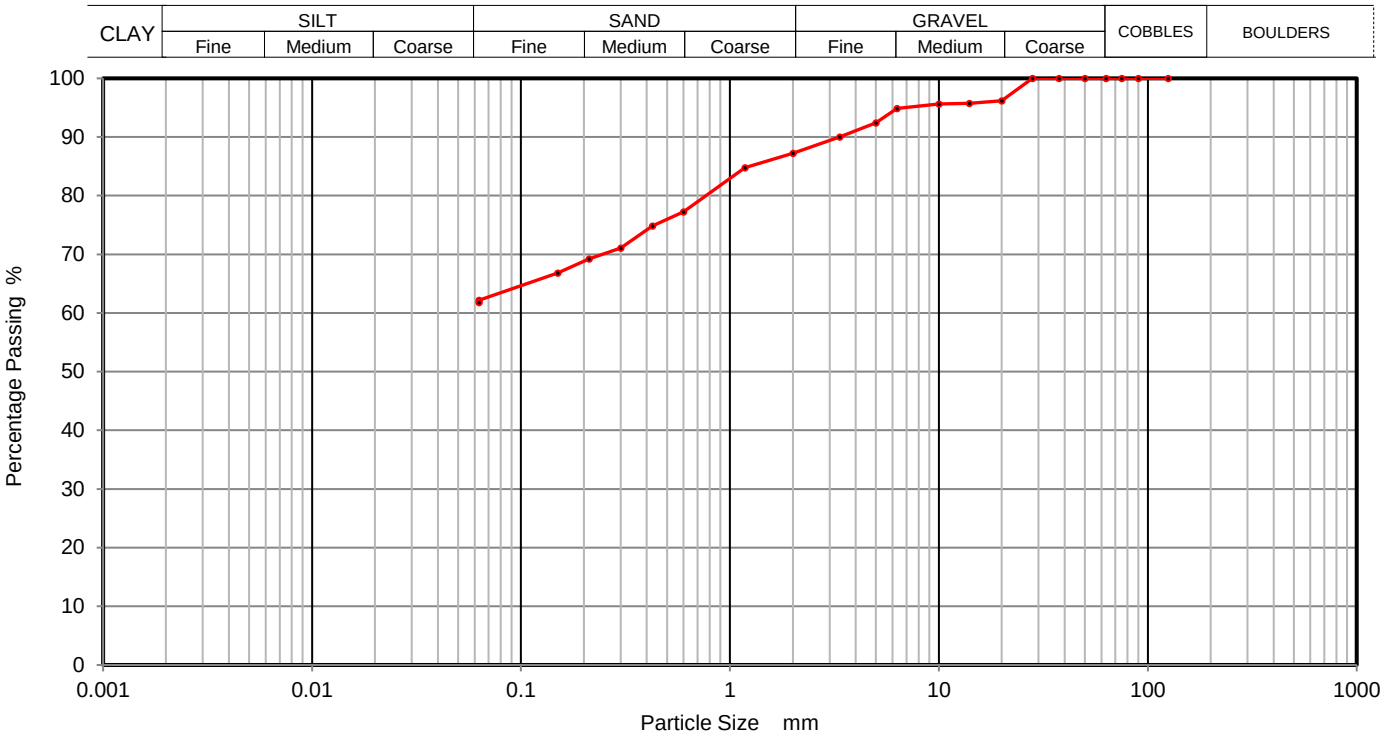
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse gravelly fine to coarse sandy SILT/CLAY	Depth Top	15.80
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	96		
10	96		
6.3	95		
5	92		
3.35	90		
2	87		
1.18	85		
0.6	77		
0.425	75		
0.3	71		
0.212	69		
0.15	67		
0.063	62		

Sample Proportions	% dry mass
Cobbles	0
Gravel	13
Sand	25
Silt and Clay	62

Grading Analysis	
Uniformity Coefficient	

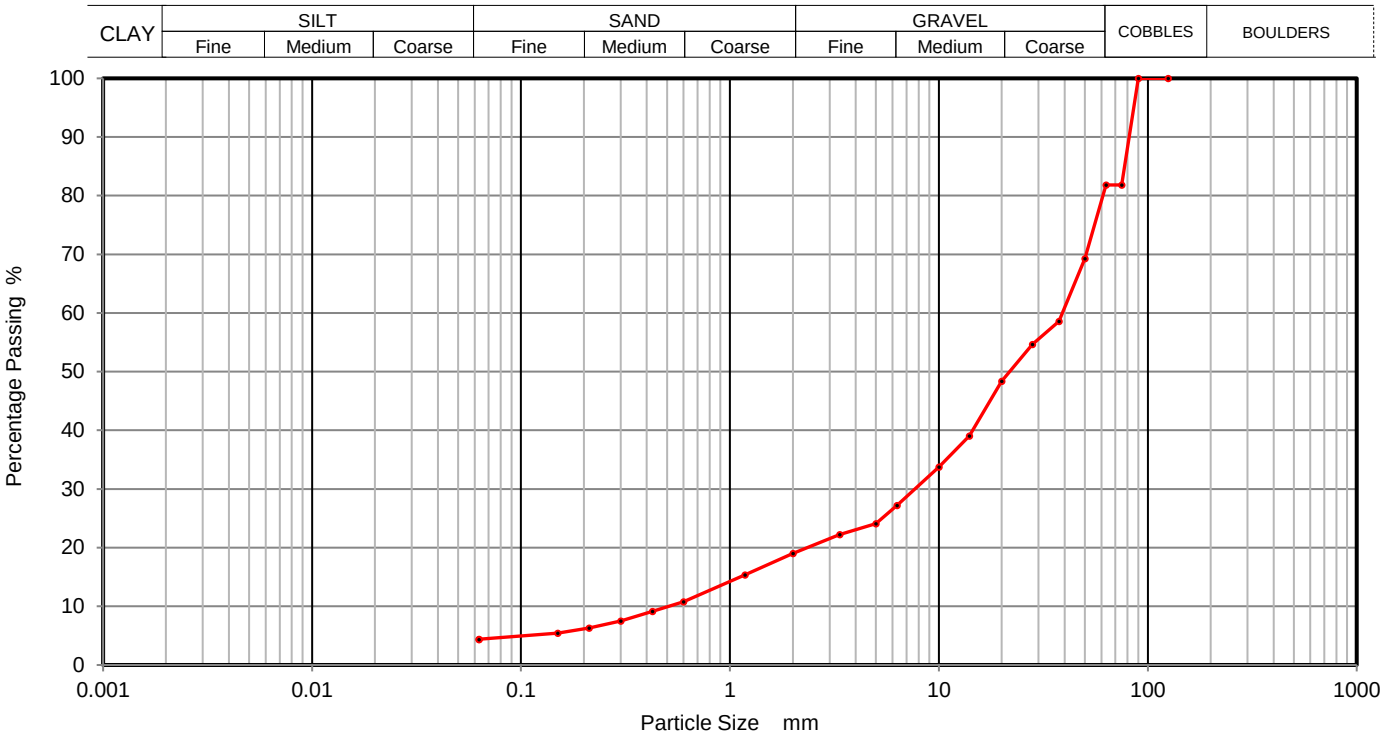
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly silty slightly clayey fine to coarse sandy fine to coarse GRAVEL with some cobbles	Depth Top	16.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	82	0.0019	
63	82		
50	69		
37.5	59		
28	55		
20	48		
14	39		
10	34		
6.3	27		
5	24		
3.35	22		
2	19		
1.18	15		
0.6	11		
0.425	9		
0.3	7		
0.212	6		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Cobbles	18
Gravel	63
Sand	15
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

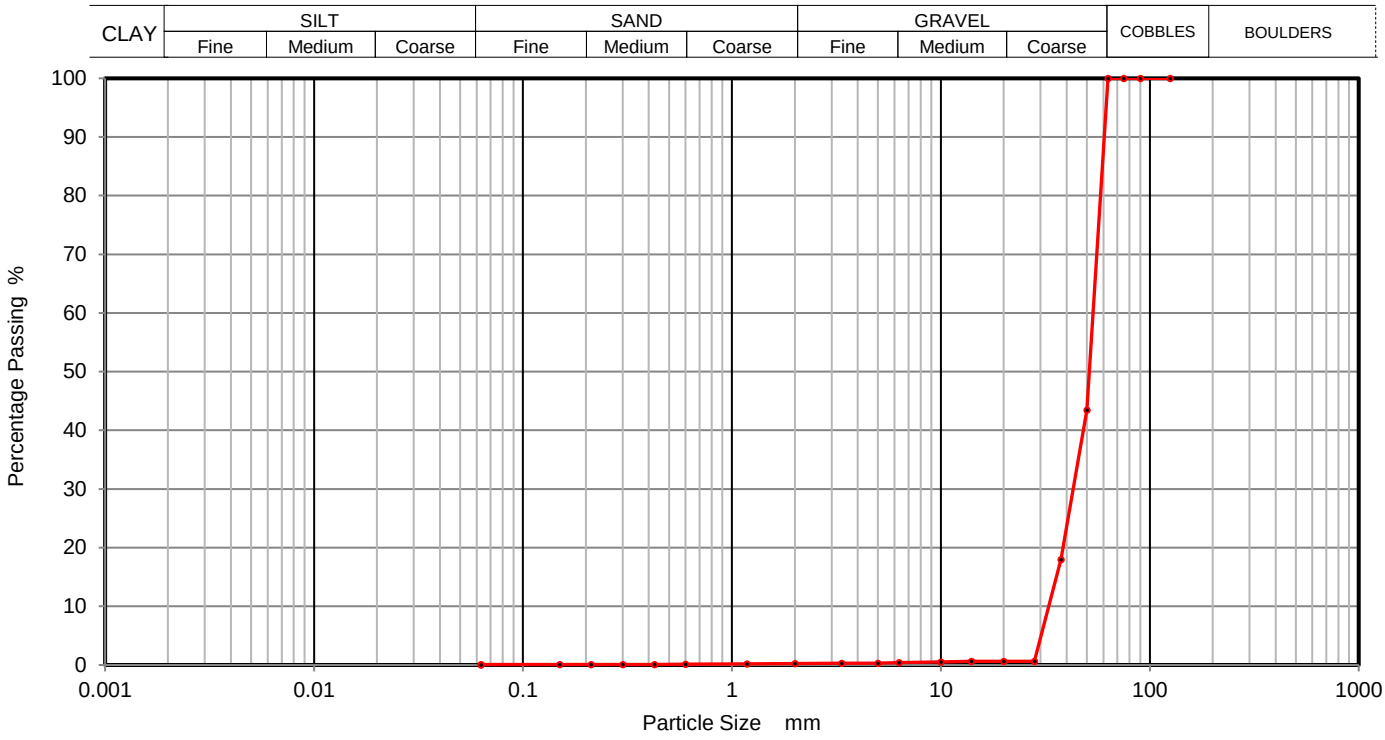
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse GRAVEL	Depth Top	16.80
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	43		
37.5	18		
28	1		
20	1		
14	1		
10	0		
6.3	0		
5	0		
3.35	0		
2	0		
1.18	0		
0.6	0		
0.425	0		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	100
Sand	0
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

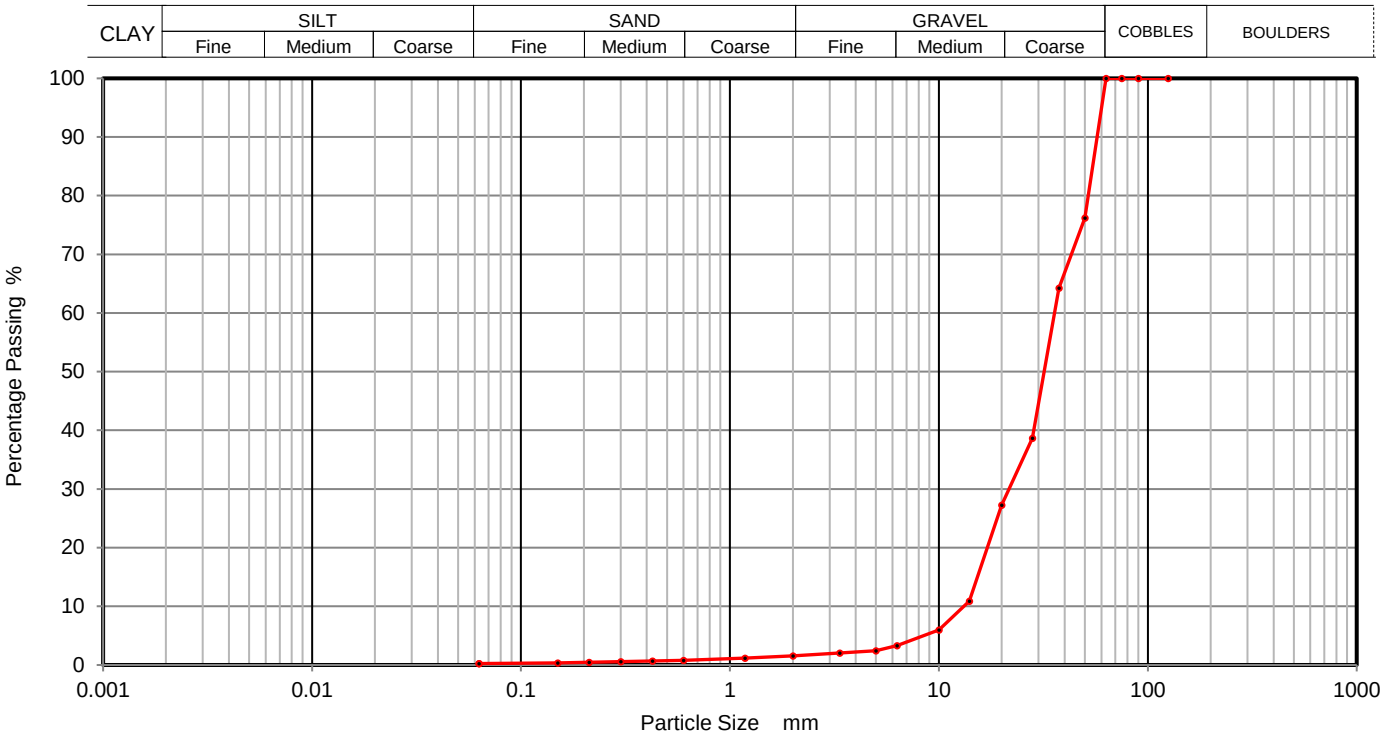
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	17.30
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	76		
37.5	64		
28	39		
20	27		
14	11		
10	6		
6.3	3		
5	2		
3.35	2		
2	2		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	98
Sand	2
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

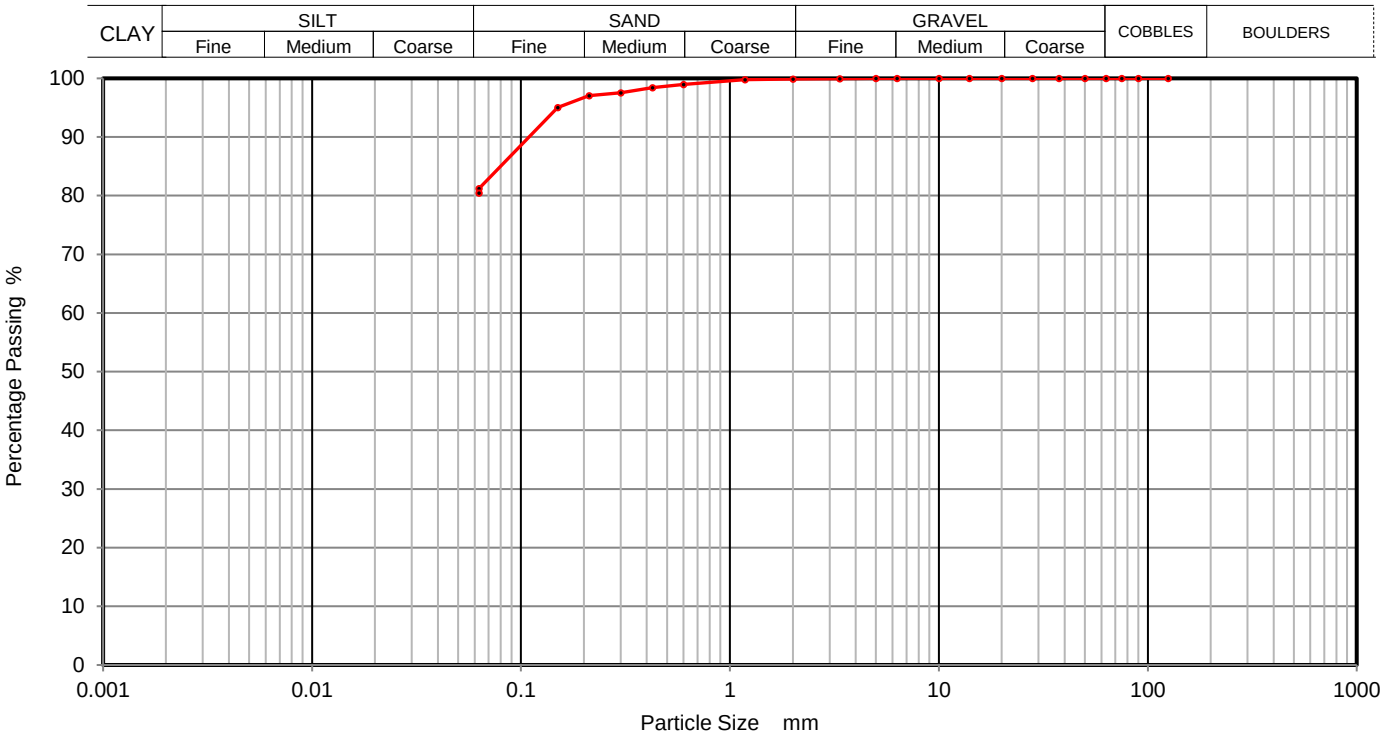
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	18/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	19/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	95		
0.063	81		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	19
Silt and Clay	81

Grading Analysis	
Uniformity Coefficient	

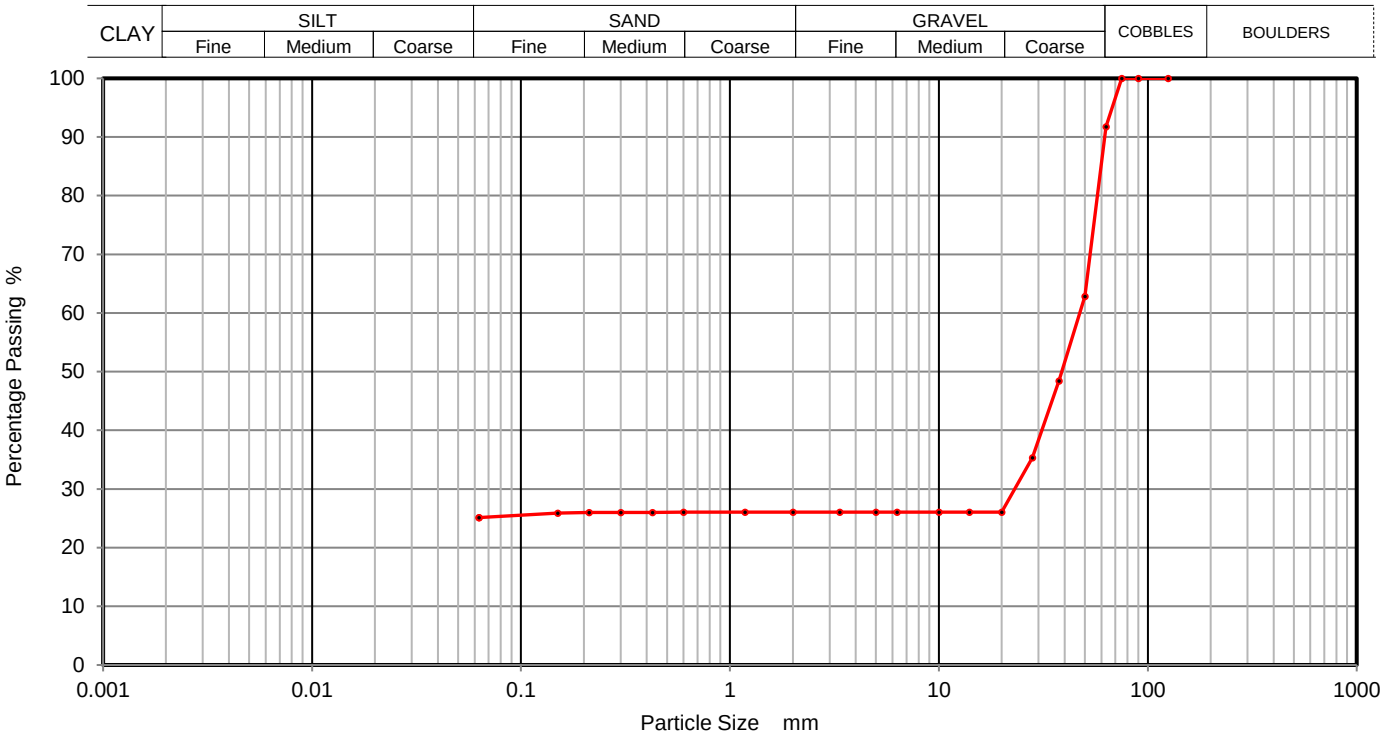
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy silty clayey fine to coarse GRAVEL with some cobbles	Depth Top	3.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	92		
50	63		
37.5	48		
28	35		
20	26		
14	26		
10	26		
6.3	26		
5	26		
3.35	26		
2	26		
1.18	26		
0.6	26		
0.425	26		
0.3	26		
0.212	26		
0.15	26		
0.063	25		

Sample Proportions	% dry mass
Cobbles	8
Gravel	66
Sand	1
Silt and Clay	25

Grading Analysis	
Uniformity Coefficient	

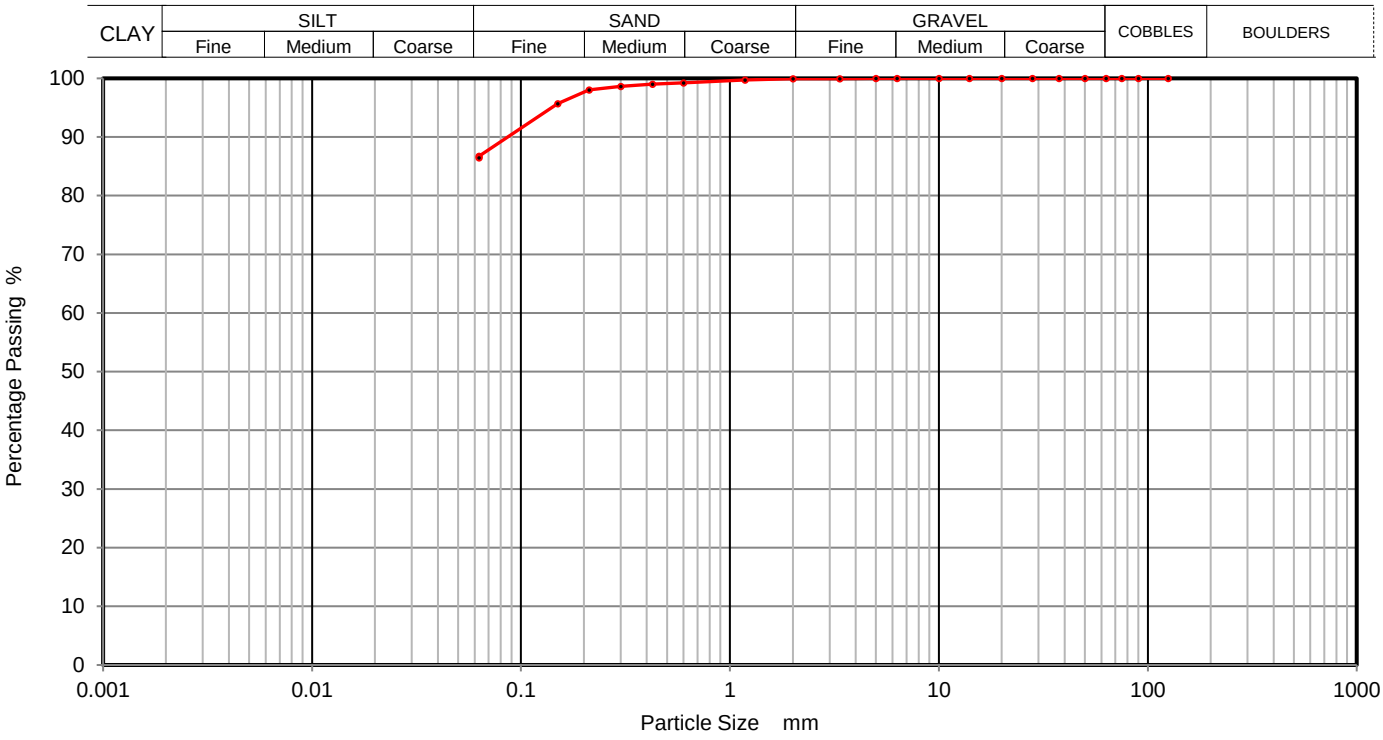
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	96		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

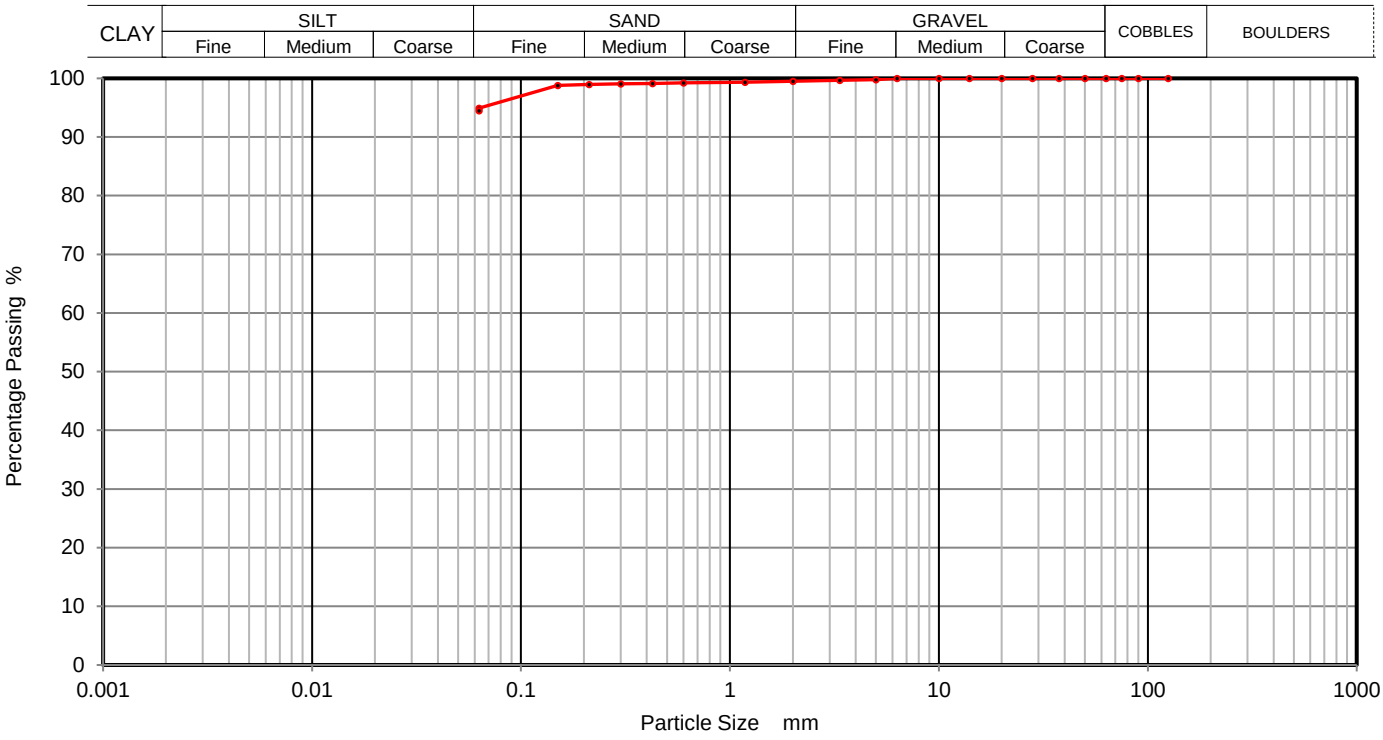
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	8.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	95		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	5
Silt and Clay	95

Grading Analysis	
Uniformity Coefficient	

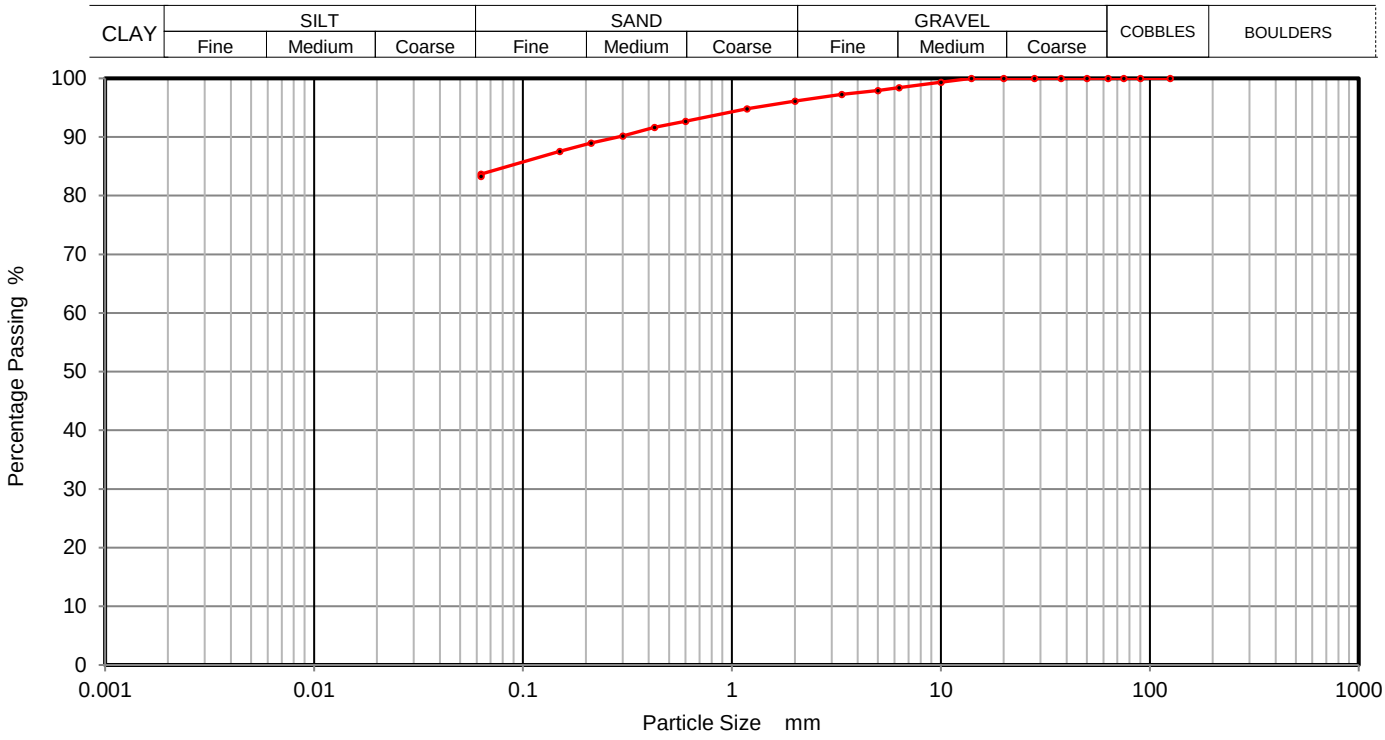
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	98		
5	98		
3.35	97		
2	96		
1.18	95		
0.6	93		
0.425	92		
0.3	90		
0.212	89		
0.15	88		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	12
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

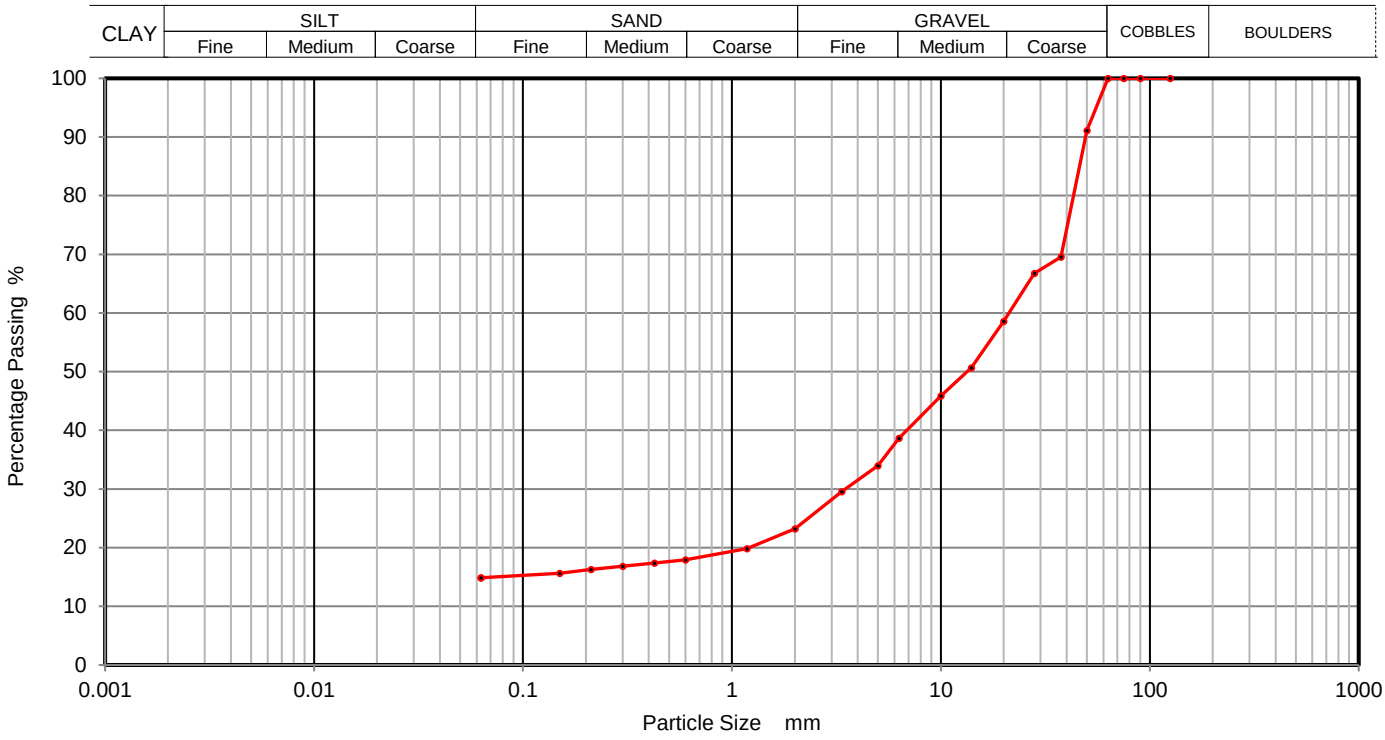
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy silty clayey fine to coarse GRAVEL	Depth Top	14.70
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	91		
37.5	70		
28	67		
20	59		
14	51		
10	46		
6.3	39		
5	34		
3.35	30		
2	23		
1.18	20		
0.6	18		
0.425	17		
0.3	17		
0.212	16		
0.15	16		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	77
Sand	8
Silt and Clay	15

Grading Analysis	
Uniformity Coefficient	

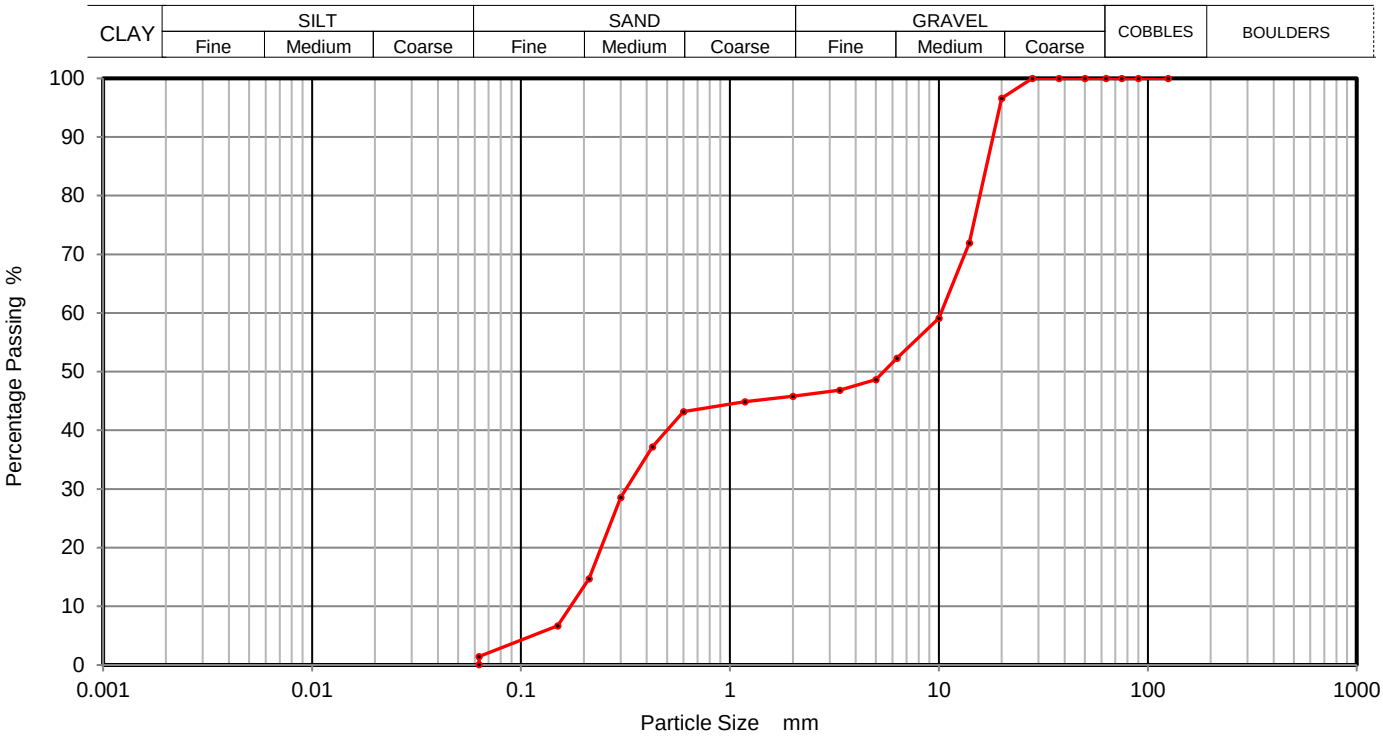
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**35579**
		Borehole/Pit No.	**M05**
Site Name	**Foynes Port**	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	**22.40**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	72		
10	59		
6.3	52		
5	49		
3.35	47		
2	46		
1.18	45		
0.6	43		
0.425	37		
0.3	29		
0.212	15		
0.15	7		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	54
Sand	45
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

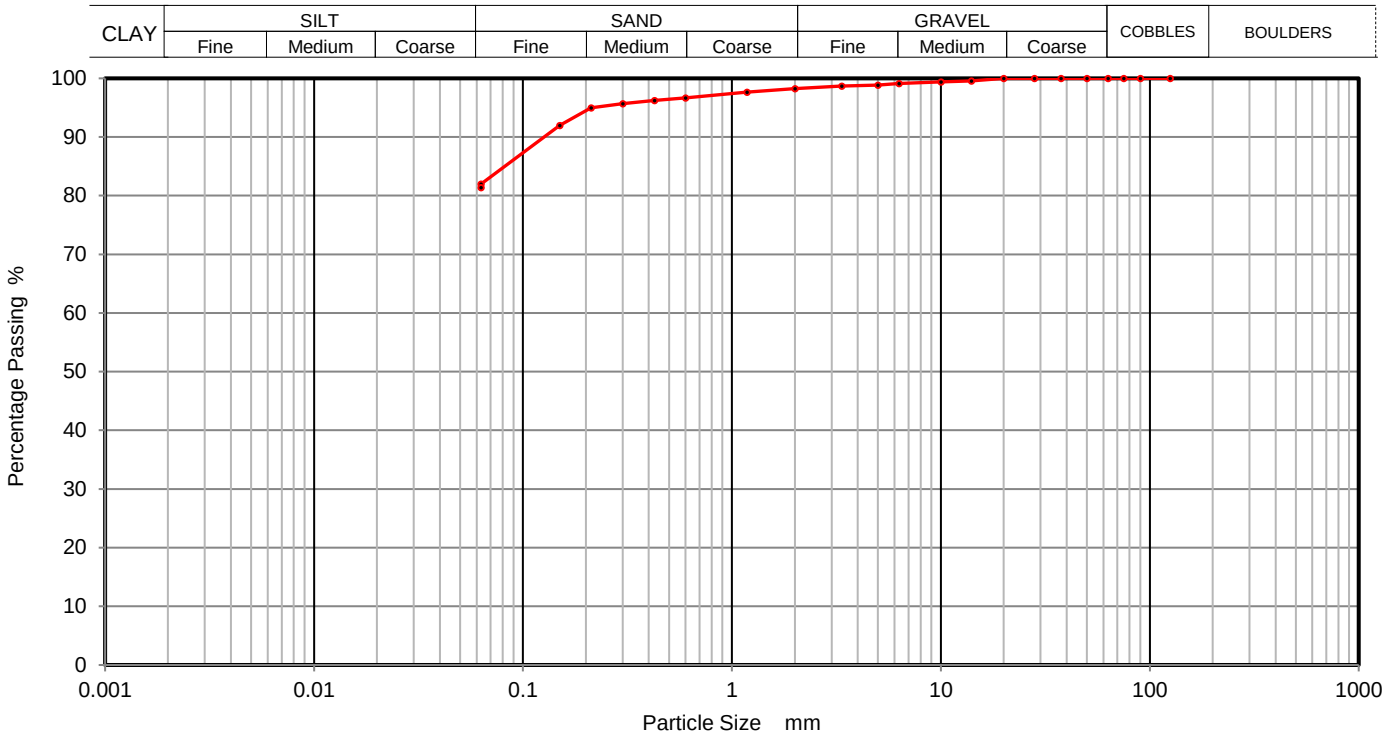
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	0.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	96		
0.3	96		
0.212	95		
0.15	92		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	16
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

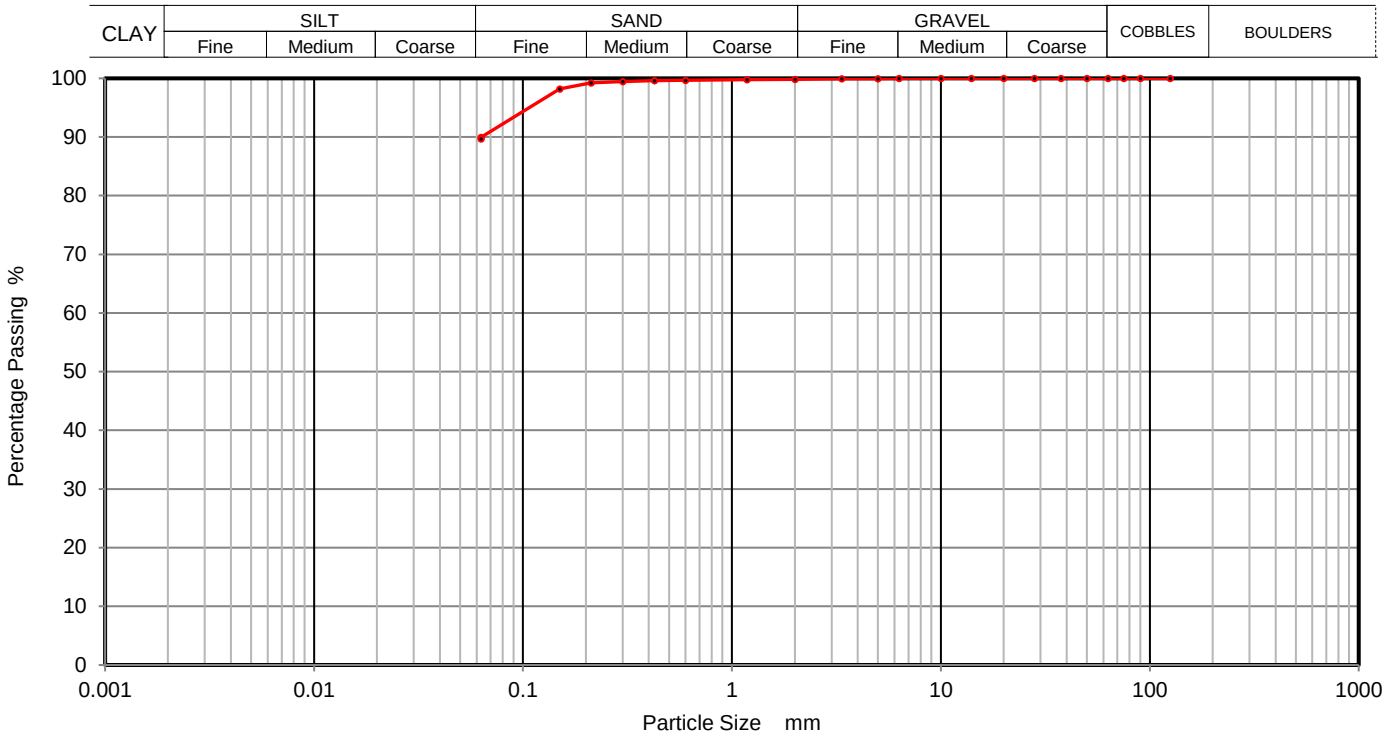
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	98		
0.063	90		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	10
Silt and Clay	90

Grading Analysis	
Uniformity Coefficient	

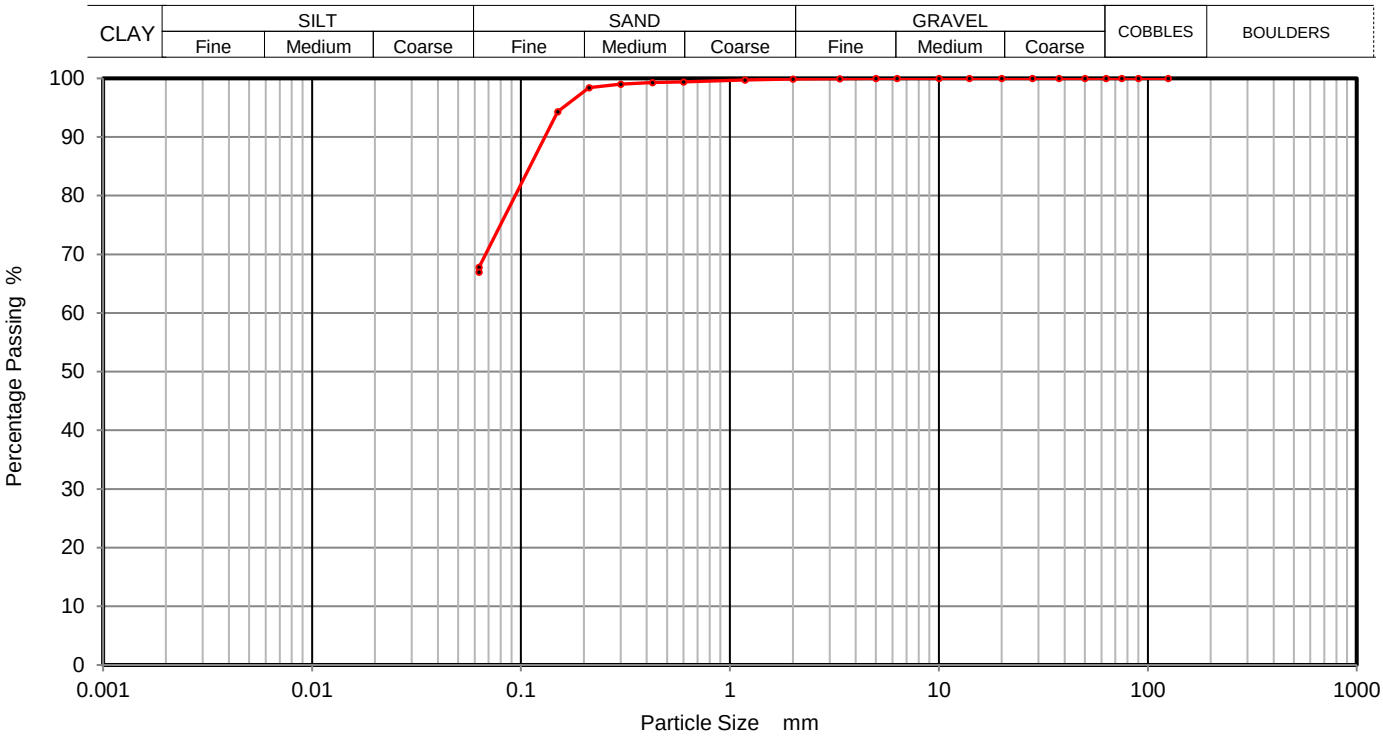
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	5.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	94		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	32
Silt and Clay	68

Grading Analysis	
Uniformity Coefficient	

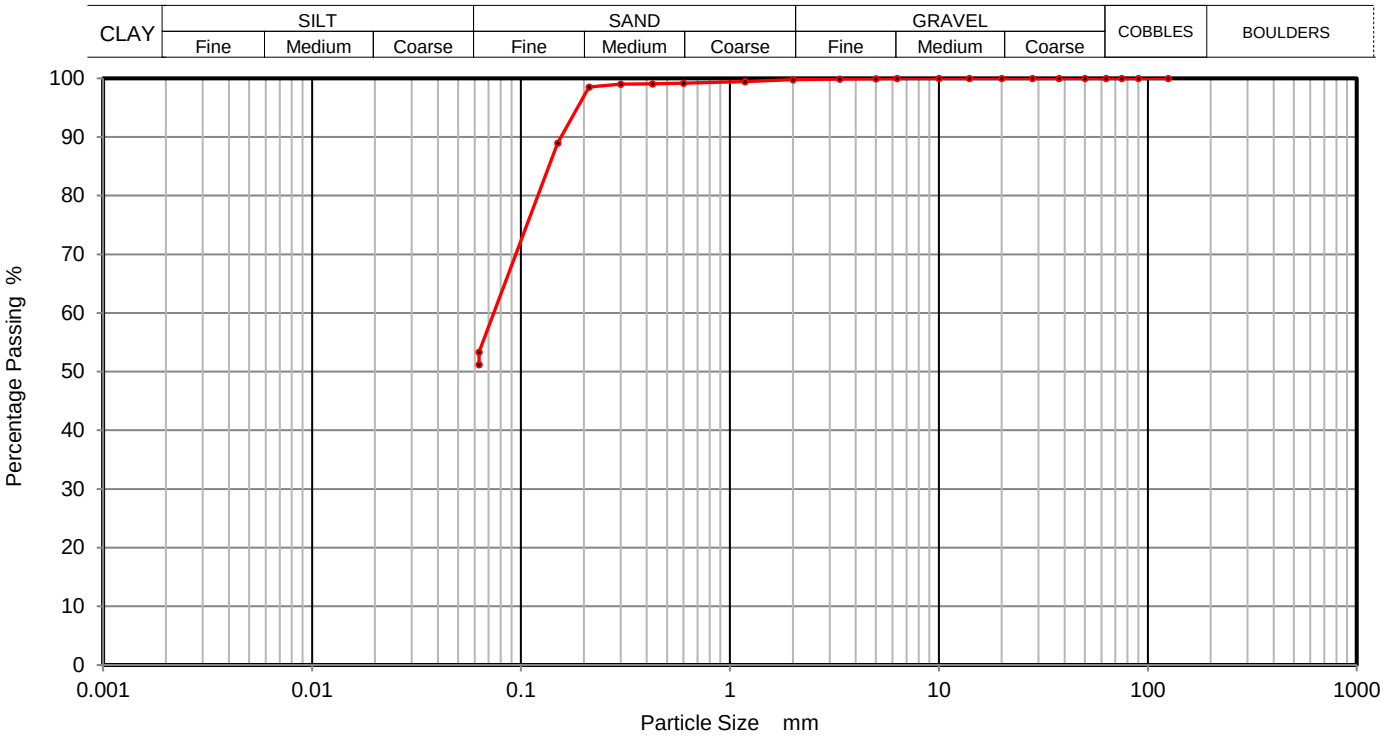
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	6.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	89		
0.063	53		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	47
Silt and Clay	53

Grading Analysis	
Uniformity Coefficient	

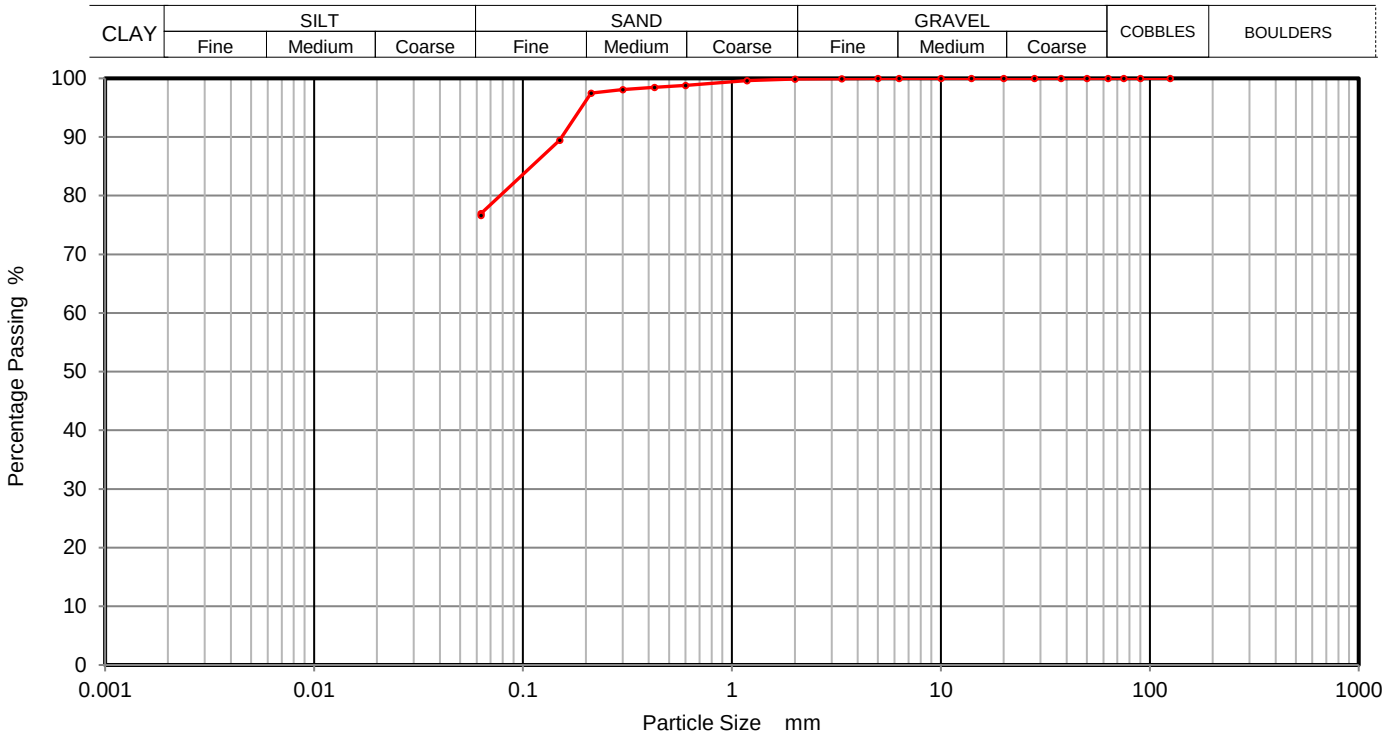
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	89		
0.063	77		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	23
Silt and Clay	77

Grading Analysis	
Uniformity Coefficient	

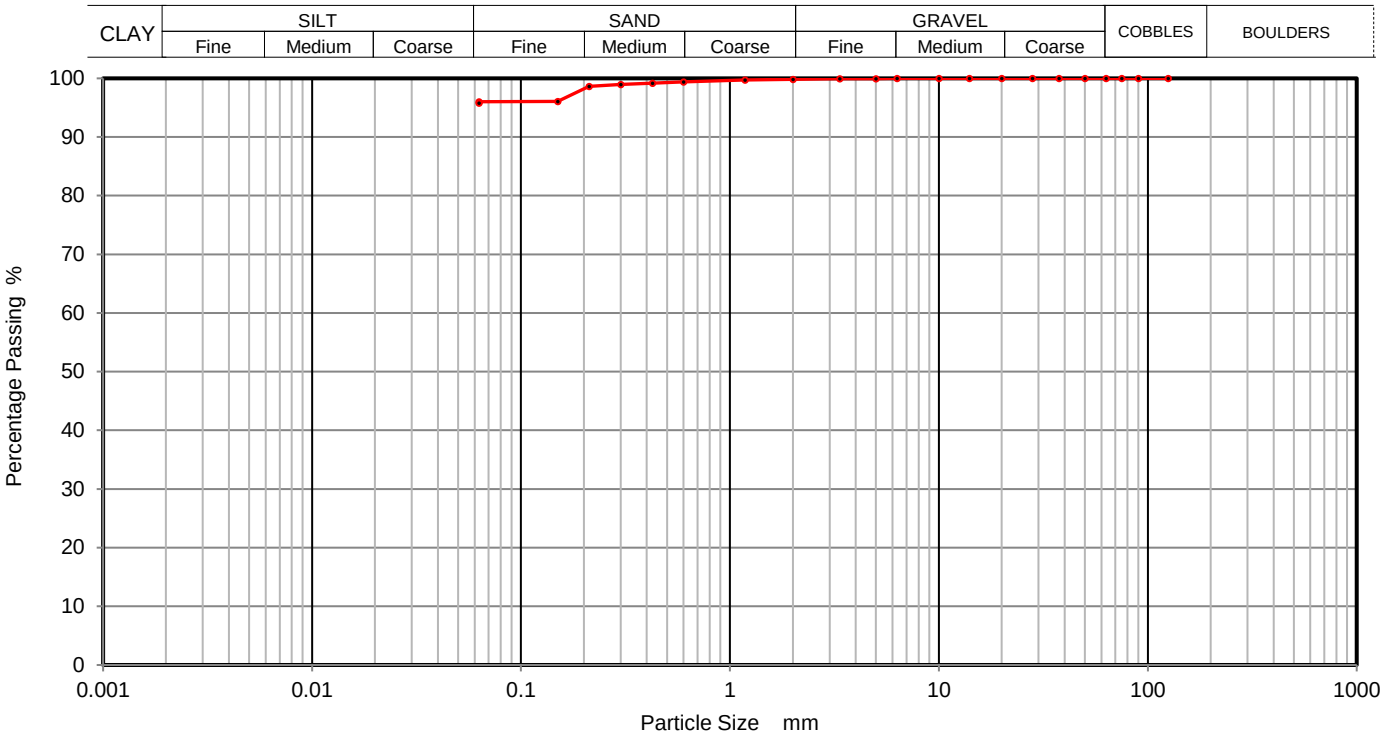
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	96		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	4
Silt and Clay	96

Grading Analysis	
Uniformity Coefficient	

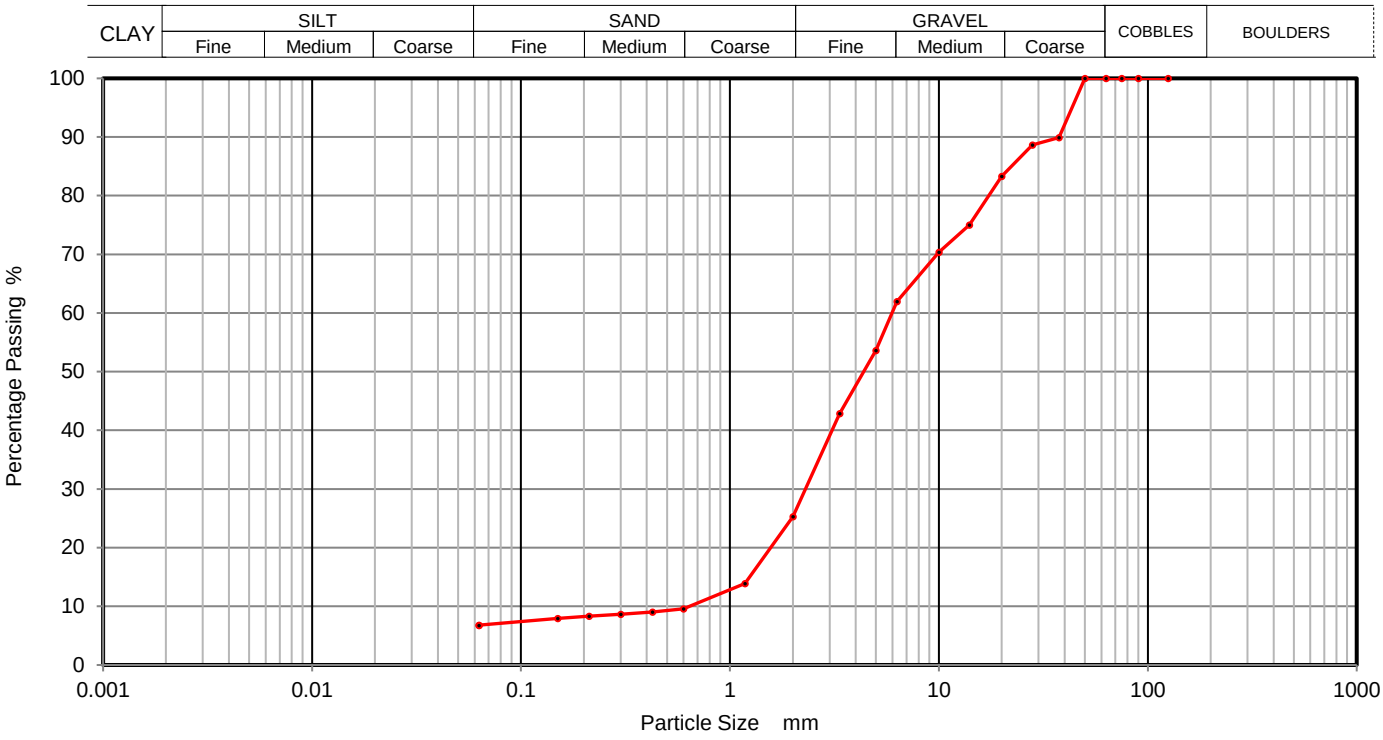
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	90		
28	89		
20	83		
14	75		
10	70		
6.3	62		
5	54		
3.35	43		
2	25		
1.18	14		
0.6	10		
0.425	9		
0.3	9		
0.212	8		
0.15	8		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	75
Sand	18
Silt and Clay	7

Grading Analysis	
Uniformity Coefficient	

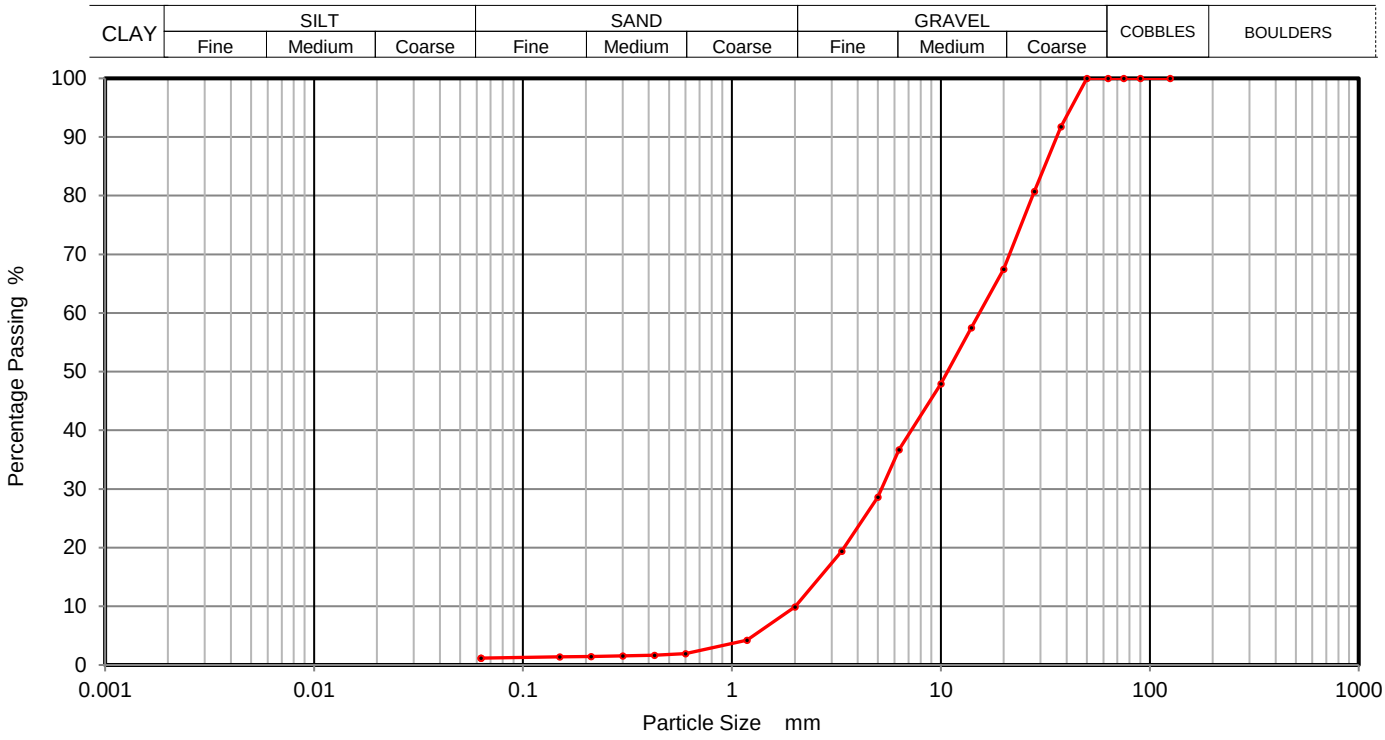
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	15.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	92		
28	81		
20	67		
14	57		
10	48		
6.3	37		
5	29		
3.35	19		
2	10		
1.18	4		
0.6	2		
0.425	2		
0.3	2		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	90
Sand	9
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

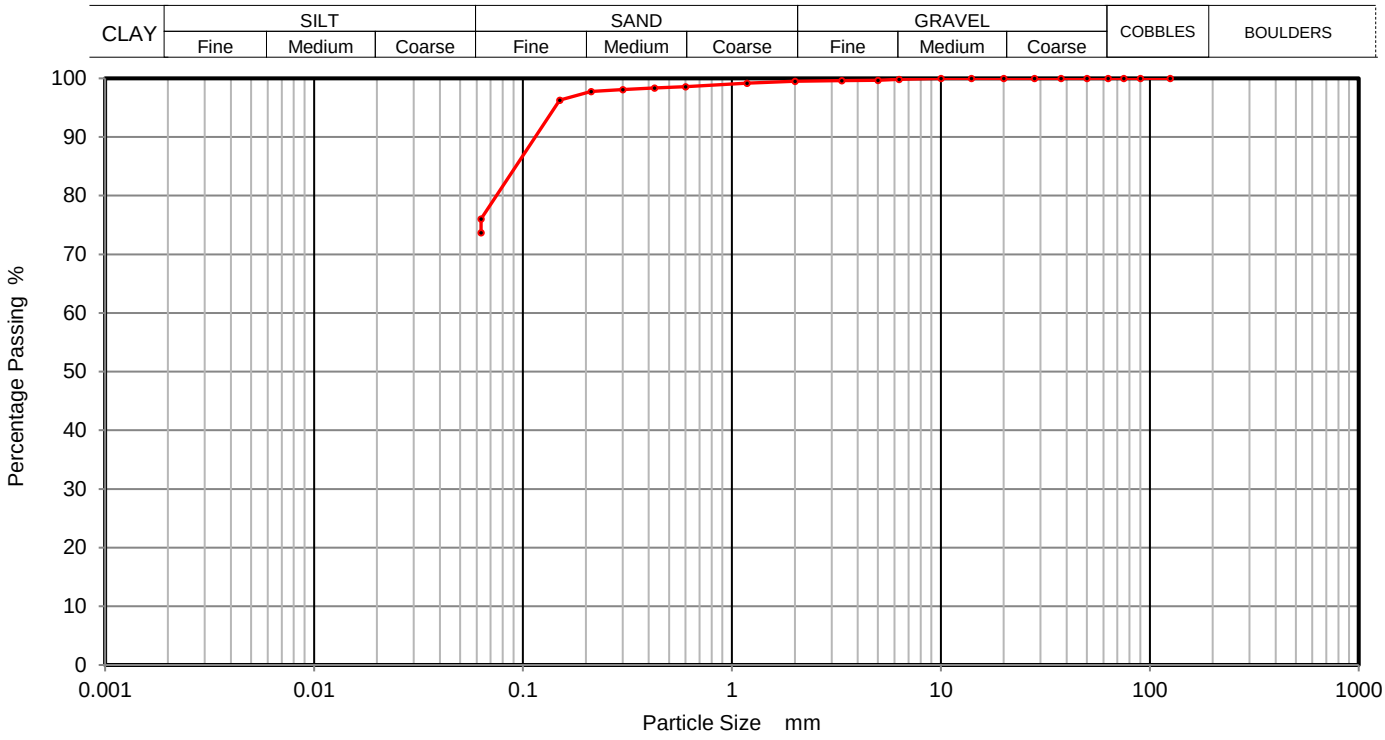
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	98		
0.212	98		
0.15	96		
0.063	76		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	23
Silt and Clay	76

Grading Analysis	
Uniformity Coefficient	

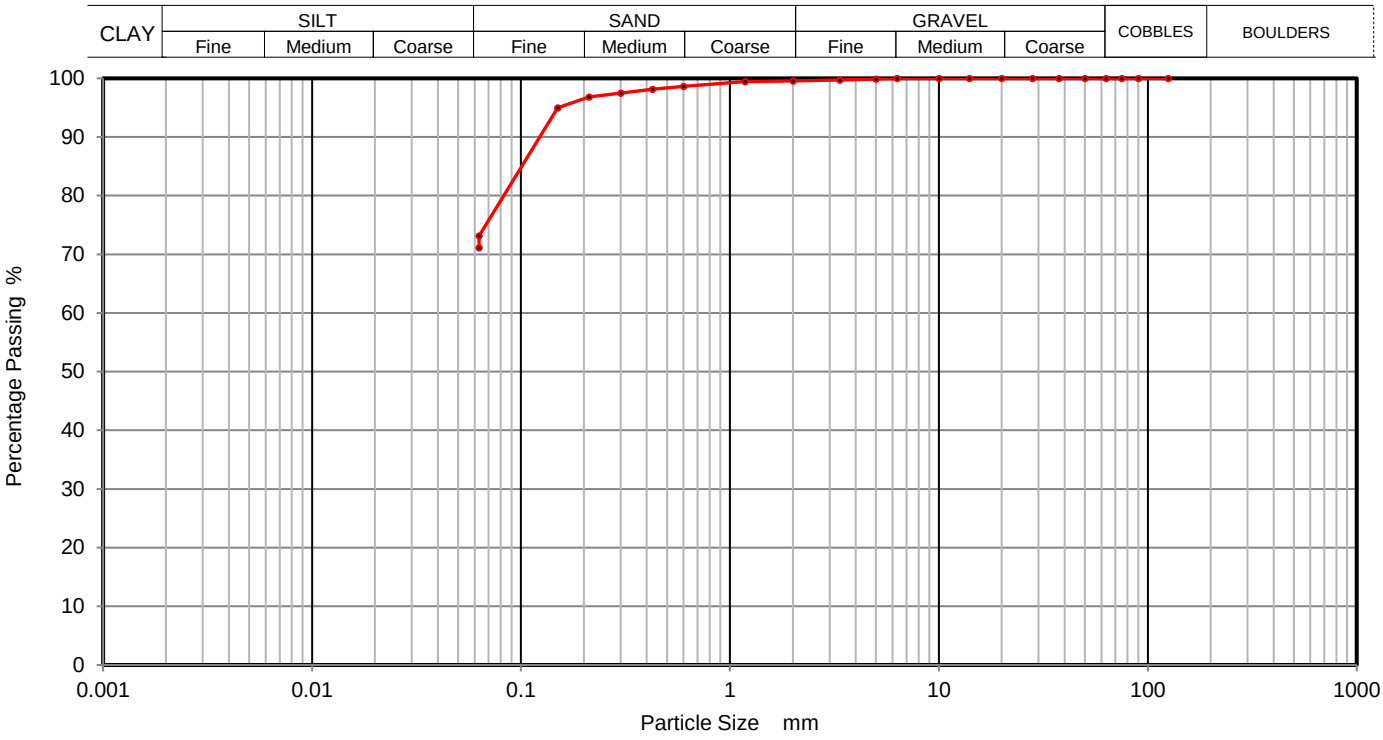
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	98		
0.3	97		
0.212	97		
0.15	95		
0.063	73		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	27
Silt and Clay	73

Grading Analysis	
Uniformity Coefficient	

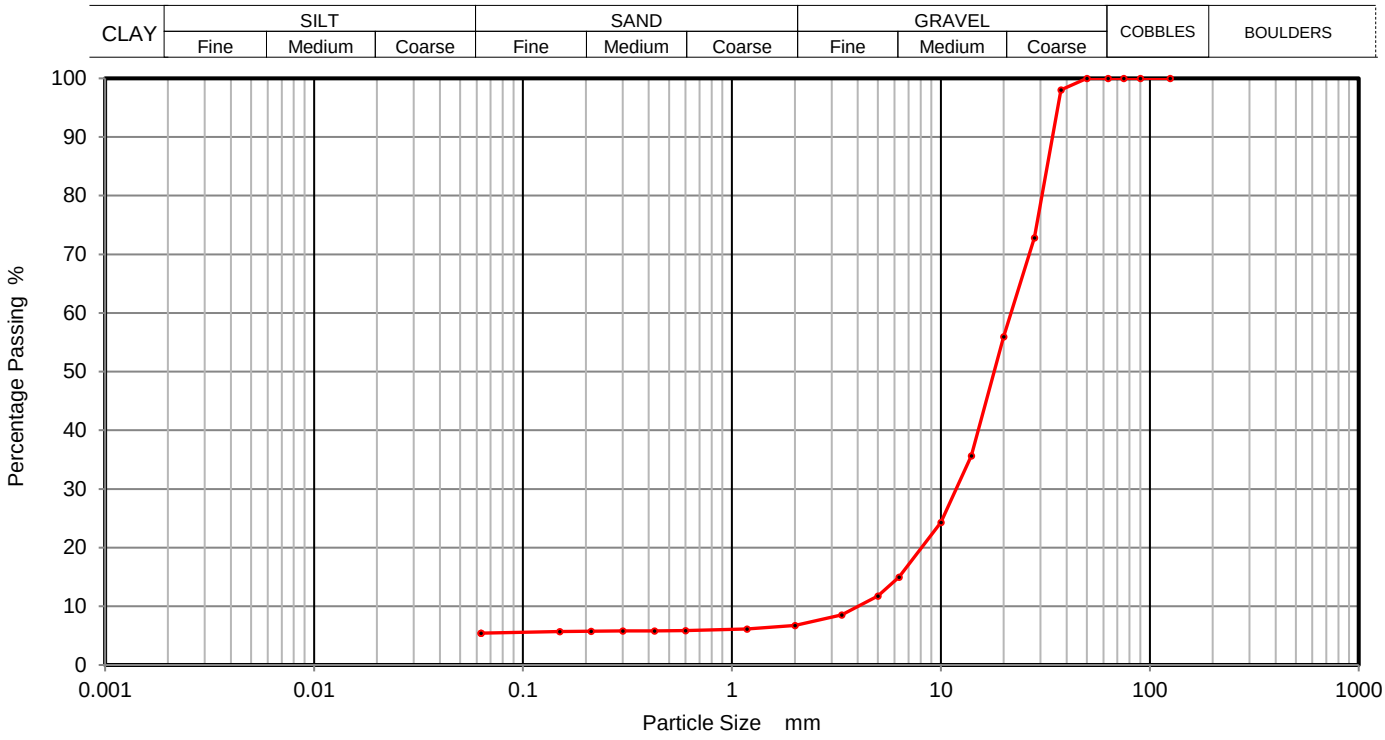
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy slightly silty fine to coarse GRAVEL	Depth Top	5.20
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	98		
28	73		
20	56		
14	36		
10	24		
6.3	15		
5	12		
3.35	9		
2	7		
1.18	6		
0.6	6		
0.425	6		
0.3	6		
0.212	6		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Cobbles	0
Gravel	93
Sand	2
Silt and Clay	5

Grading Analysis	
Uniformity Coefficient	

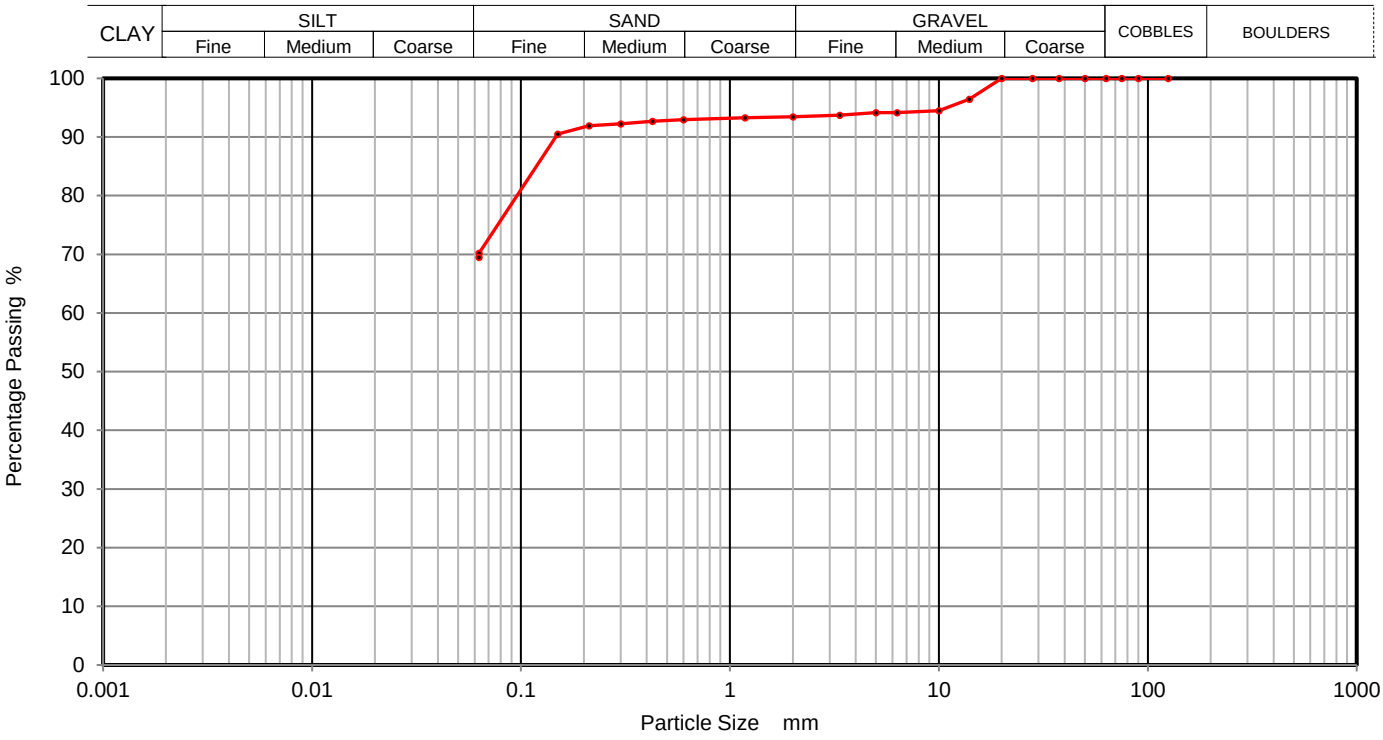
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	94		
6.3	94		
5	94		
3.35	94		
2	93		
1.18	93		
0.6	93		
0.425	93		
0.3	92		
0.212	92		
0.15	90		
0.063	70		

Sample Proportions	% dry mass
Cobbles	0
Gravel	7
Sand	23
Silt and Clay	70

Grading Analysis	
Uniformity Coefficient	

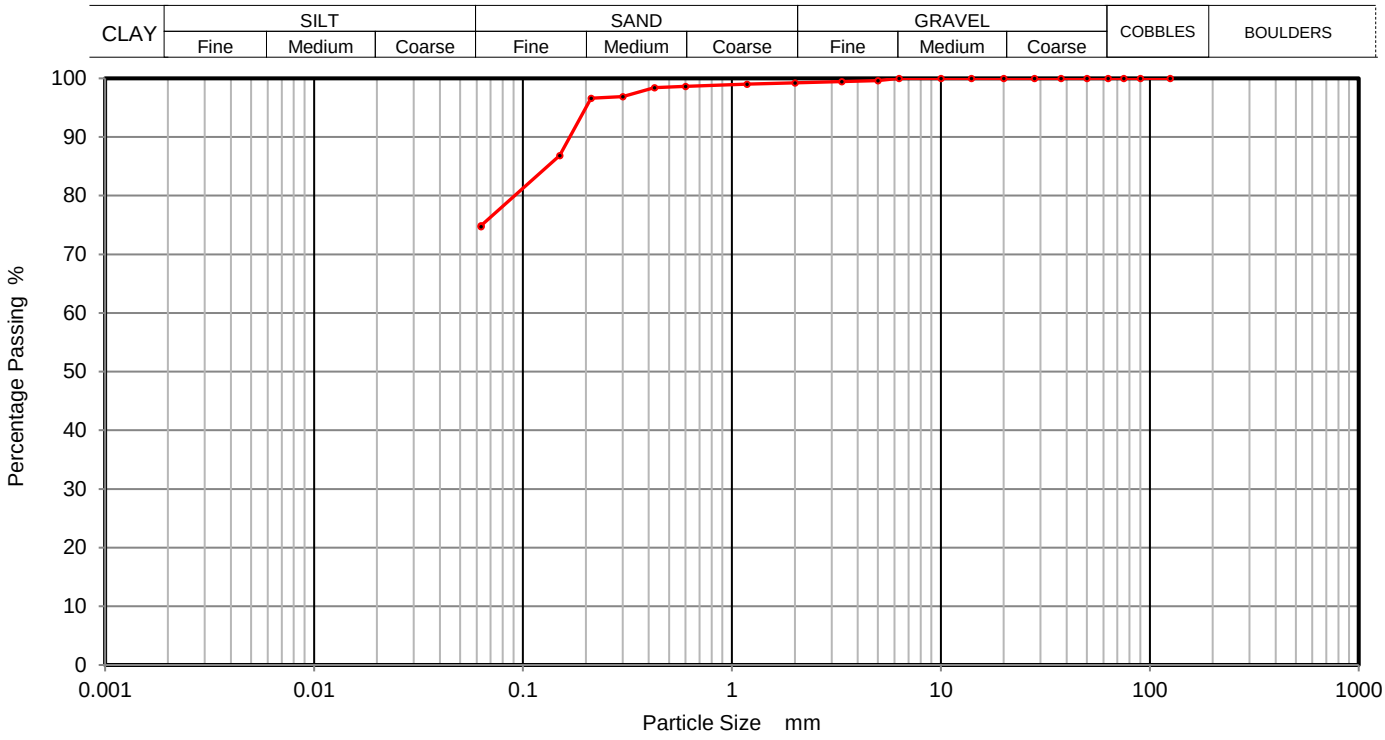
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	8.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	97		
0.212	97		
0.15	87		
0.063	75		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	24
Silt and Clay	75

Grading Analysis	
Uniformity Coefficient	

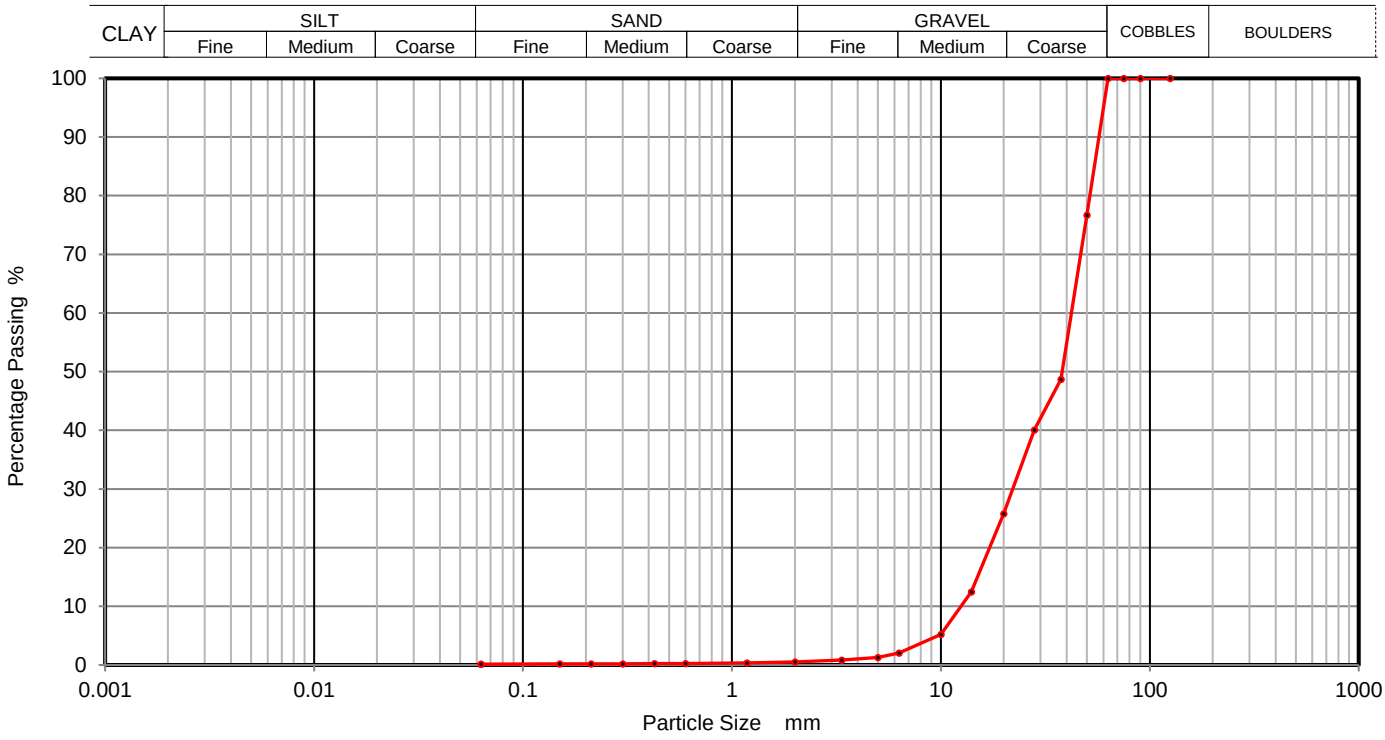
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	17.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	77		
37.5	49		
28	40		
20	26		
14	12		
10	5		
6.3	2		
5	1		
3.35	1		
2	1		
1.18	0		
0.6	0		
0.425	0		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	99
Sand	1
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

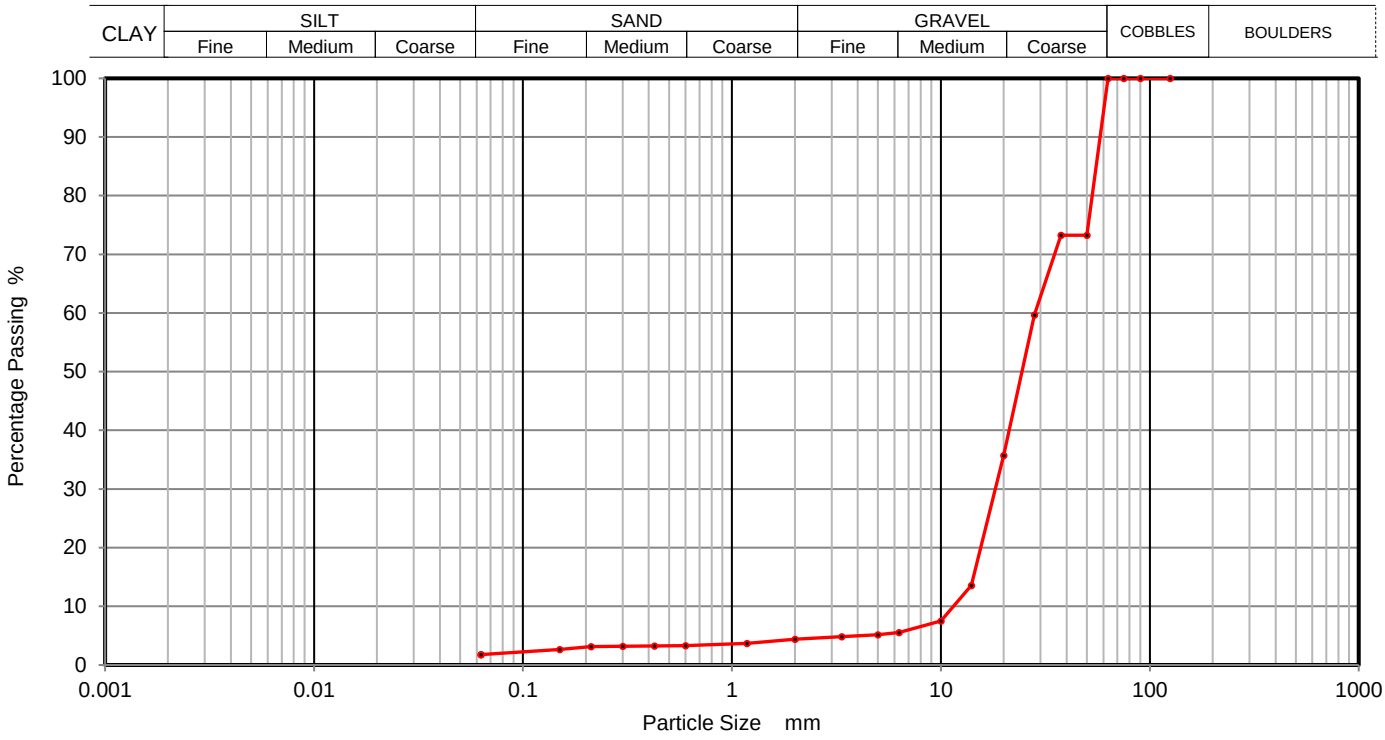
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy slightly silty fine to coarse GRAVEL	Depth Top	20.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	73		
37.5	73		
28	60		
20	36		
14	14		
10	8		
6.3	6		
5	5		
3.35	5		
2	4		
1.18	4		
0.6	3		
0.425	3		
0.3	3		
0.212	3		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	96
Sand	2
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

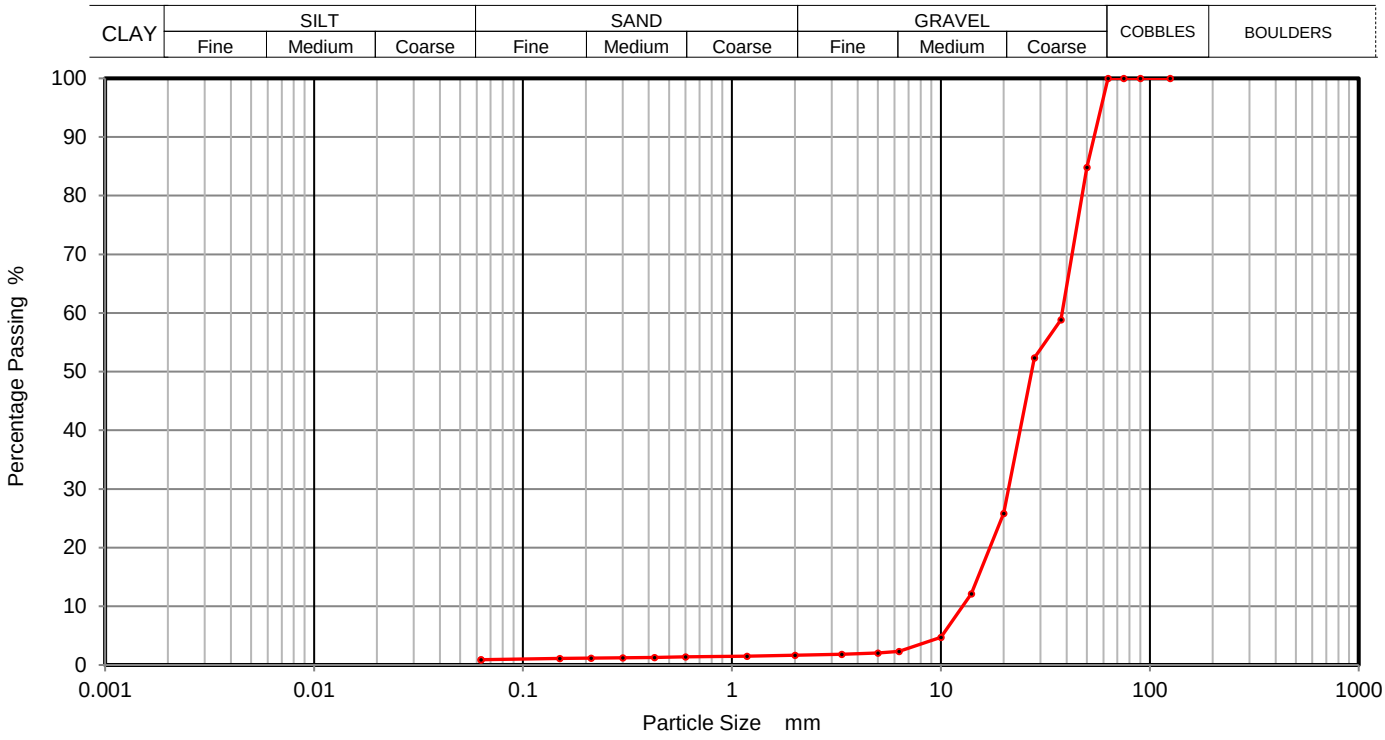
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M07
Site Name	Foynes Port	Sample No.	
Soil Description	Brown/grey slightly fine to coarse sandy slightly silty fine to coarse GRAVEL	Depth Top	21.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	85		
37.5	59		
28	52		
20	26		
14	12		
10	5		
6.3	2		
5	2		
3.35	2		
2	2		
1.18	2		
0.6	1		
0.425	1		
0.3	1		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	98
Sand	1
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

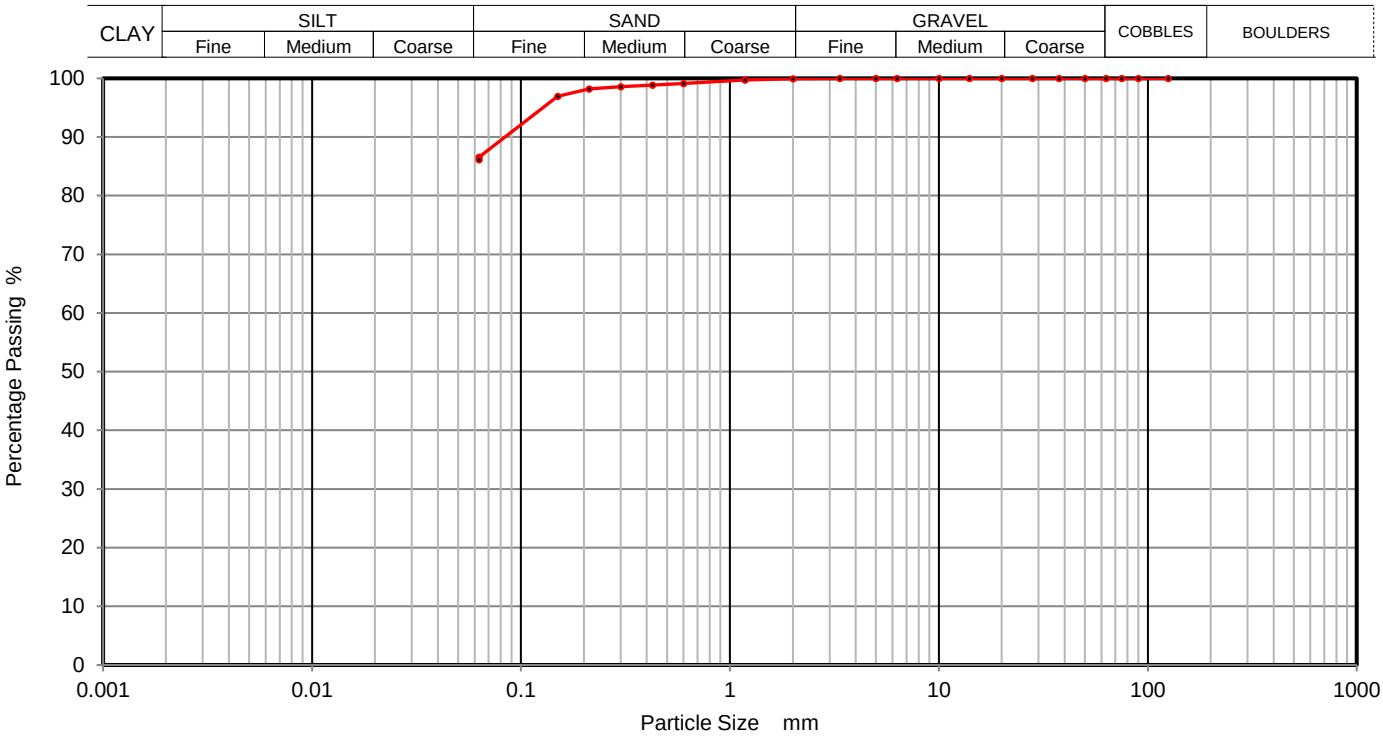
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	97		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

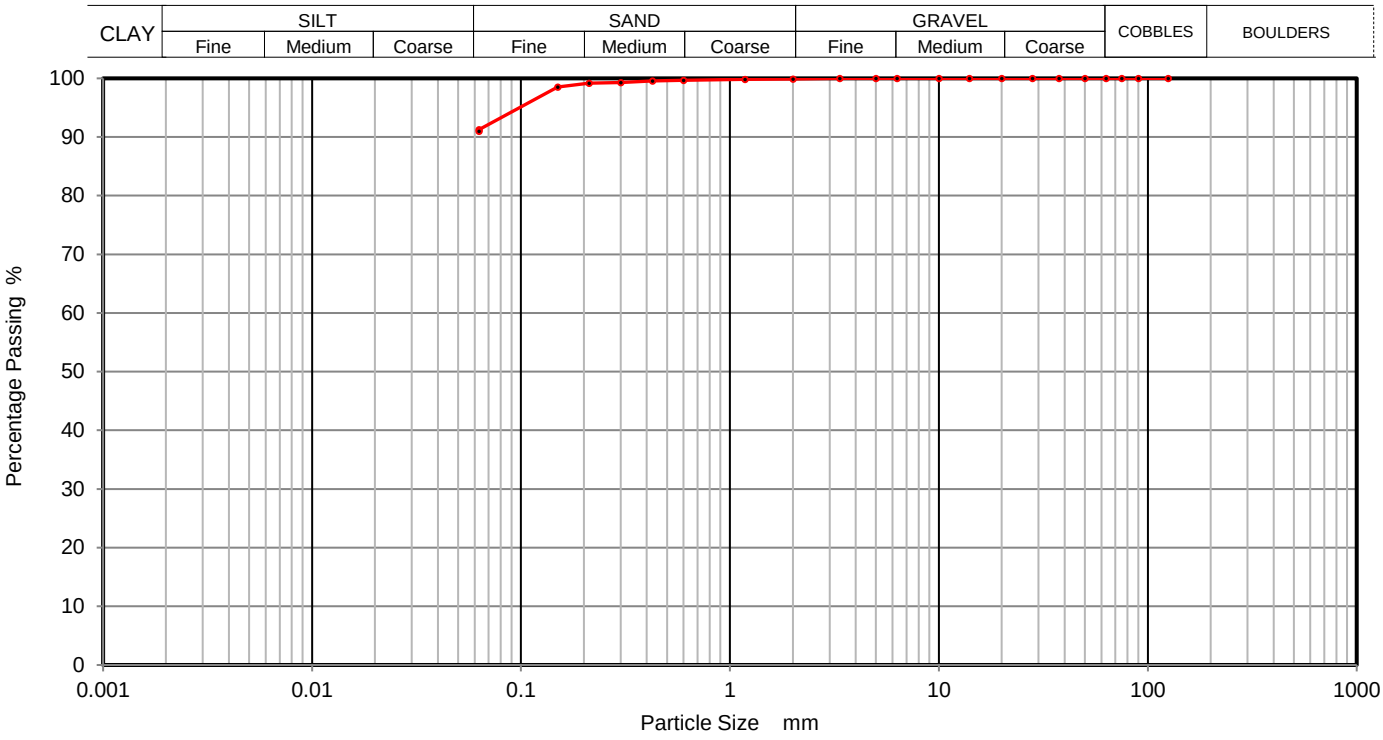
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	91		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	9
Silt and Clay	91

Grading Analysis	
Uniformity Coefficient	

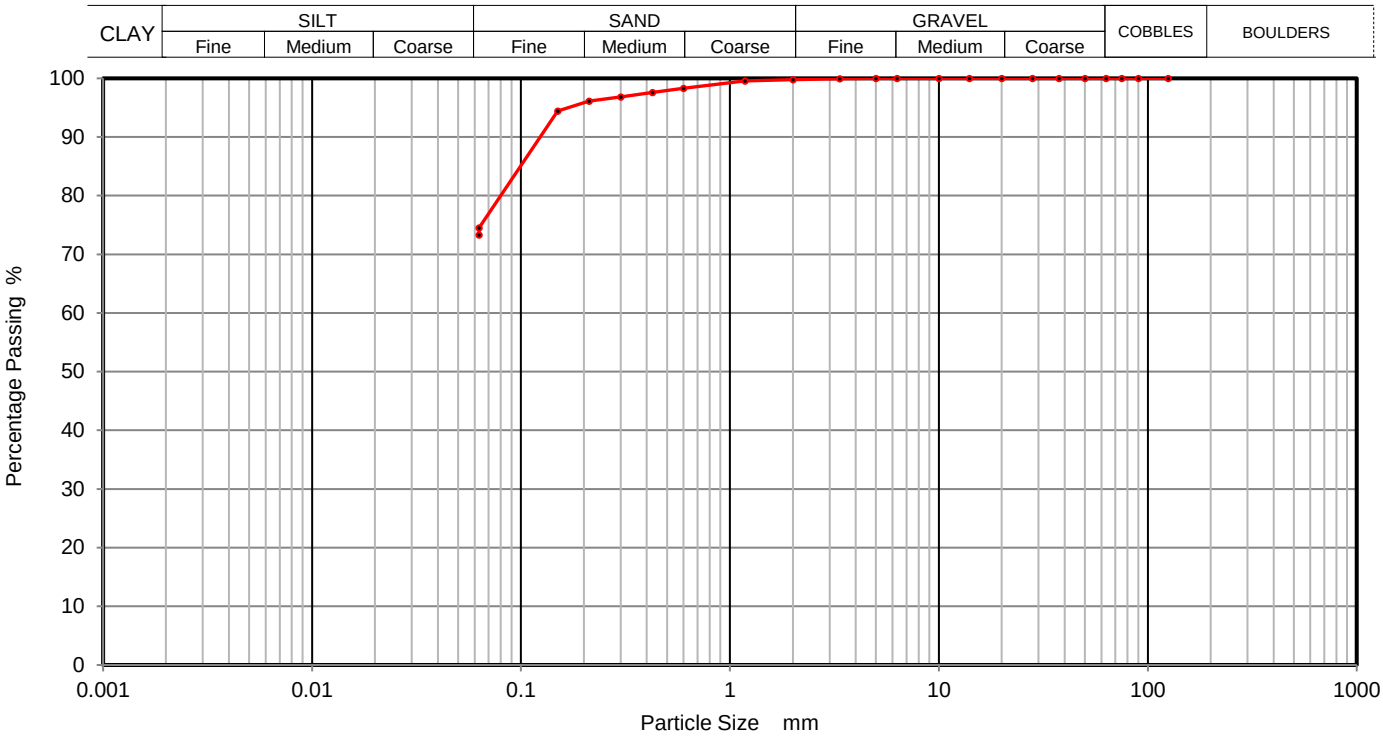
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	2.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	98		
0.3	97		
0.212	96		
0.15	94		
0.063	75		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	25
Silt and Clay	75

Grading Analysis	
Uniformity Coefficient	

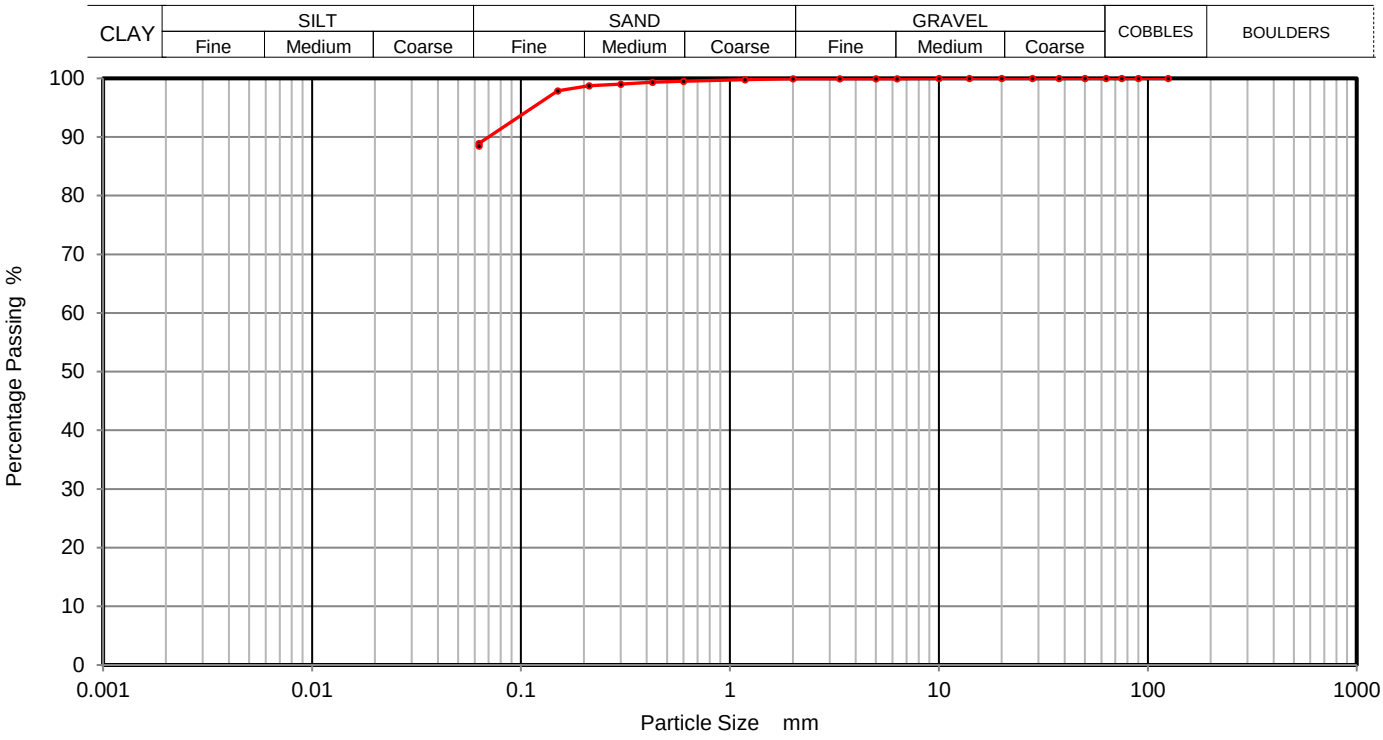
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	11
Silt and Clay	89

Grading Analysis	
Uniformity Coefficient	

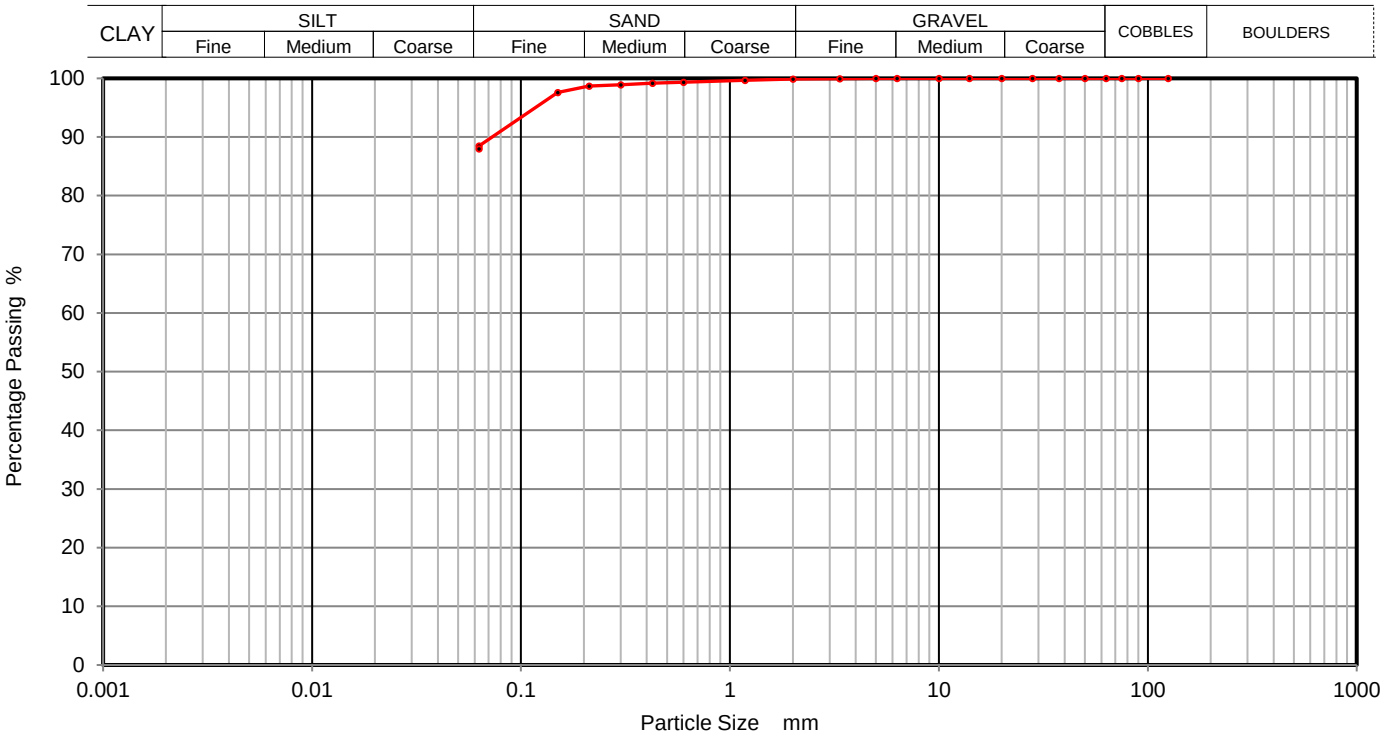
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	7.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	88		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	12
Silt and Clay	88

Grading Analysis	
Uniformity Coefficient	

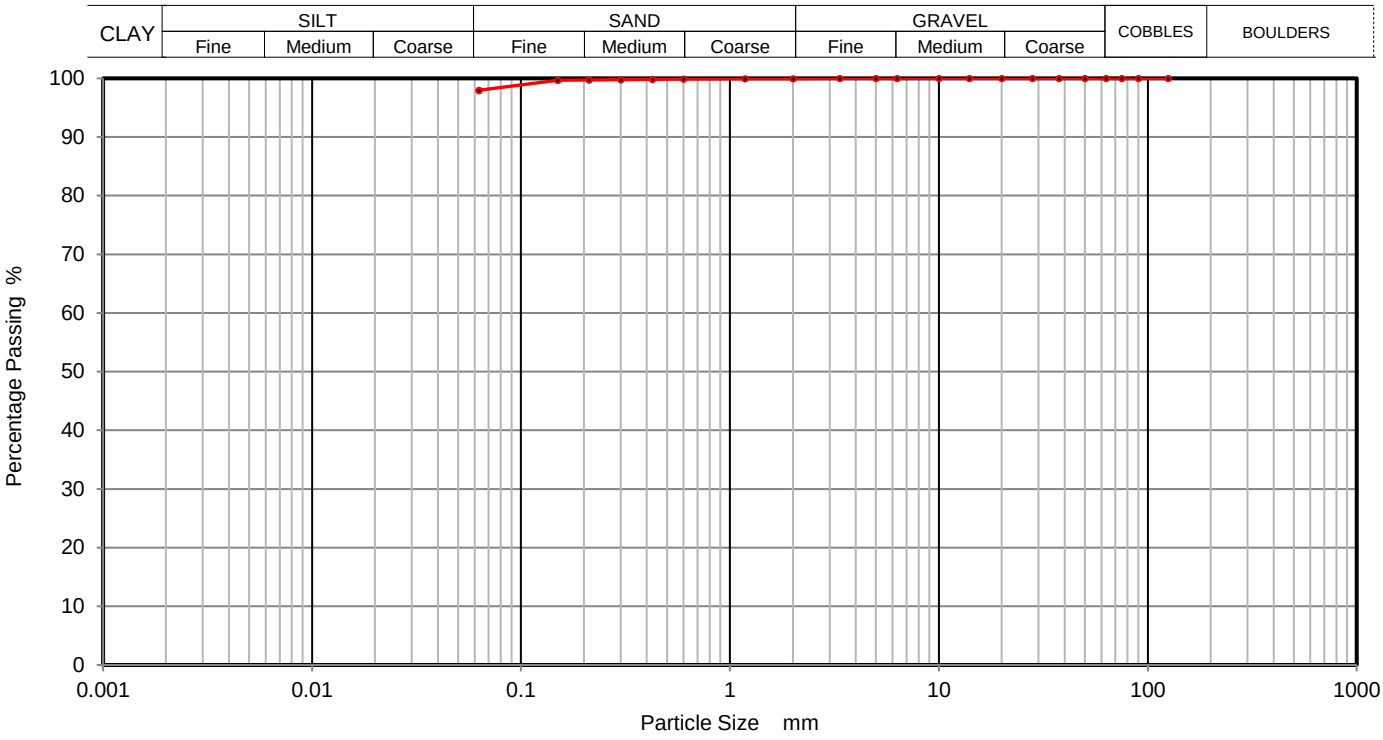
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	10.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	98		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	2
Silt and Clay	98

Grading Analysis	
Uniformity Coefficient	

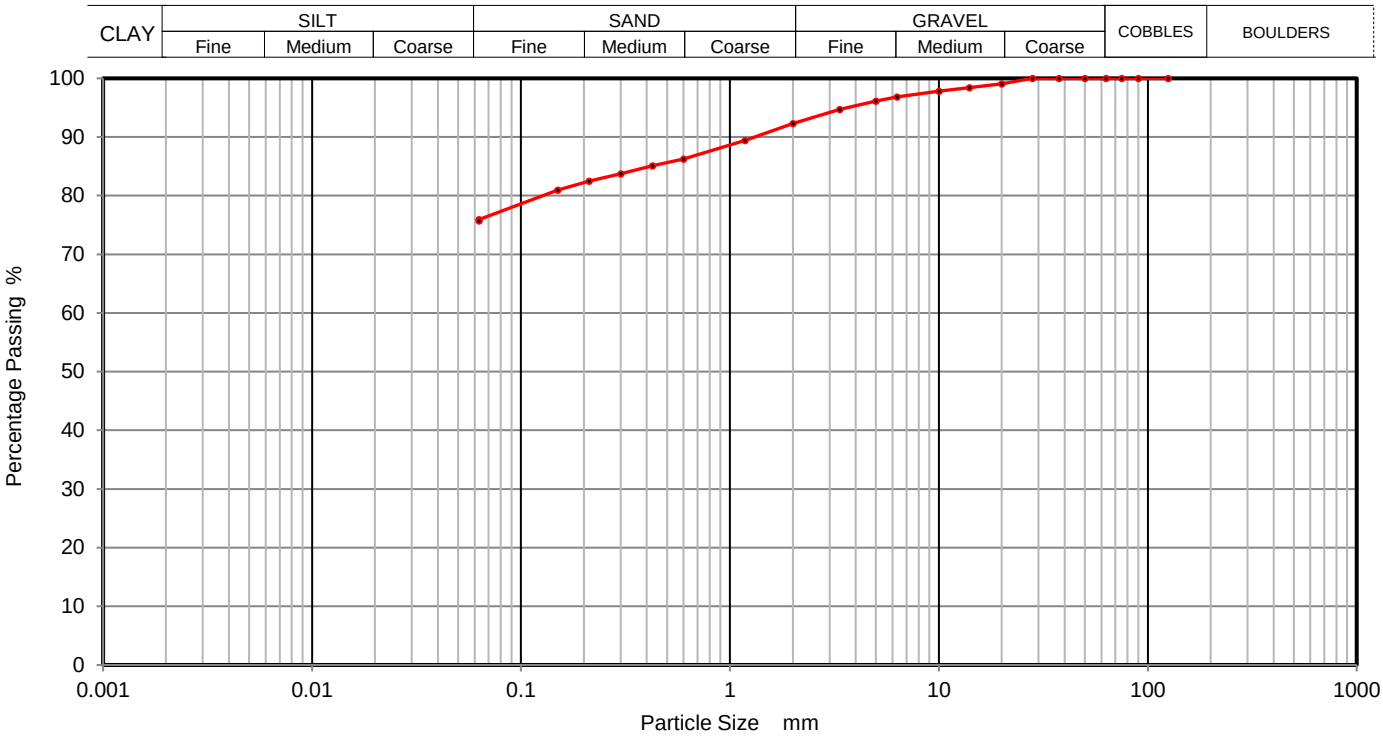
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse gravelly fine to coarse sandy SILT/CLAY	Depth Top	13.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	98		
6.3	97		
5	96		
3.35	95		
2	92		
1.18	89		
0.6	86		
0.425	85		
0.3	84		
0.212	82		
0.15	81		
0.063	76		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	16
Silt and Clay	76

Grading Analysis	
Uniformity Coefficient	

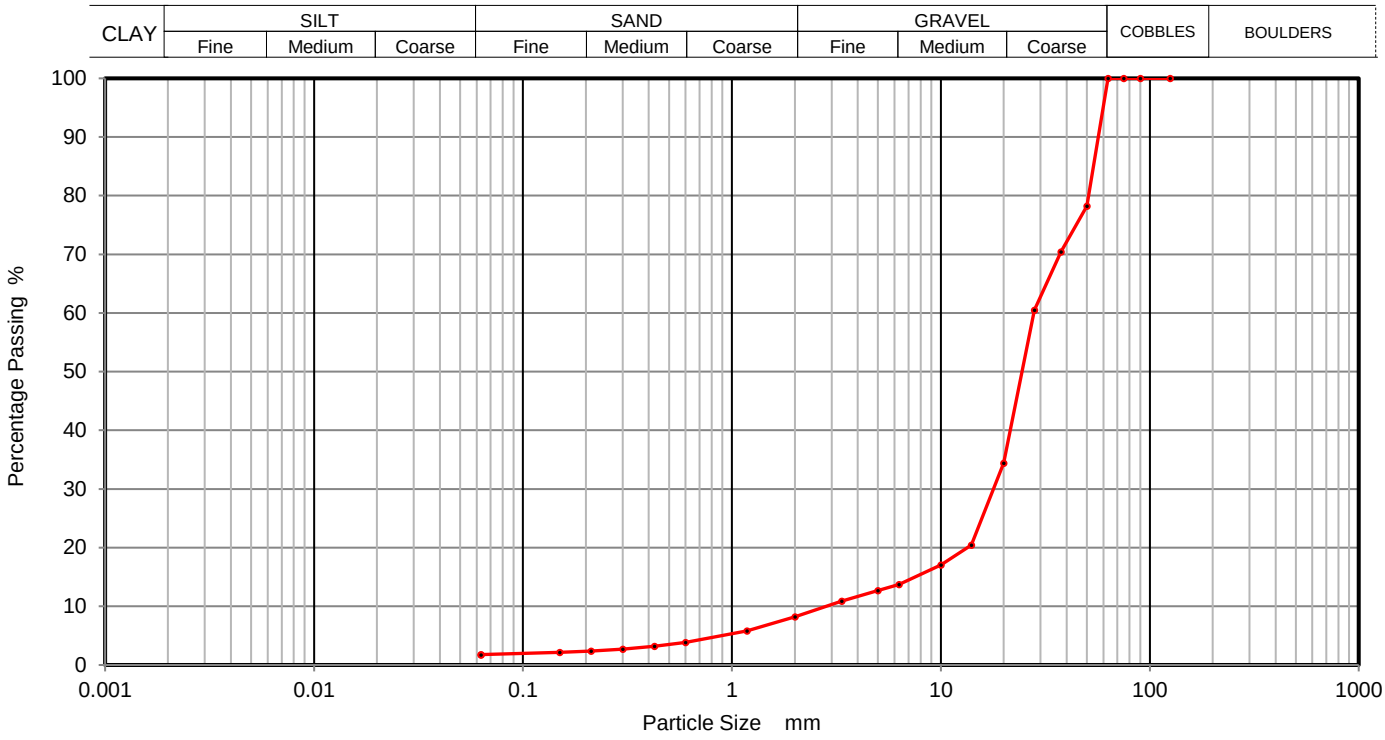
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	20/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	13.80
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	78		
37.5	70		
28	60		
20	34		
14	20		
10	17		
6.3	14		
5	13		
3.35	11		
2	8		
1.18	6		
0.6	4		
0.425	3		
0.3	3		
0.212	2		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	92
Sand	6
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

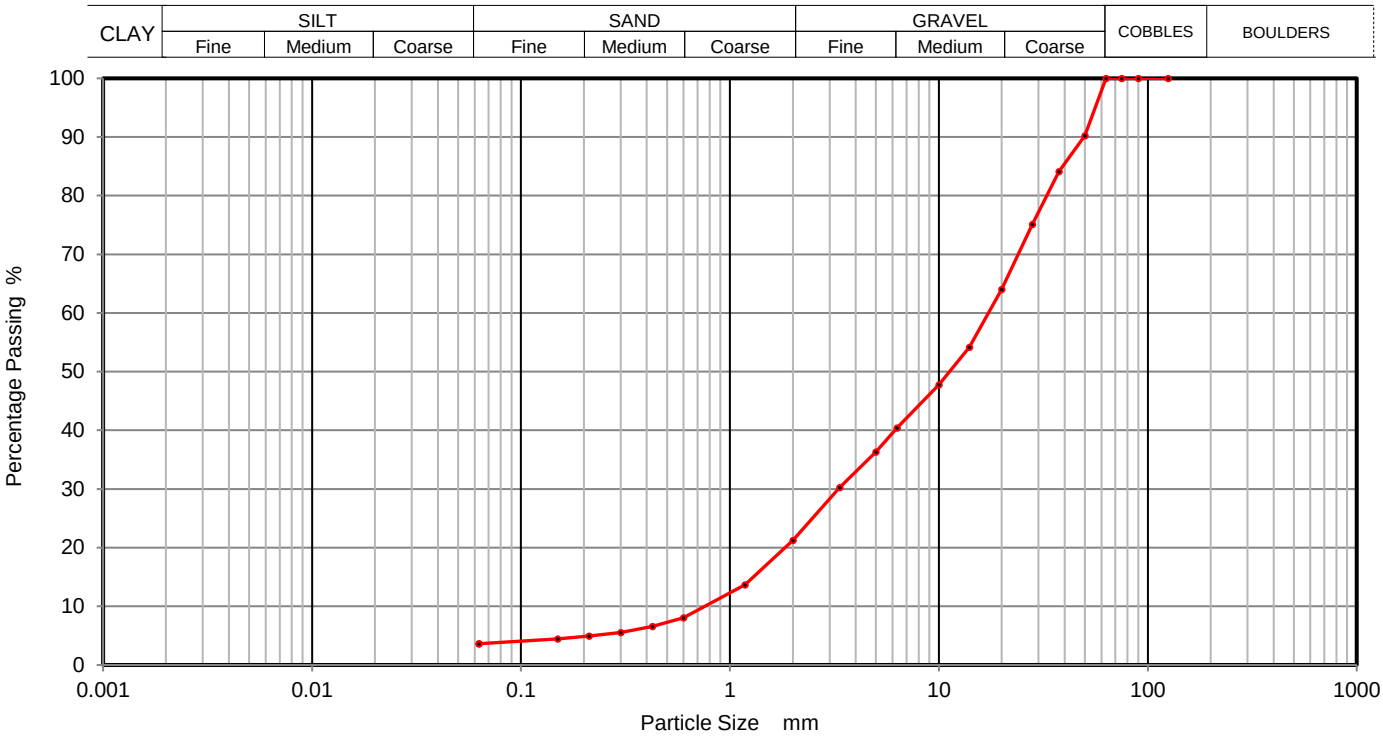
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	15.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	90		
37.5	84		
28	75		
20	64		
14	54		
10	48		
6.3	40		
5	36		
3.35	30		
2	21		
1.18	14		
0.6	8		
0.425	7		
0.3	6		
0.212	5		
0.15	4		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	79
Sand	17
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

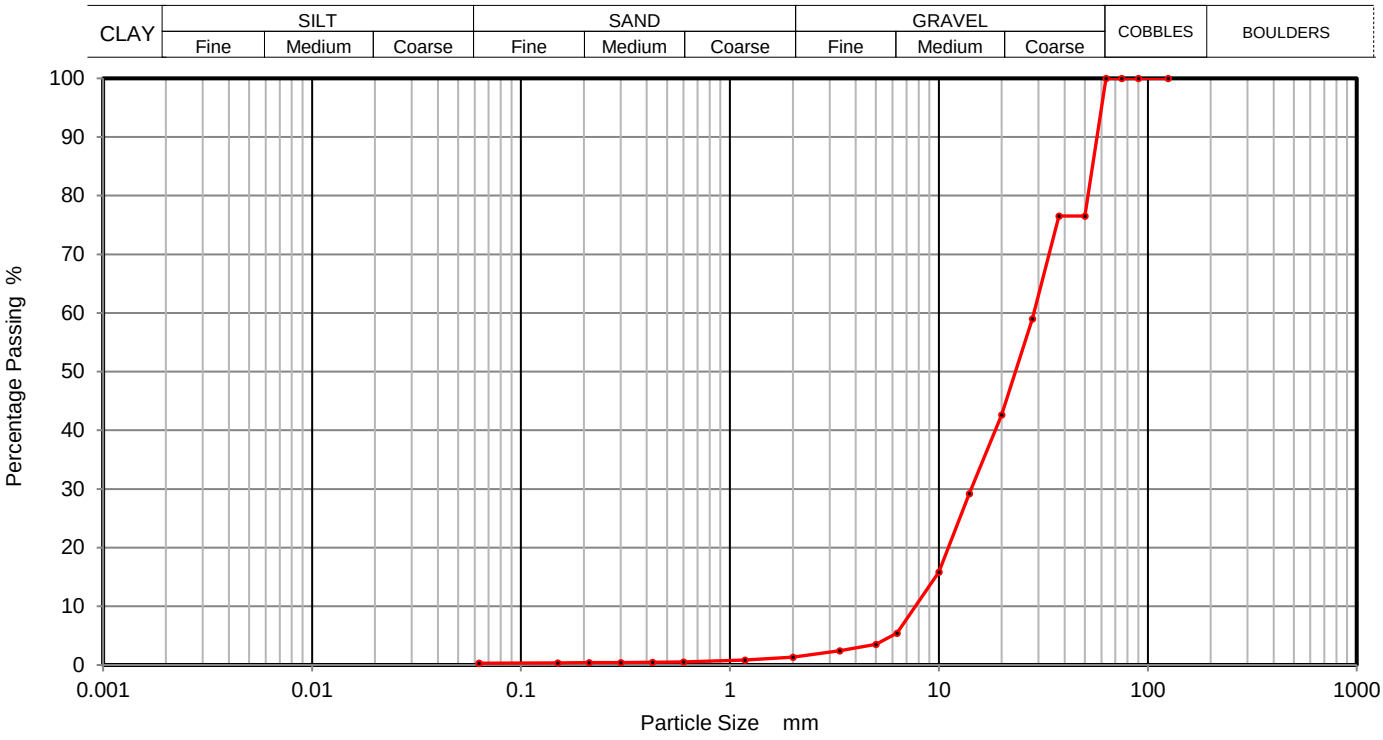
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	21.40
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	77		
37.5	77		
28	59		
20	43		
14	29		
10	16		
6.3	5		
5	4		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	0		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	99
Sand	1
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

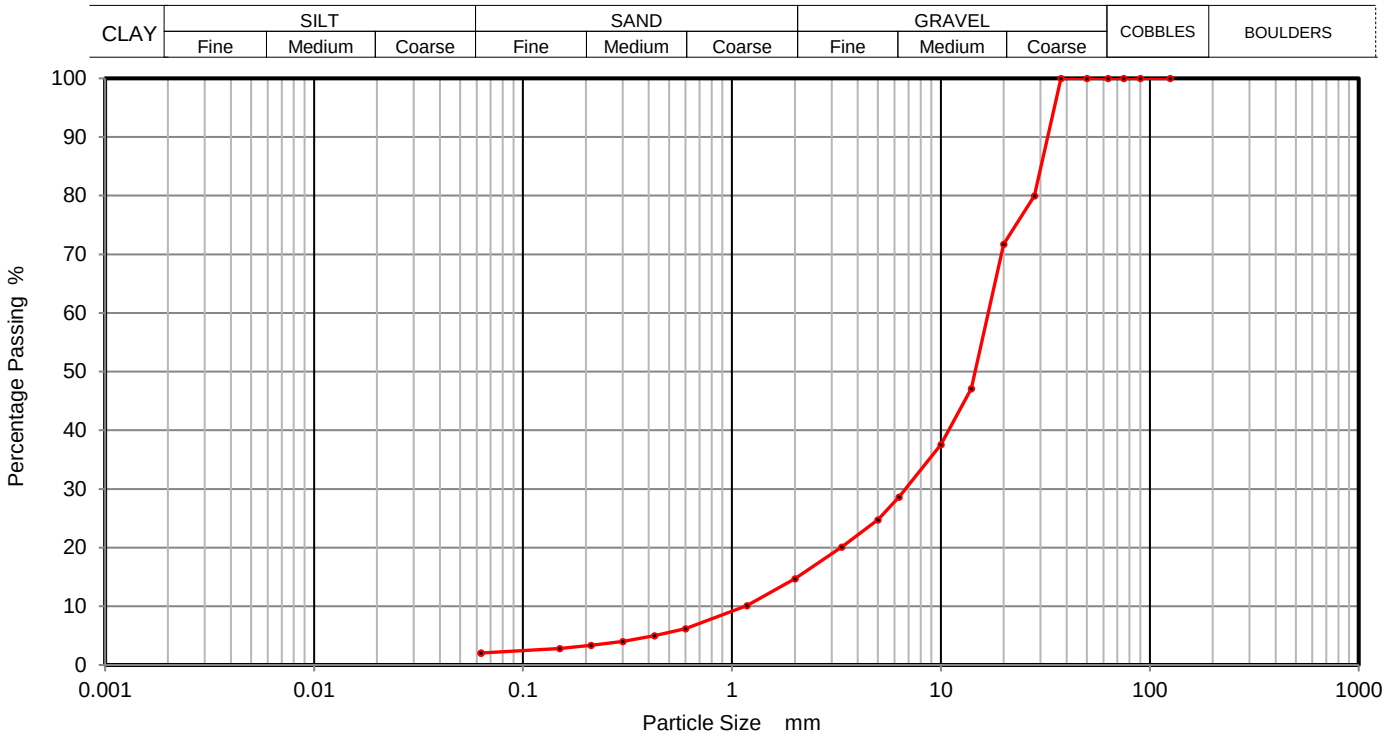
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	24.40
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	80		
20	72		
14	47		
10	38		
6.3	29		
5	25		
3.35	20		
2	15		
1.18	10		
0.6	6		
0.425	5		
0.3	4		
0.212	3		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	85
Sand	13
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

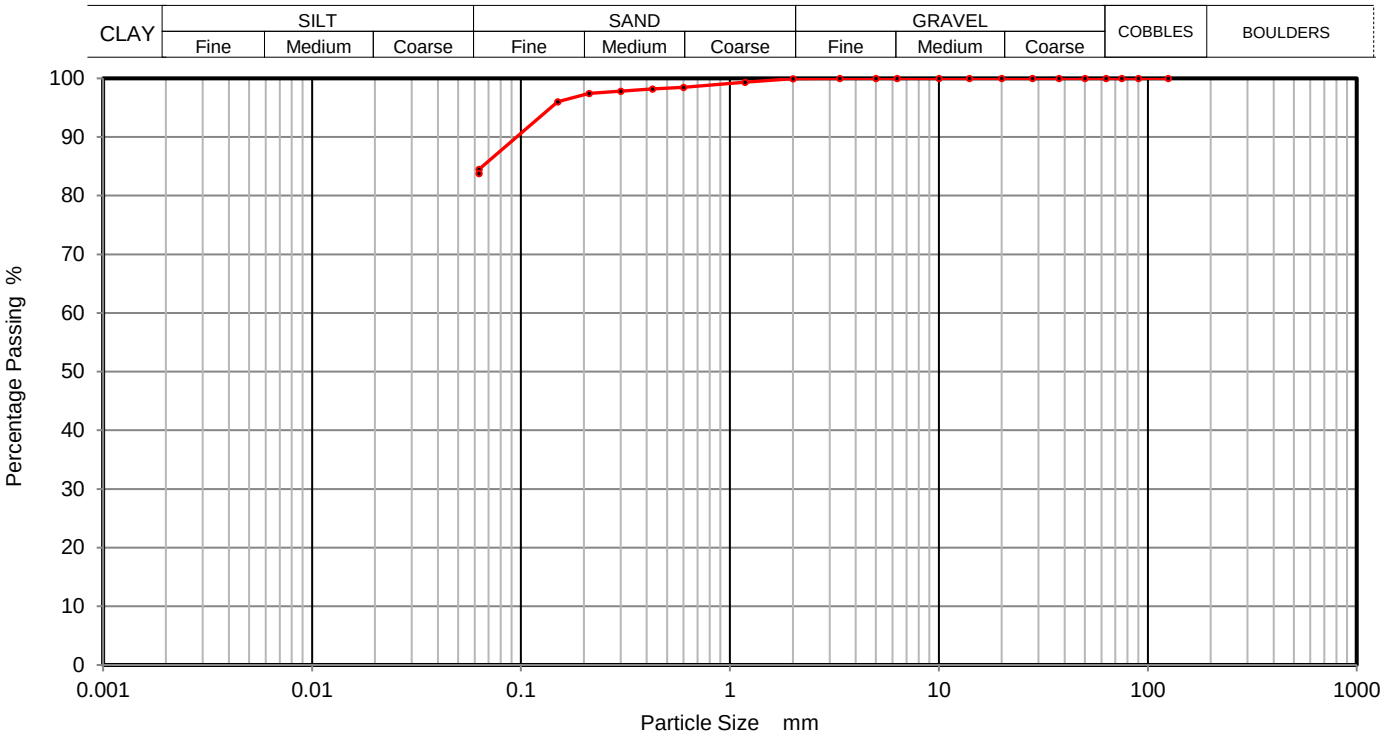
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

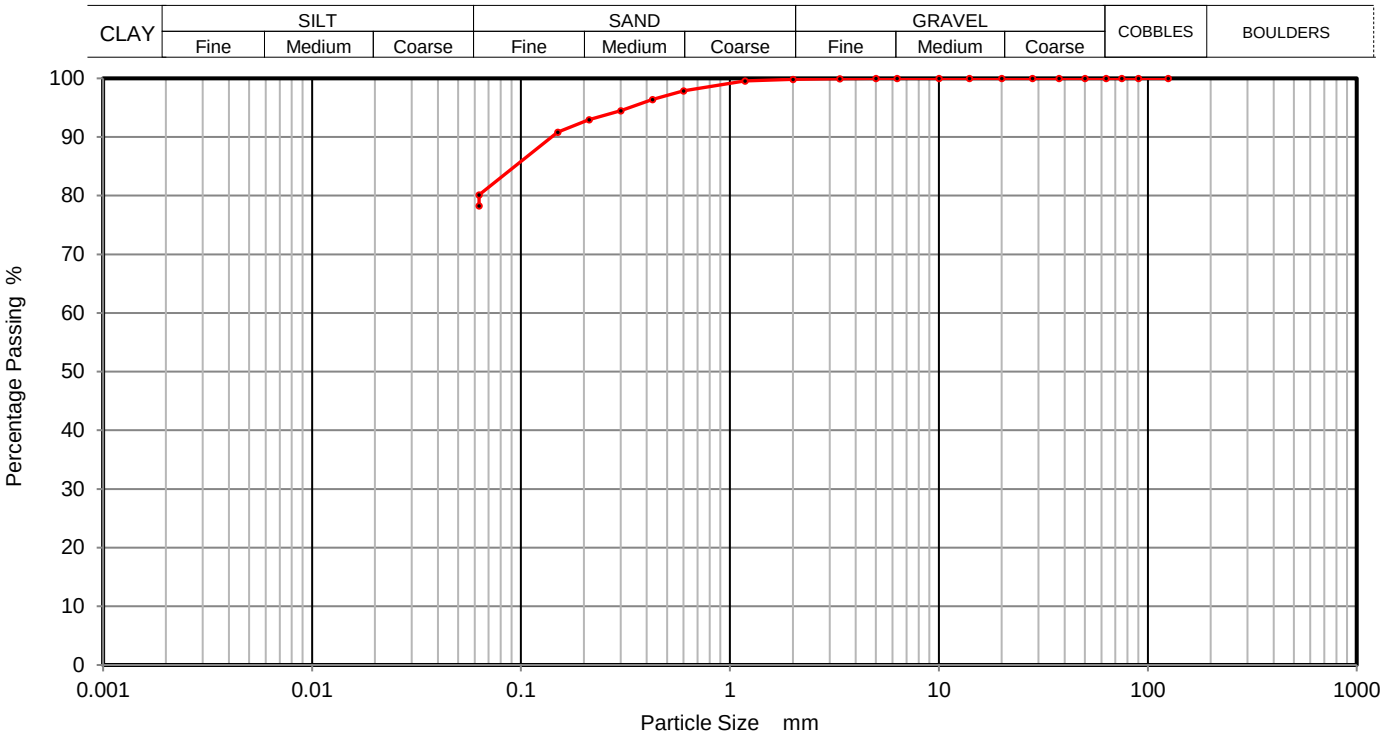
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	96		
0.3	94		
0.212	93		
0.15	91		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	20
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

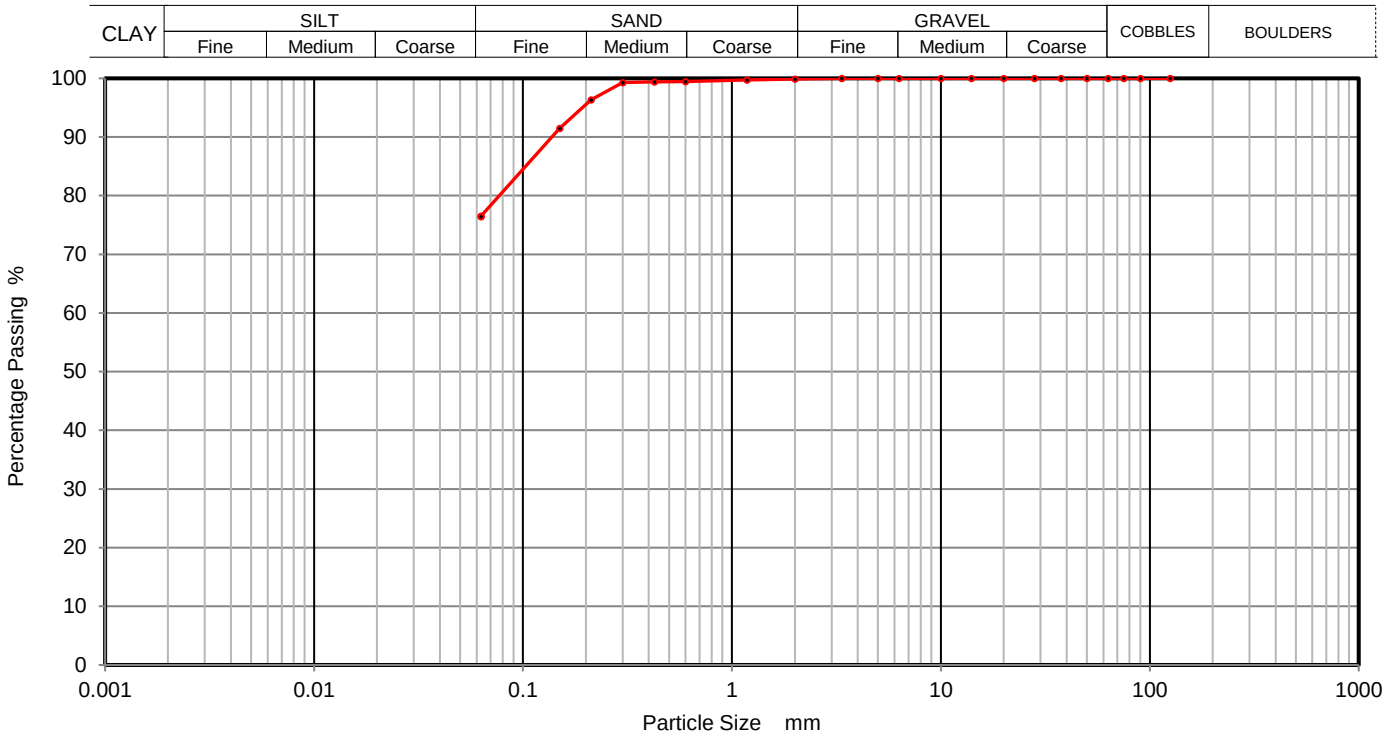
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	96		
0.15	91		
0.063	77		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	23
Silt and Clay	77

Grading Analysis	
Uniformity Coefficient	

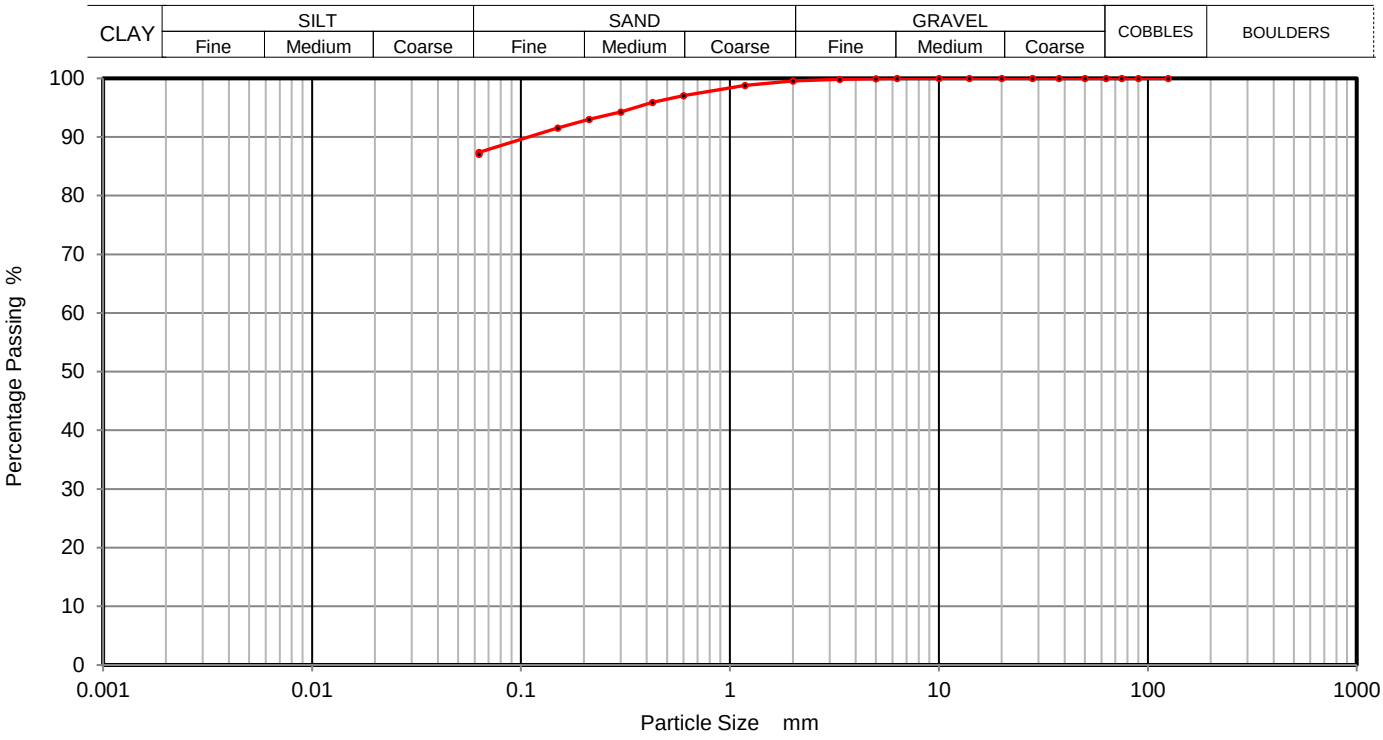
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	96		
0.3	94		
0.212	93		
0.15	92		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

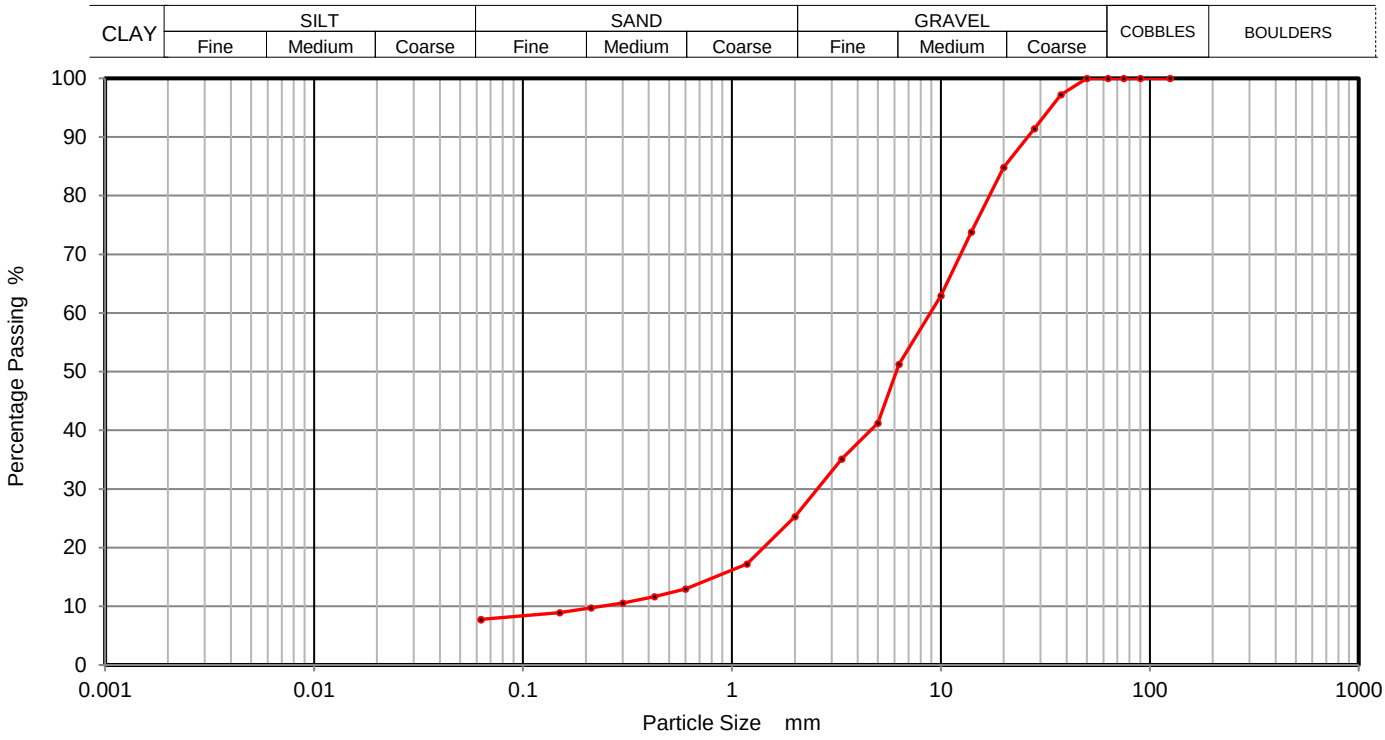
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	97		
28	91		
20	85		
14	74		
10	63		
6.3	51		
5	41		
3.35	35		
2	25		
1.18	17		
0.6	13		
0.425	12		
0.3	11		
0.212	10		
0.15	9		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	75
Sand	17
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

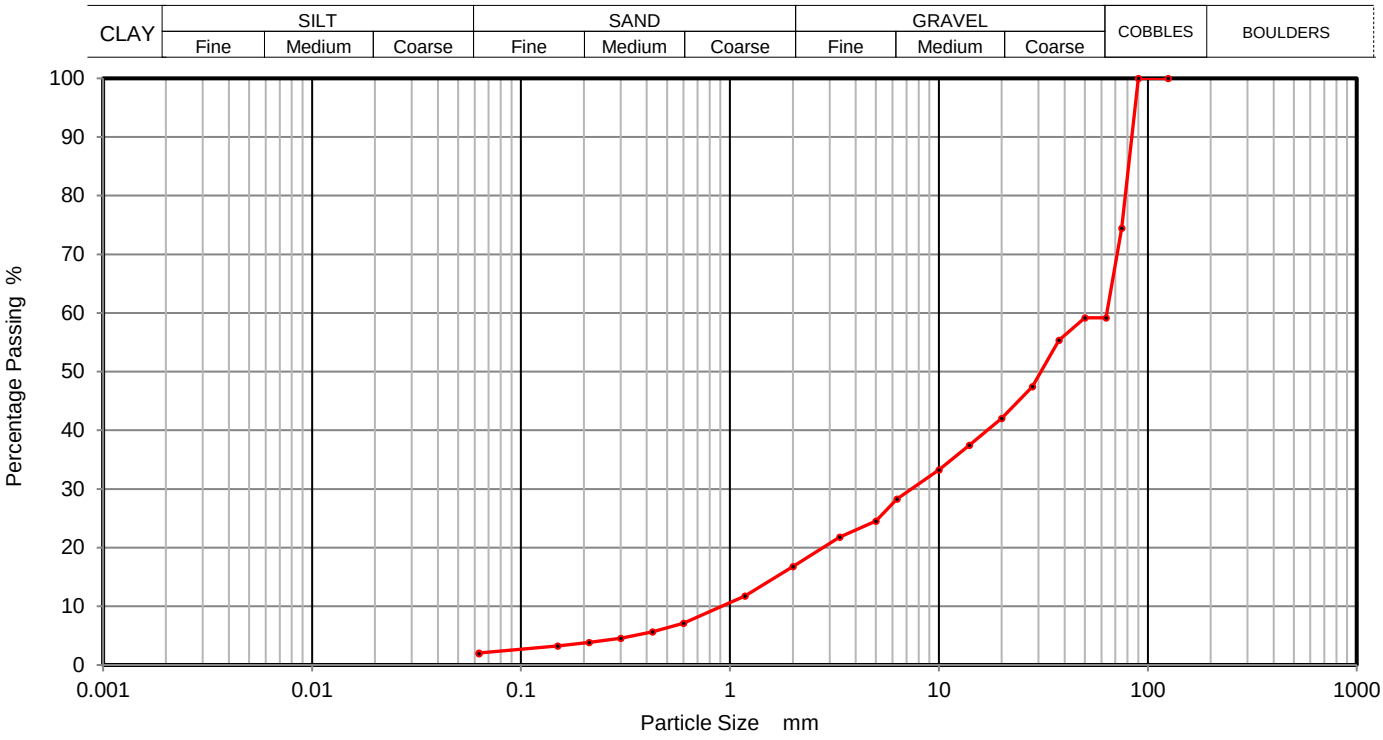
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly clayey fine to coarse sandy fine to coarse GRAVEL with many cobbles	Depth Top	17.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	74	0.0019	
63	59		
50	59		
37.5	55		
28	47		
20	42		
14	37		
10	33		
6.3	28		
5	25		
3.35	22		
2	17		
1.18	12		
0.6	7		
0.425	6		
0.3	5		
0.212	4		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Cobbles	41
Gravel	42
Sand	15
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

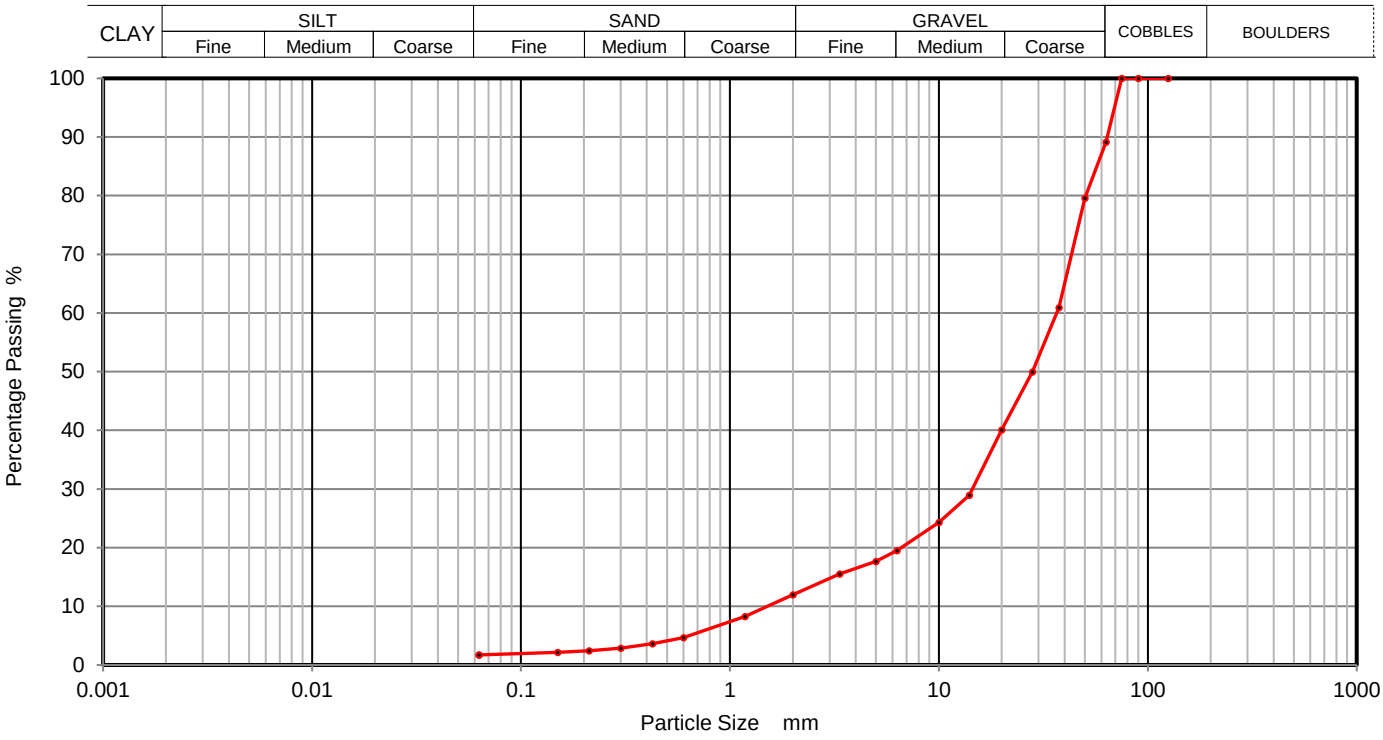
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly clayey fine to coarse sandy fine to coarse GRAVEL with some cobbles	Depth Top	20.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	89		
50	80		
37.5	61		
28	50		
20	40		
14	29		
10	24		
6.3	20		
5	18		
3.35	16		
2	12		
1.18	8		
0.6	5		
0.425	4		
0.3	3		
0.212	2		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	11
Gravel	77
Sand	10
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

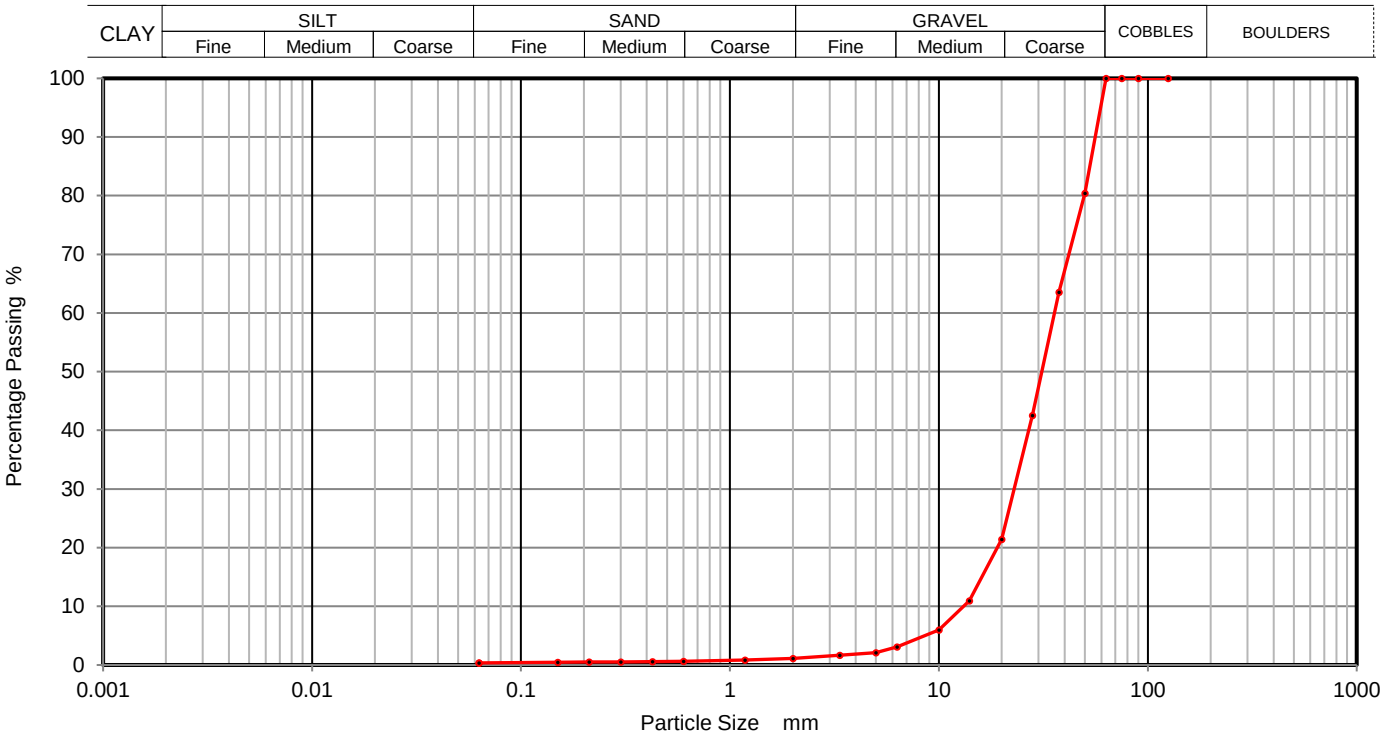
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse GRAVEL	Depth Top	23.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	80		
37.5	64		
28	43		
20	21		
14	11		
10	6		
6.3	3		
5	2		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	99
Sand	1
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

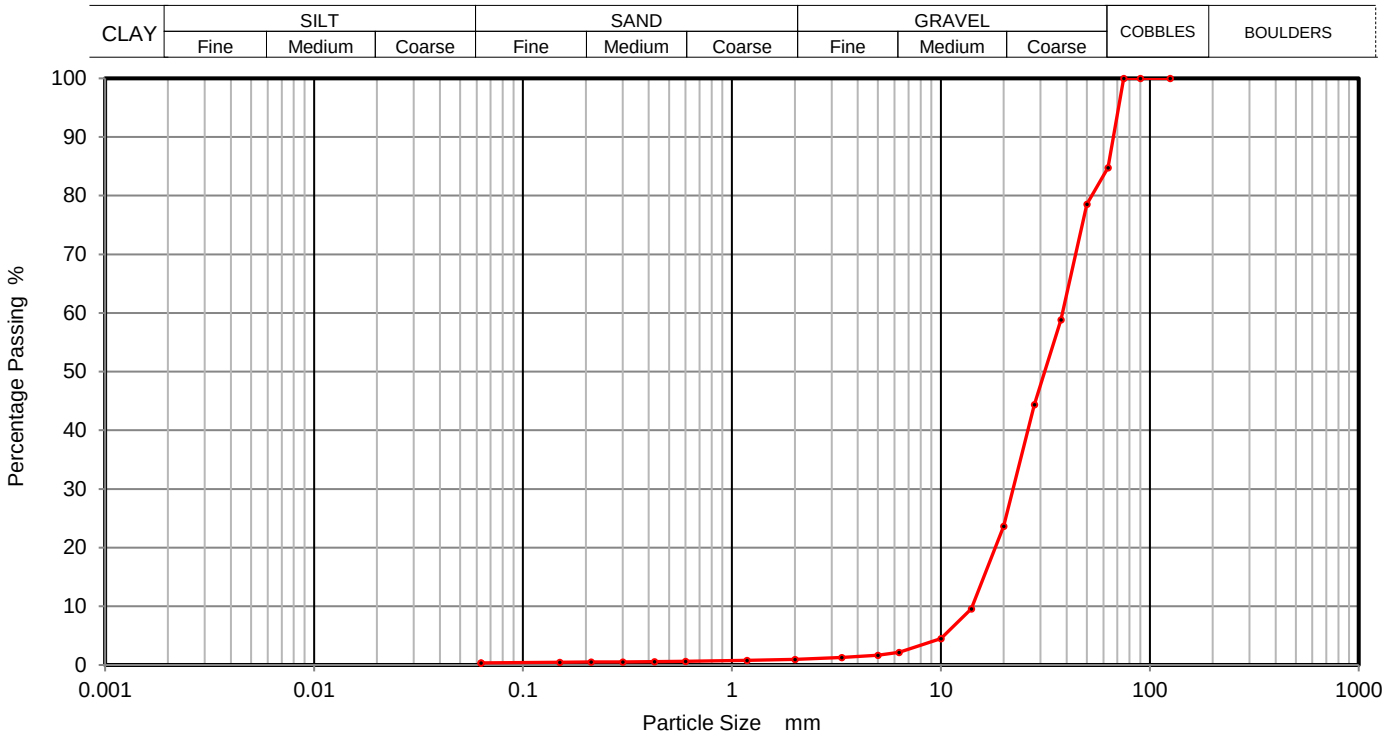
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M10
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse GRAVEL with some cobbles	Depth Top	24.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	85		
50	79		
37.5	59		
28	44		
20	24		
14	10		
10	5		
6.3	2		
5	2		
3.35	1		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	15
Gravel	84
Sand	1
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

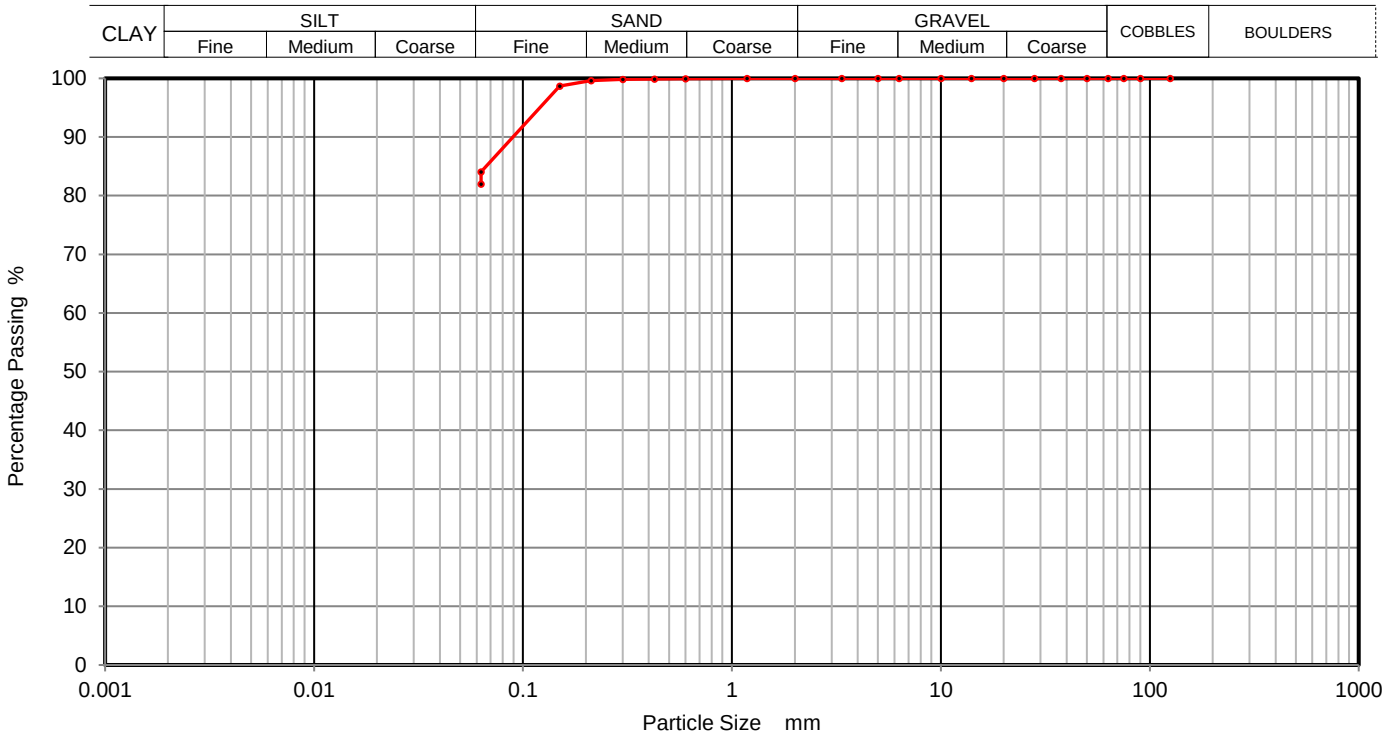
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	99		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

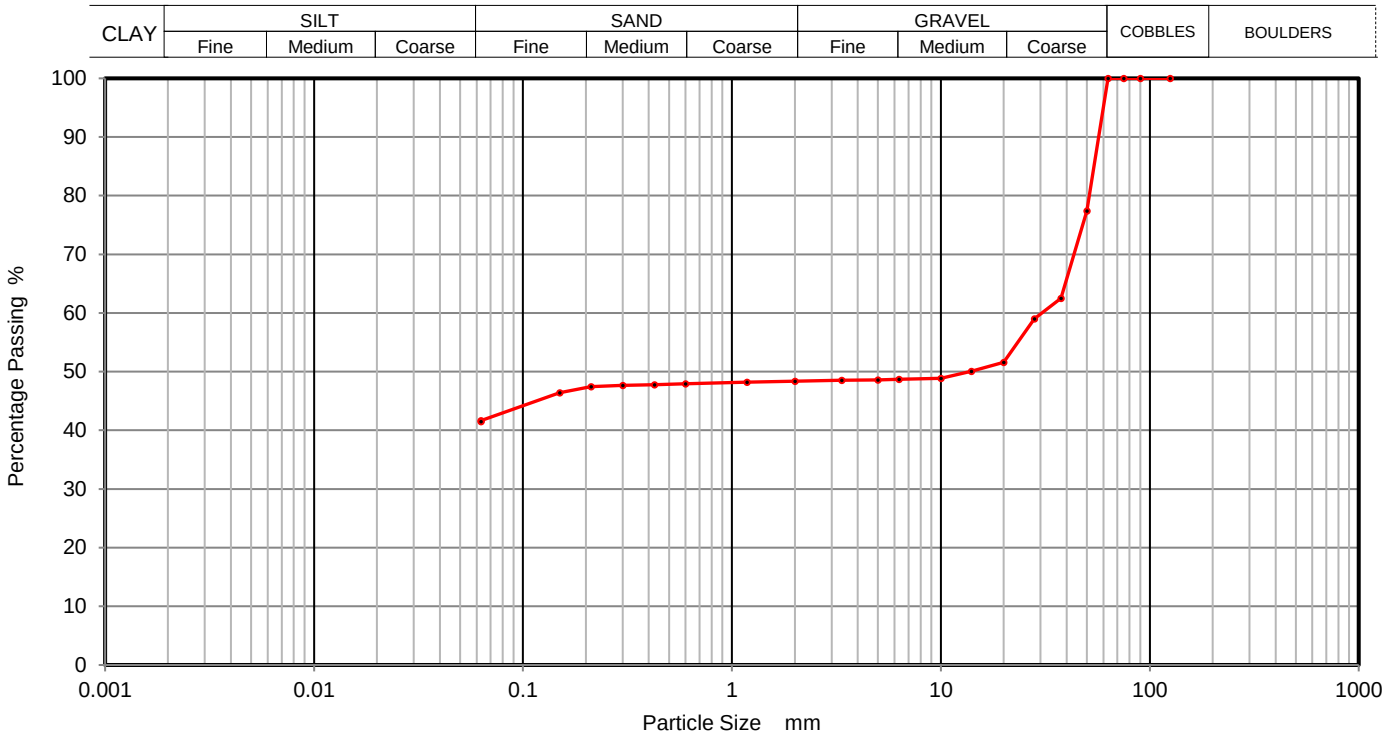
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy silty clayey fine to coarse GRAVEL	Depth Top	3.75
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	77		
37.5	63		
28	59		
20	52		
14	50		
10	49		
6.3	49		
5	49		
3.35	49		
2	48		
1.18	48		
0.6	48		
0.425	48		
0.3	48		
0.212	47		
0.15	46		
0.063	42		

Sample Proportions	% dry mass
Cobbles	0
Gravel	52
Sand	6
Silt and Clay	42

Grading Analysis	
Uniformity Coefficient	

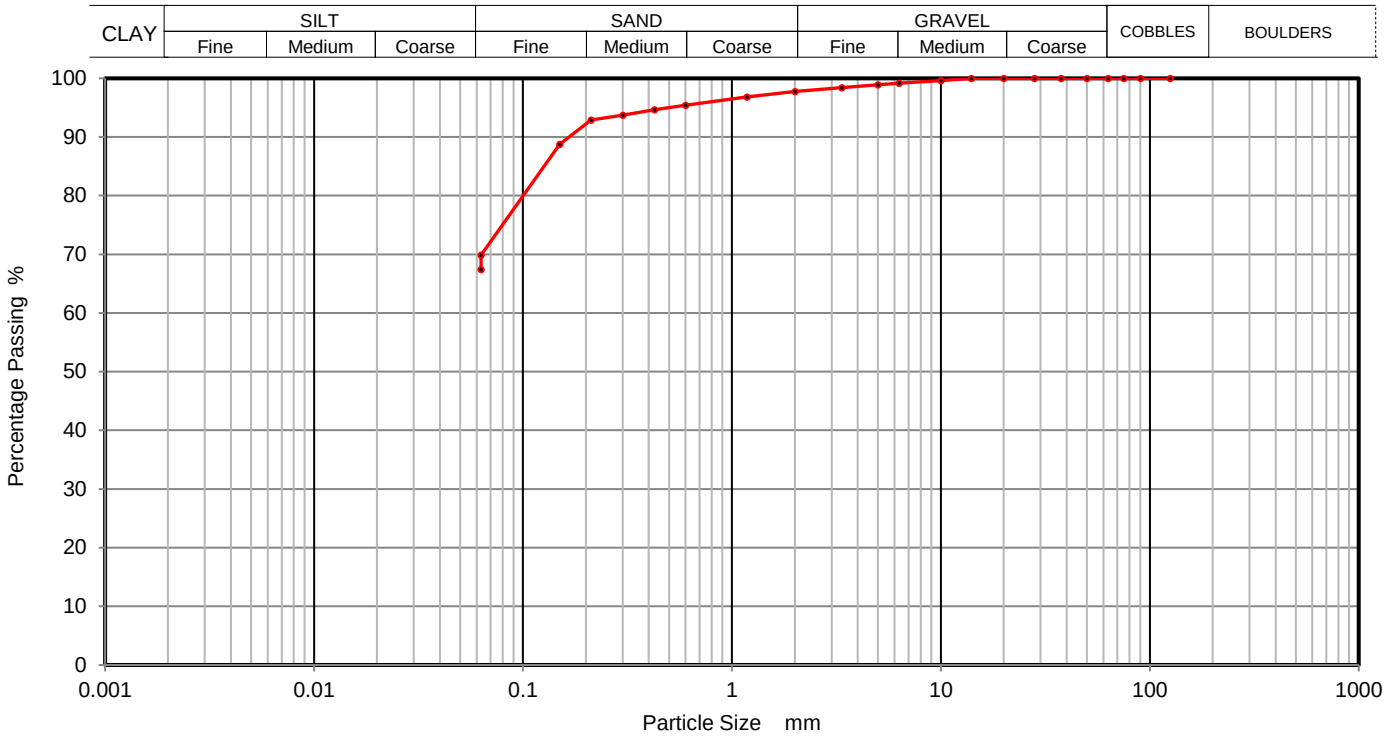
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	95		
0.425	95		
0.3	94		
0.212	93		
0.15	89		
0.063	70		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	28
Silt and Clay	70

Grading Analysis	
Uniformity Coefficient	

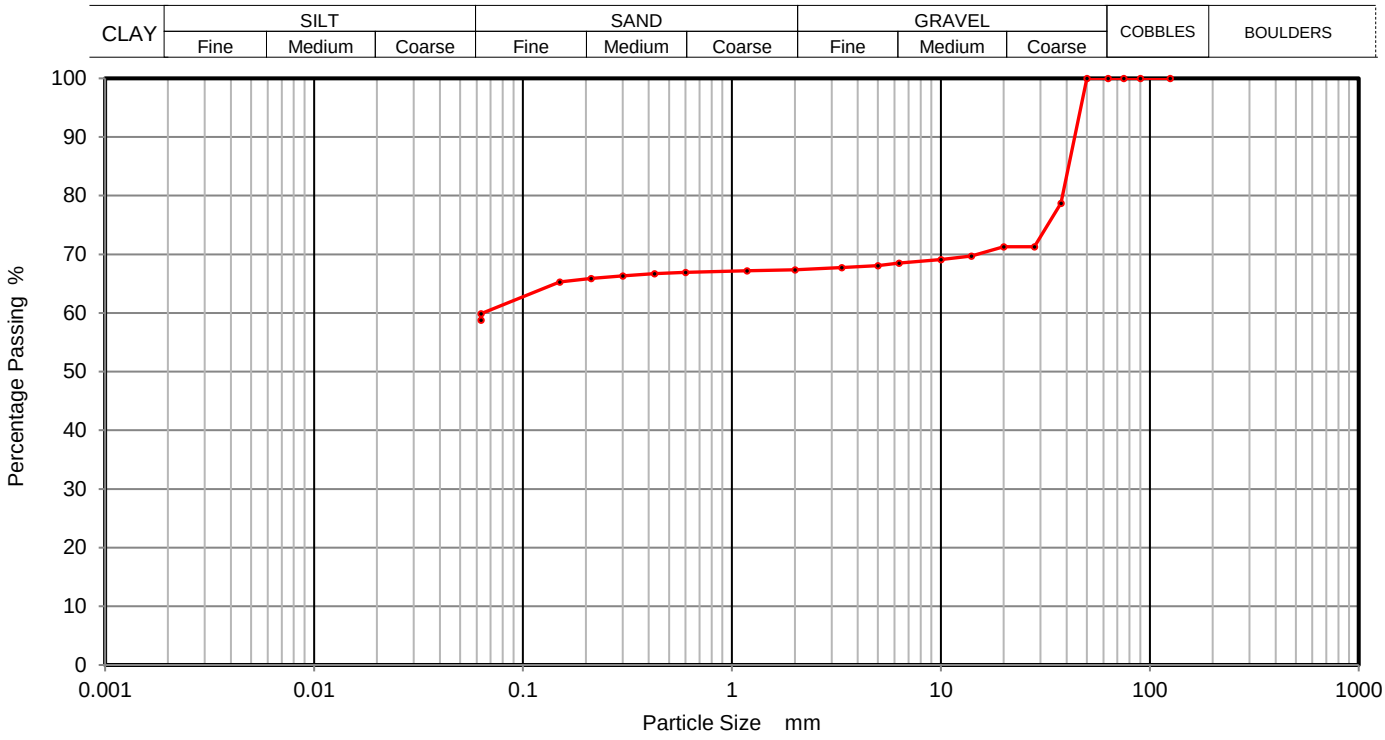
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse gravelly SILT/CLAY	Depth Top	5.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	79		
28	71		
20	71		
14	70		
10	69		
6.3	68		
5	68		
3.35	68		
2	67		
1.18	67		
0.6	67		
0.425	67		
0.3	66		
0.212	66		
0.15	65		
0.063	60		

Sample Proportions	% dry mass
Cobbles	0
Gravel	33
Sand	7
Silt and Clay	60

Grading Analysis	
Uniformity Coefficient	

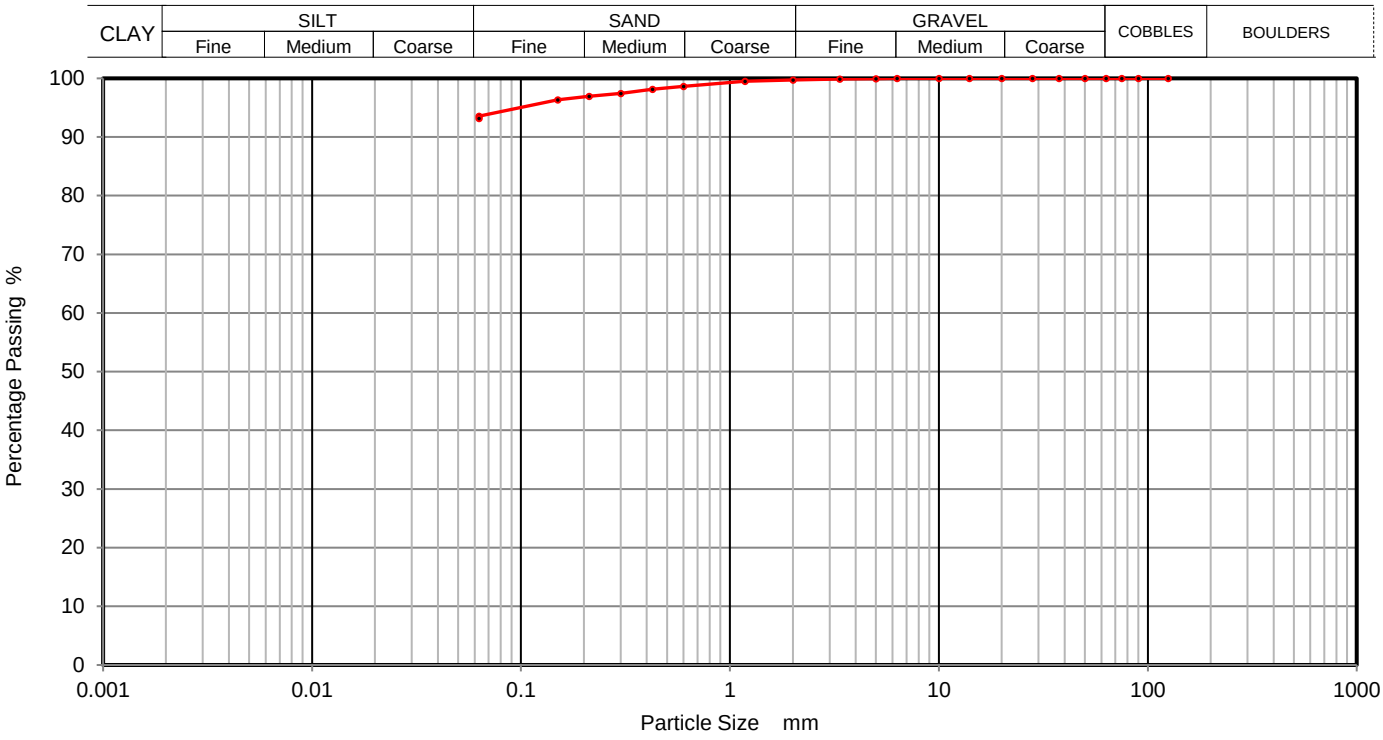
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	8.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	97		
0.212	97		
0.15	96		
0.063	94		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	6
Silt and Clay	94

Grading Analysis	
Uniformity Coefficient	

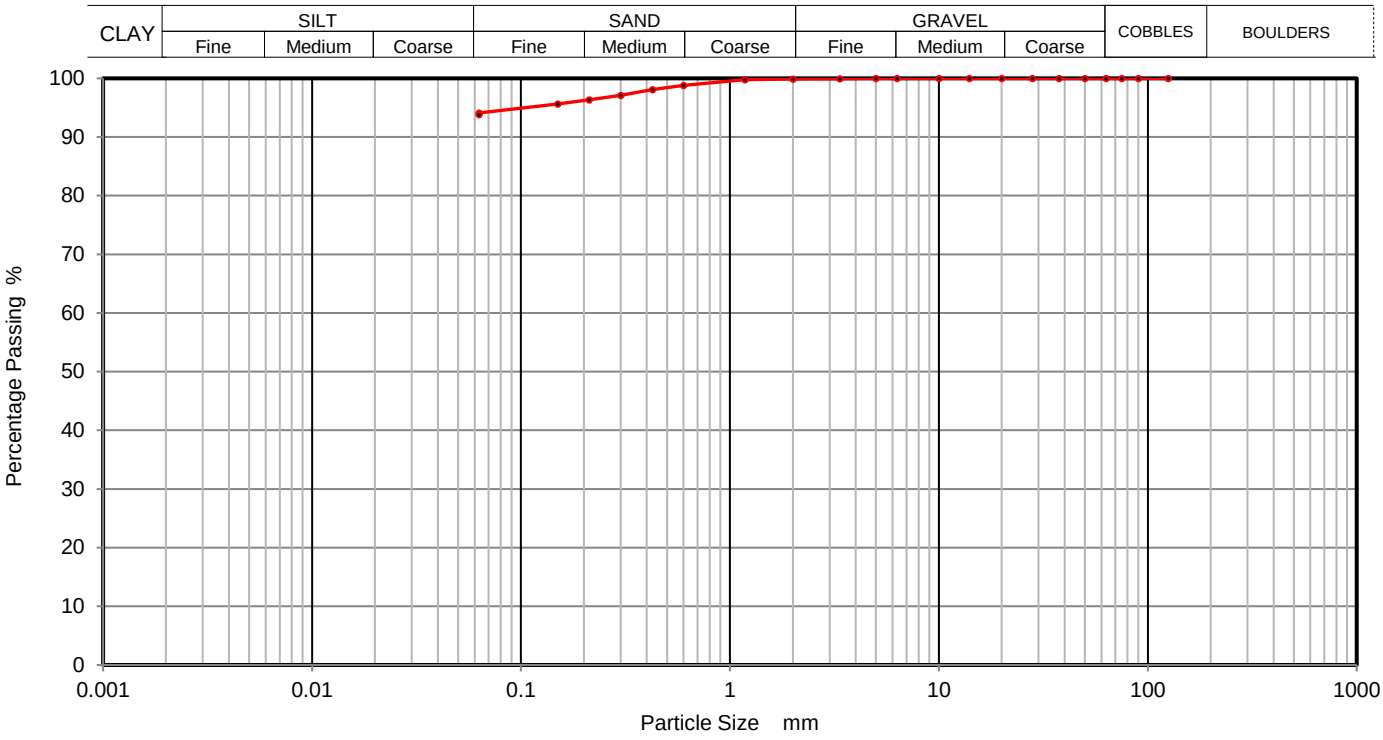
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy SILT/CLAY	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	97		
0.212	96		
0.15	96		
0.063	94		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	6
Silt and Clay	94

Grading Analysis	
Uniformity Coefficient	

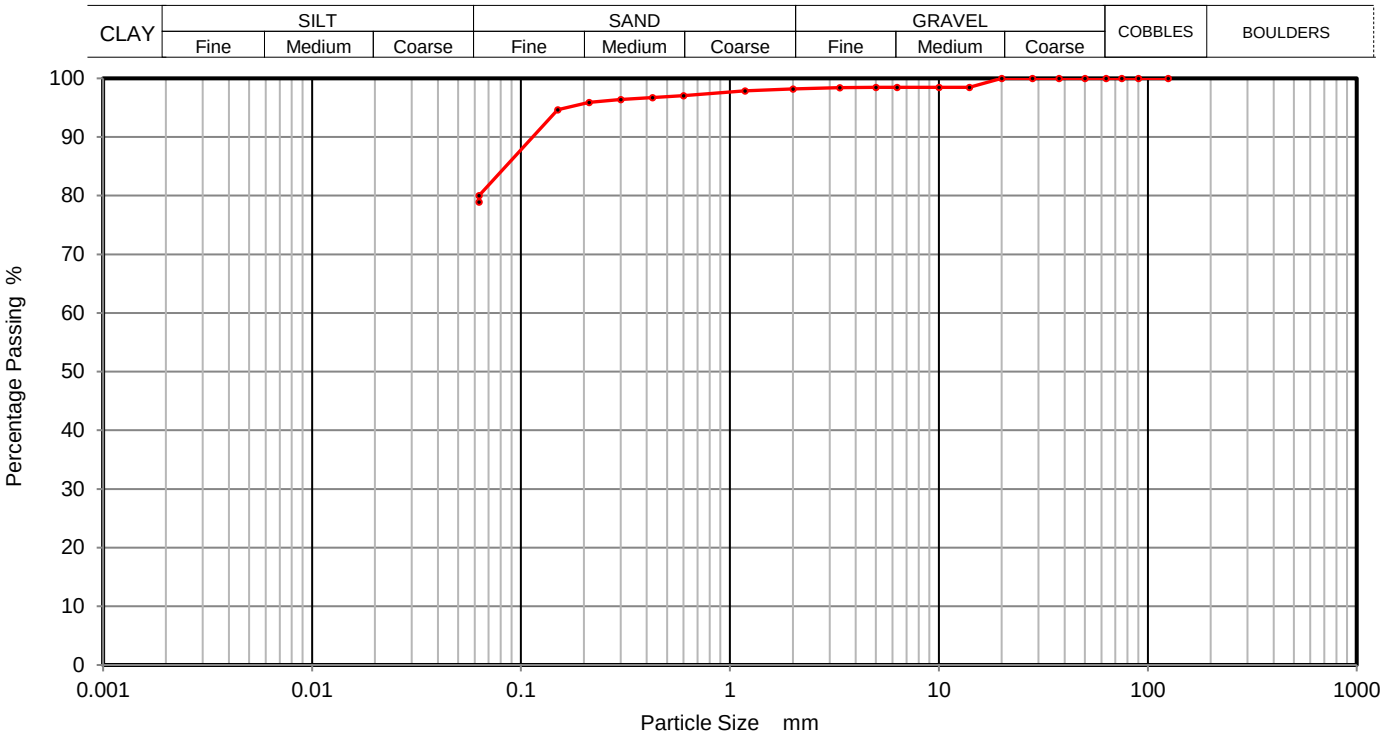
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	12.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	98		
5	98		
3.35	98		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	96		
0.212	96		
0.15	95		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	18
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

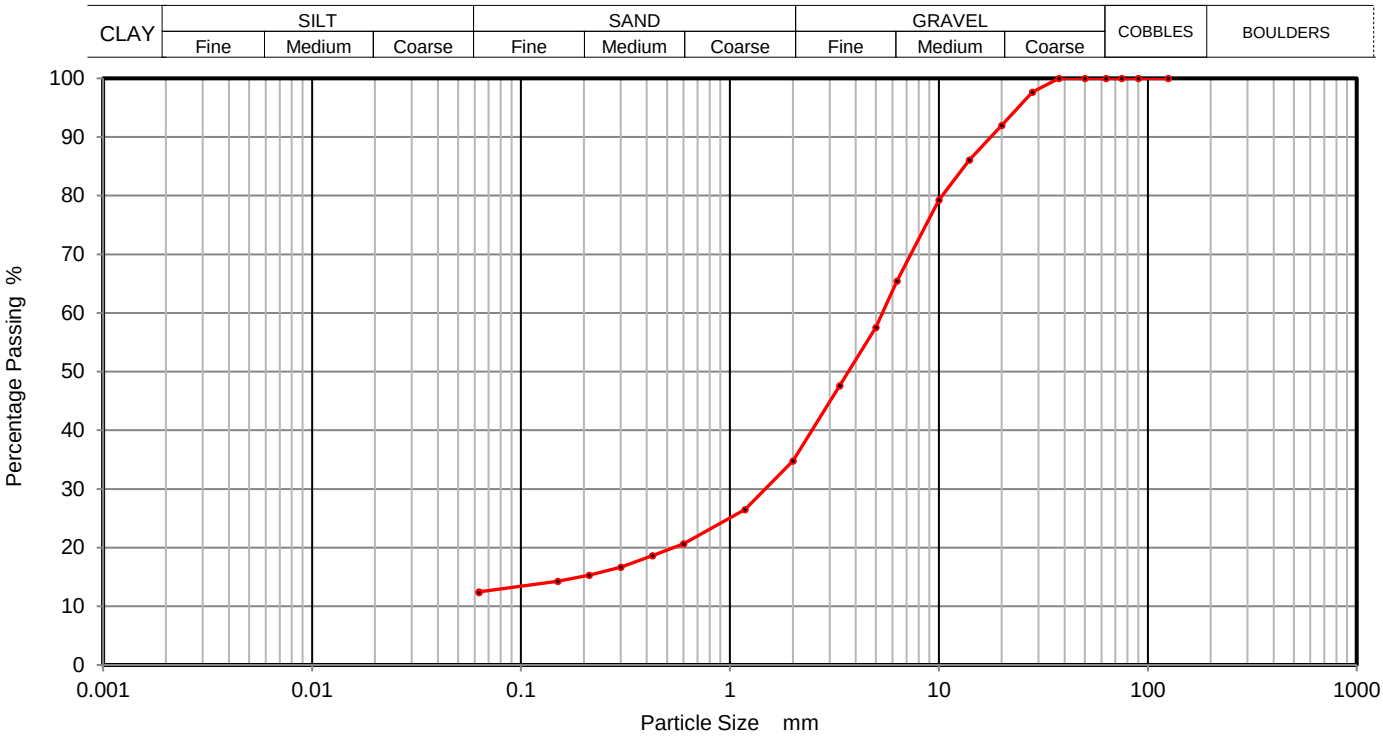
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	13.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	98		
20	92		
14	86		
10	79		
6.3	65		
5	58		
3.35	48		
2	35		
1.18	26		
0.6	21		
0.425	19		
0.3	17		
0.212	15		
0.15	14		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	65
Sand	23
Silt and Clay	12

Grading Analysis	
Uniformity Coefficient	

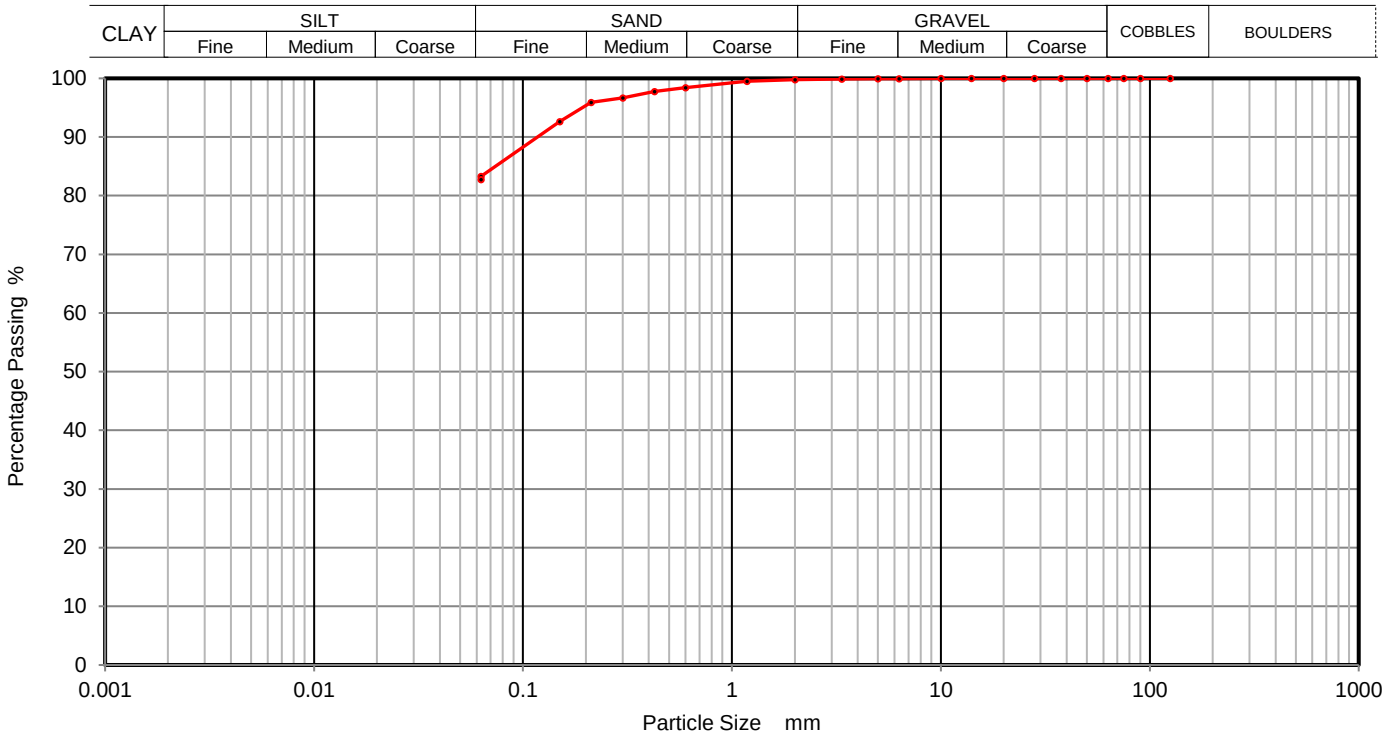
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	98		
0.3	97		
0.212	96		
0.15	93		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

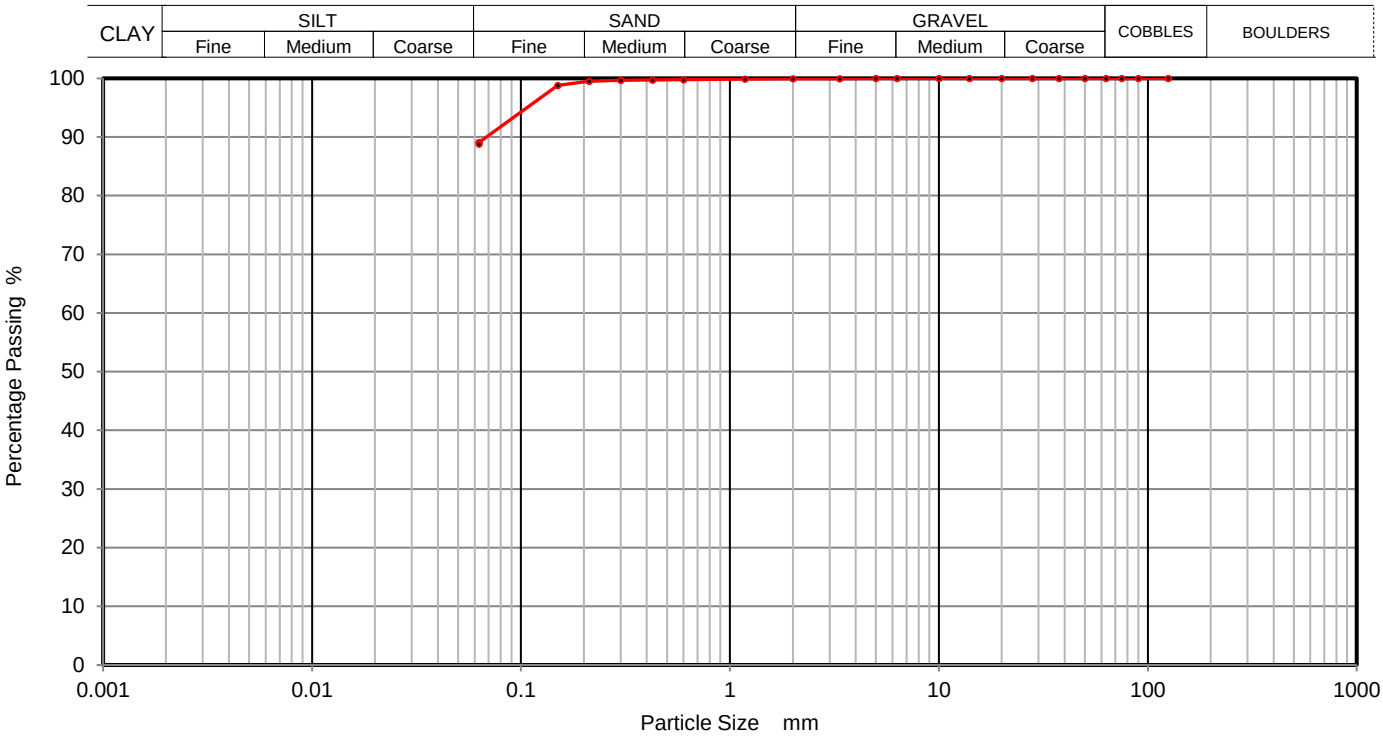
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY	Depth Top	2.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	99		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	11
Silt and Clay	89

Grading Analysis	
Uniformity Coefficient	

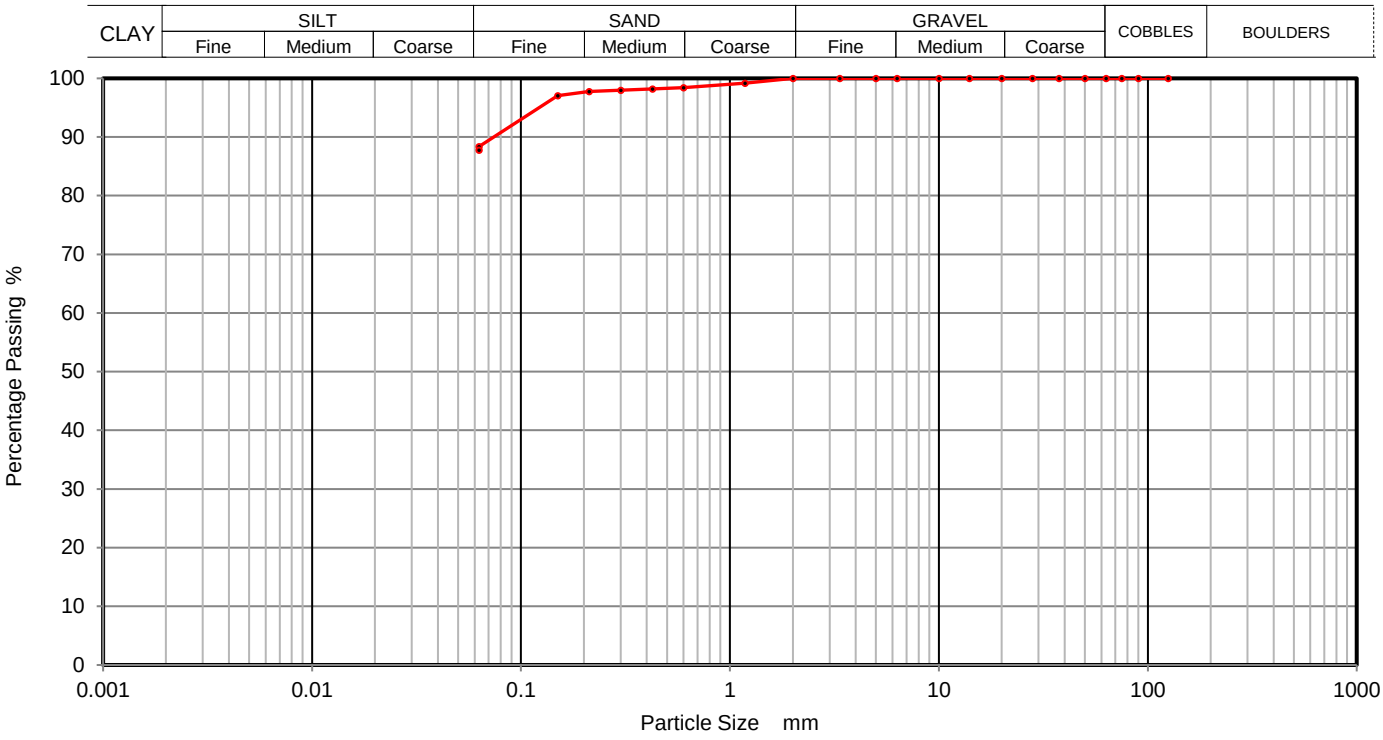
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	6.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	98		
0.212	98		
0.15	97		
0.063	88		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	12
Silt and Clay	88

Grading Analysis	
Uniformity Coefficient	

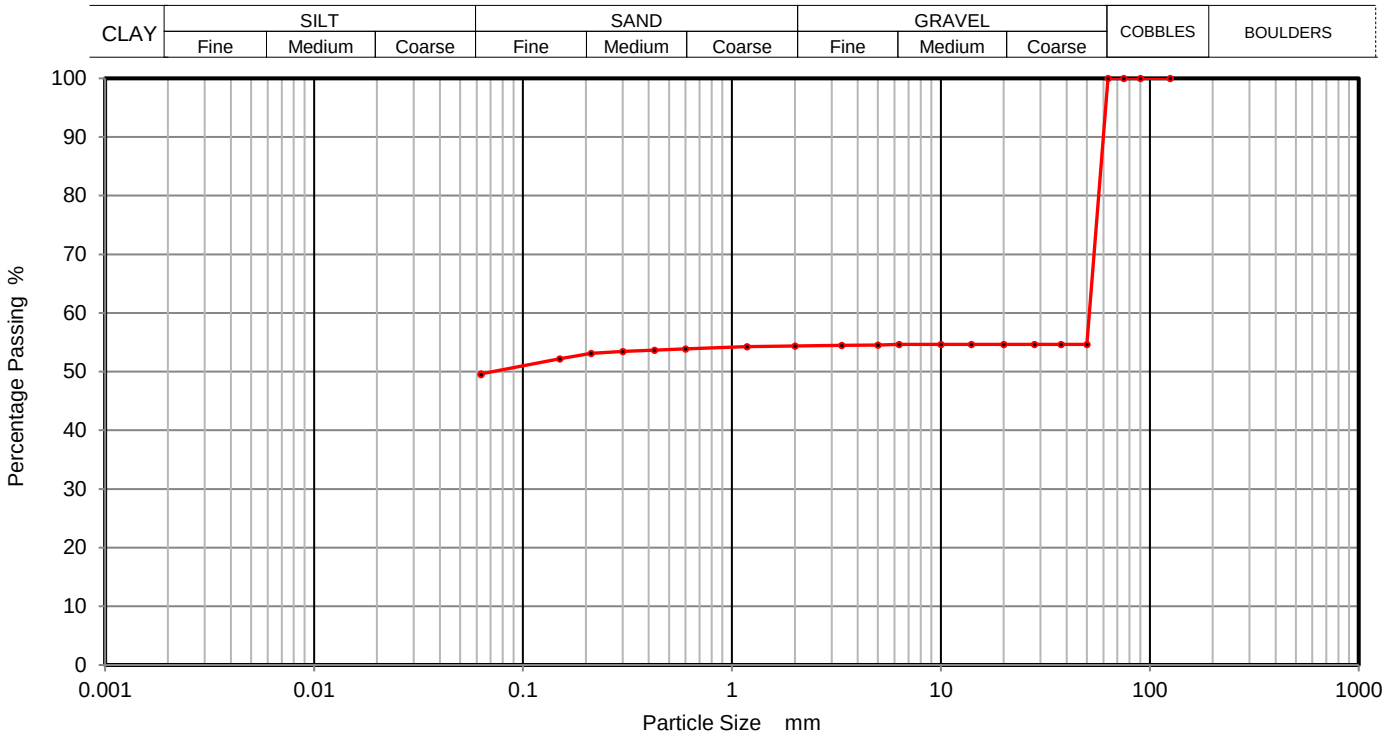
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to coarse sandy fine to coarse gravelly SILT/CLAY	Depth Top	9.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	55		
37.5	55		
28	55		
20	55		
14	55		
10	55		
6.3	55		
5	55		
3.35	54		
2	54		
1.18	54		
0.6	54		
0.425	54		
0.3	53		
0.212	53		
0.15	52		
0.063	50		

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	4
Silt and Clay	50

Grading Analysis	
Uniformity Coefficient	

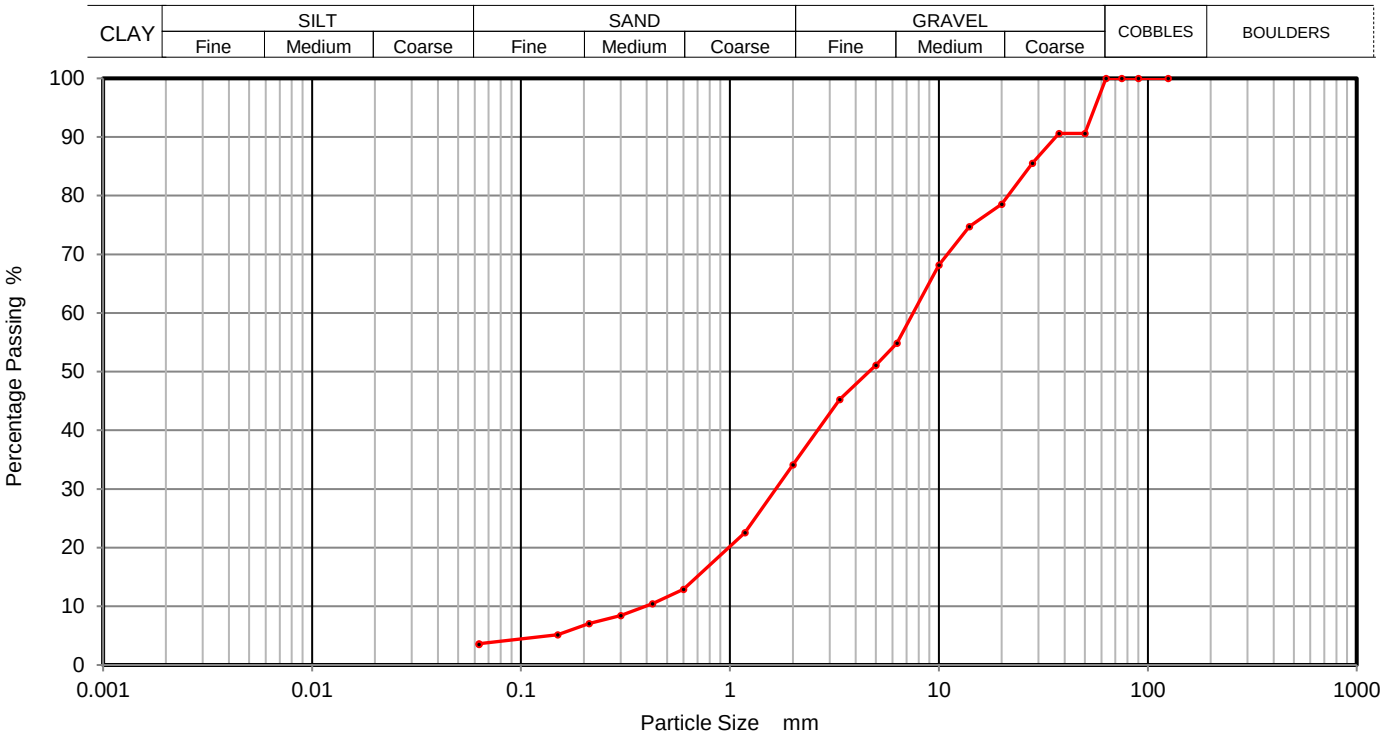
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	12.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	91		
37.5	91		
28	86		
20	79		
14	75		
10	68		
6.3	55		
5	51		
3.35	45		
2	34		
1.18	23		
0.6	13		
0.425	10		
0.3	8		
0.212	7		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	66
Sand	30
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

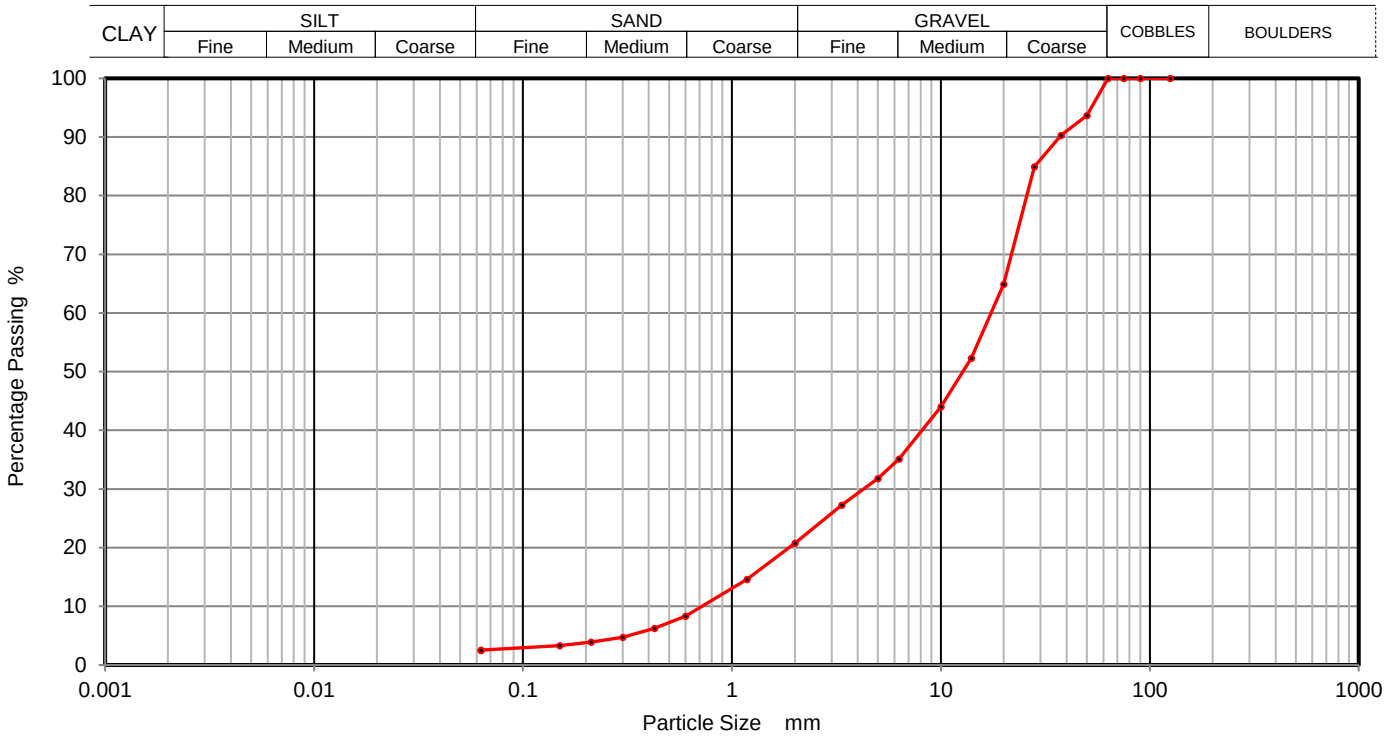
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	94		
37.5	90		
28	85		
20	65		
14	52		
10	44		
6.3	35		
5	32		
3.35	27		
2	21		
1.18	15		
0.6	8		
0.425	6		
0.3	5		
0.212	4		
0.15	3		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	79
Sand	18
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

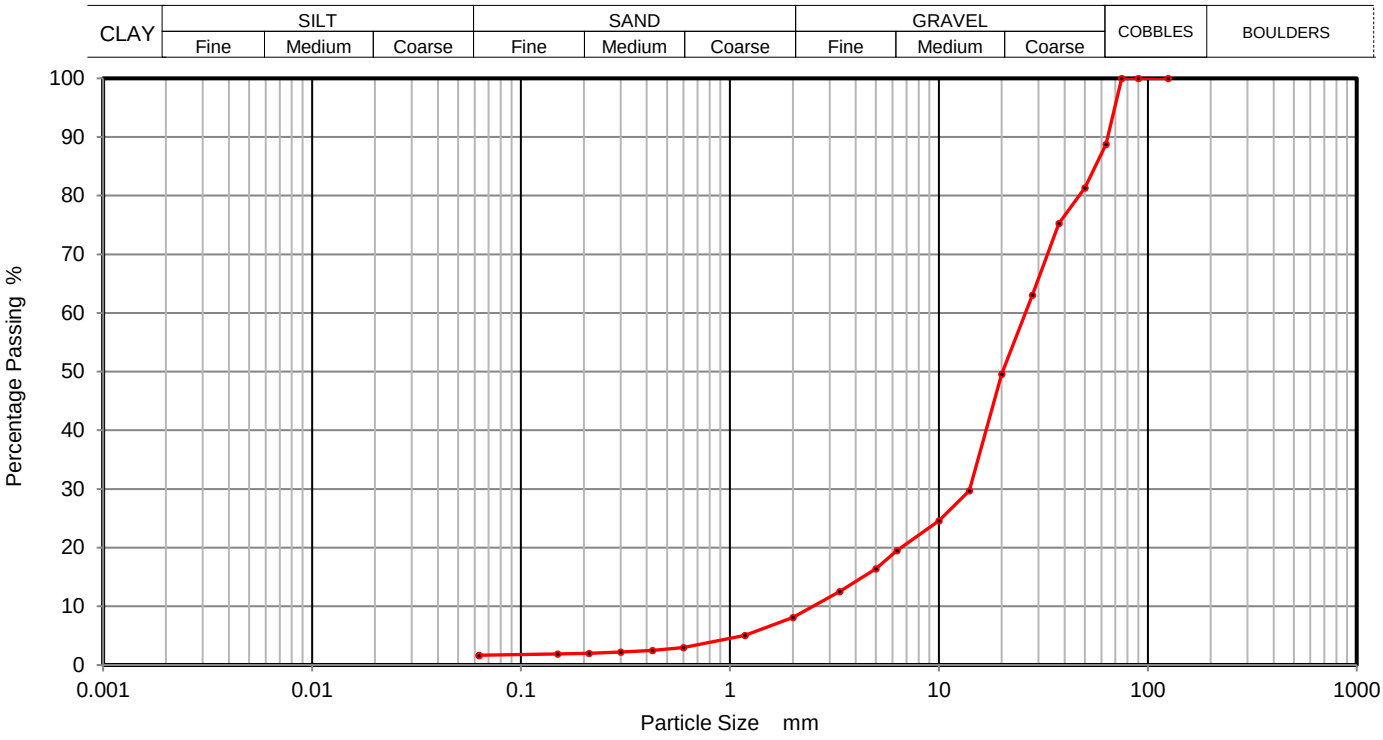
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M12
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly silty slightly fine to coarse sandy fine to coarse GRAVEL with some cobbles	Depth Top	15.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	89		
50	81		
37.5	75		
28	63		
20	50		
14	30		
10	25		
6.3	20		
5	16		
3.35	13		
2	8		
1.18	5		
0.6	3		
0.425	2		
0.3	2		
0.212	2		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	11
Gravel	81
Sand	6
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

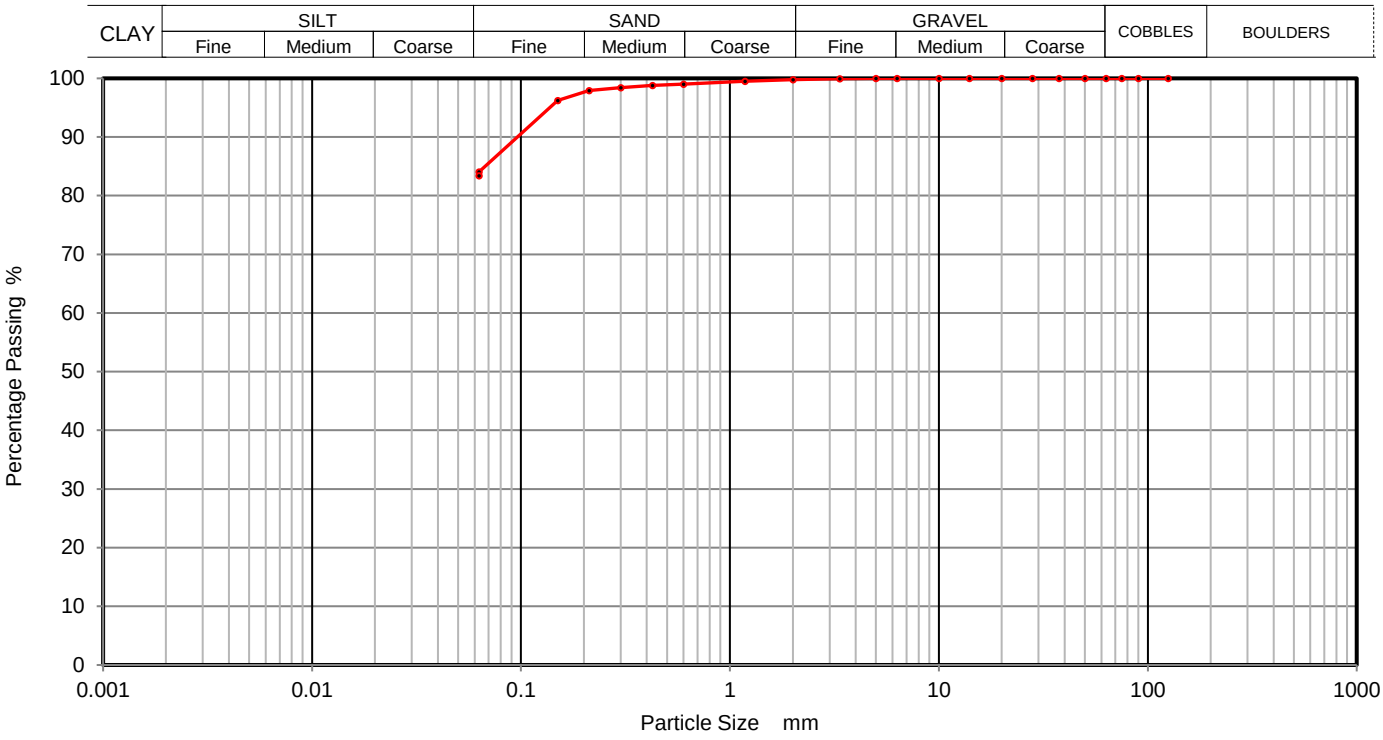
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	96		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

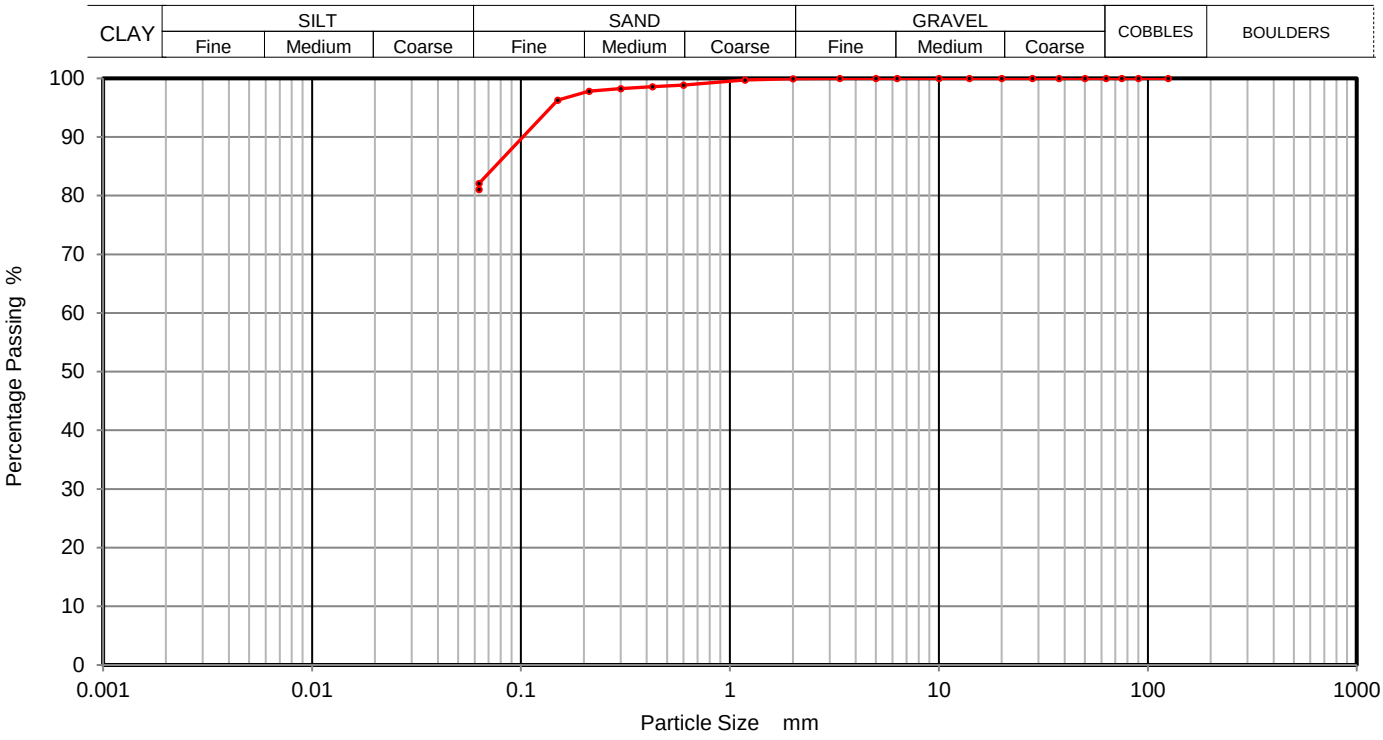
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	96		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	18
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

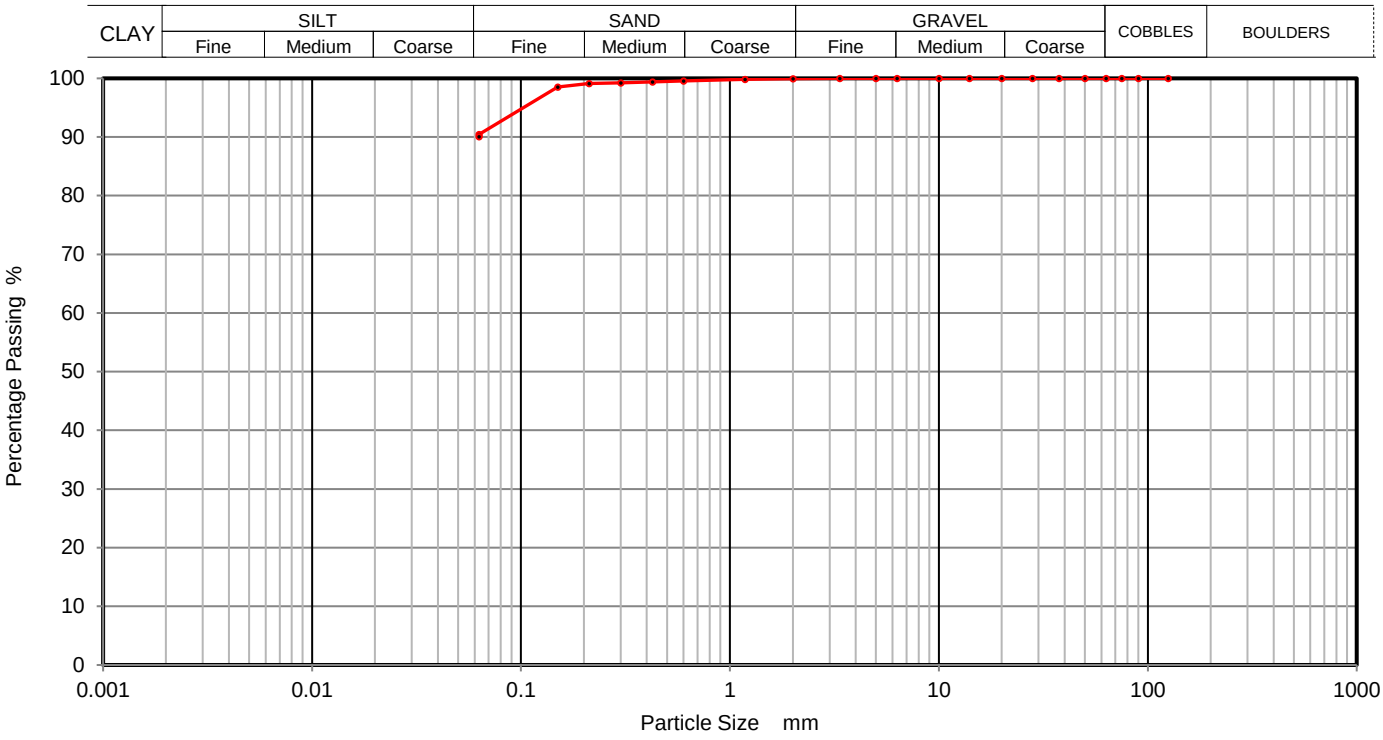
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	90		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	10
Silt and Clay	90

Grading Analysis	
Uniformity Coefficient	

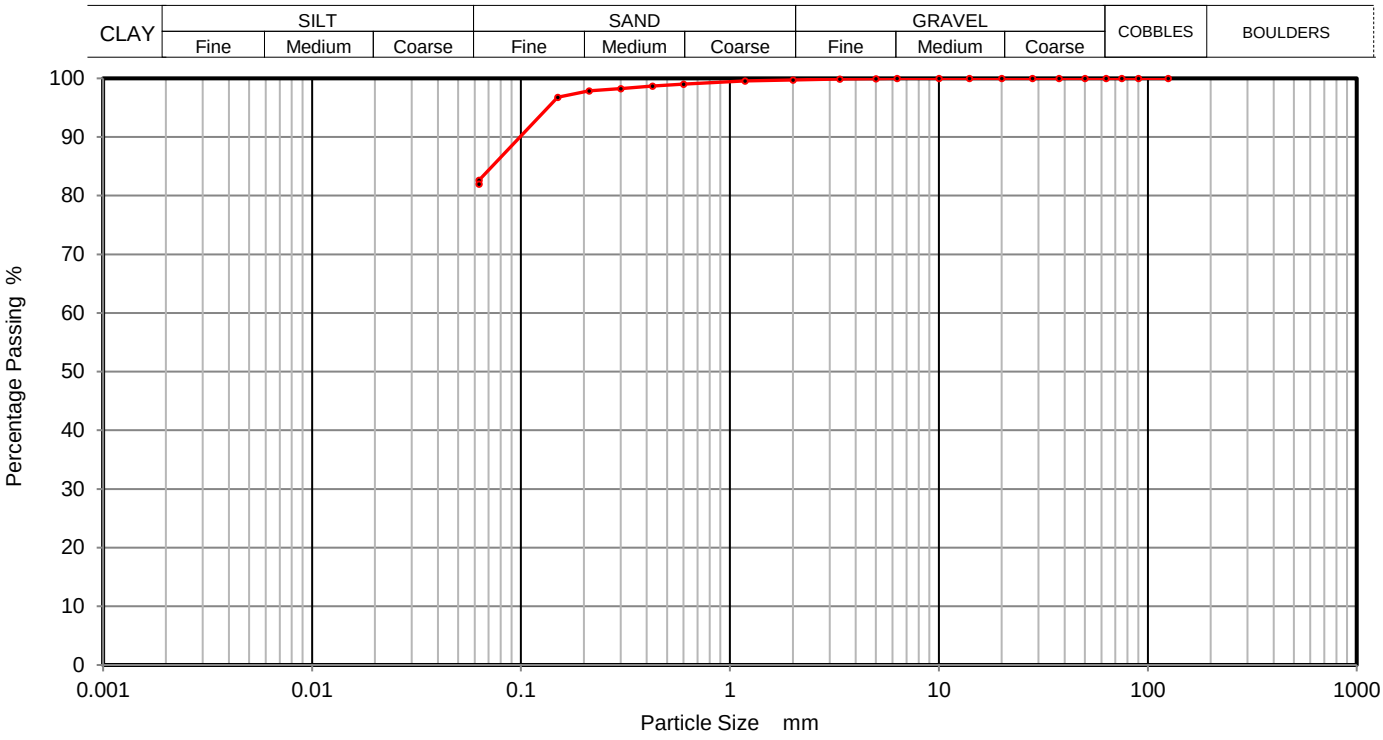
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	4.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	97		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

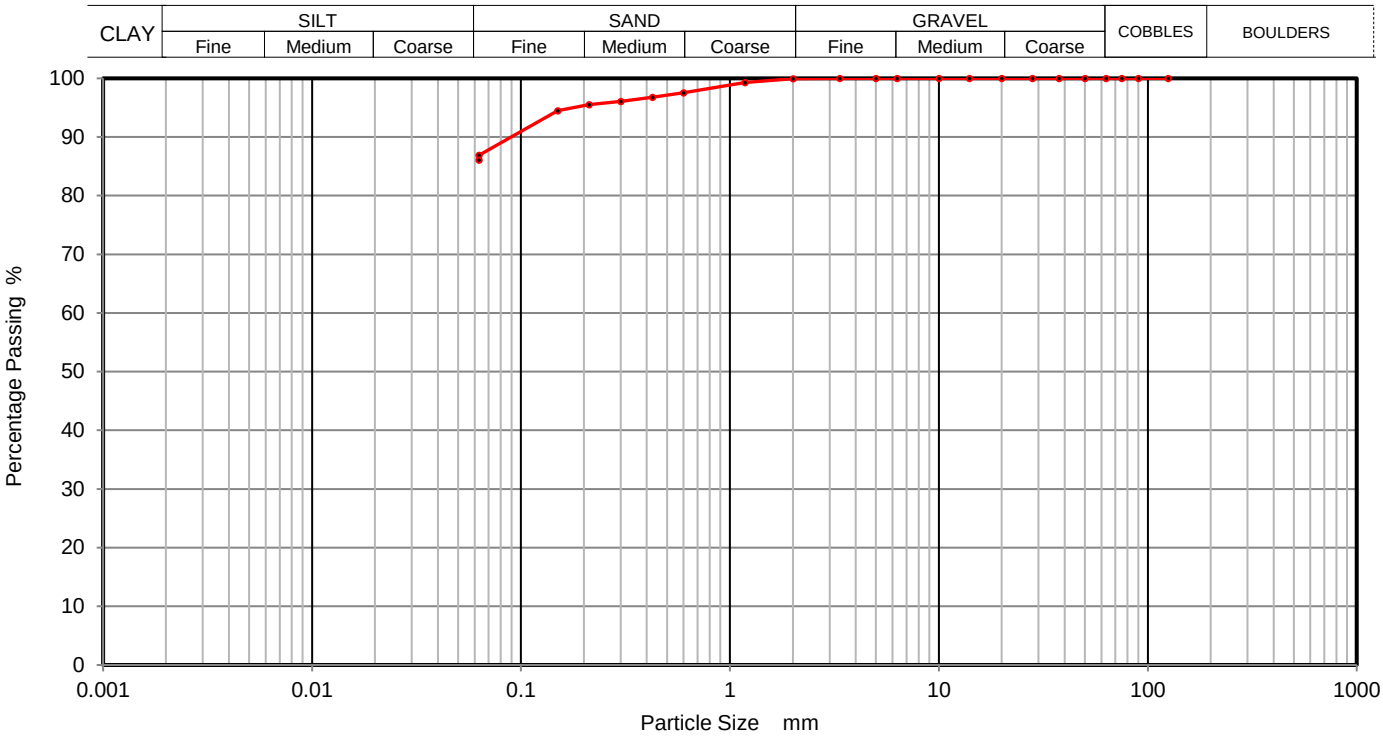
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97		
0.3	96		
0.212	96		
0.15	94		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

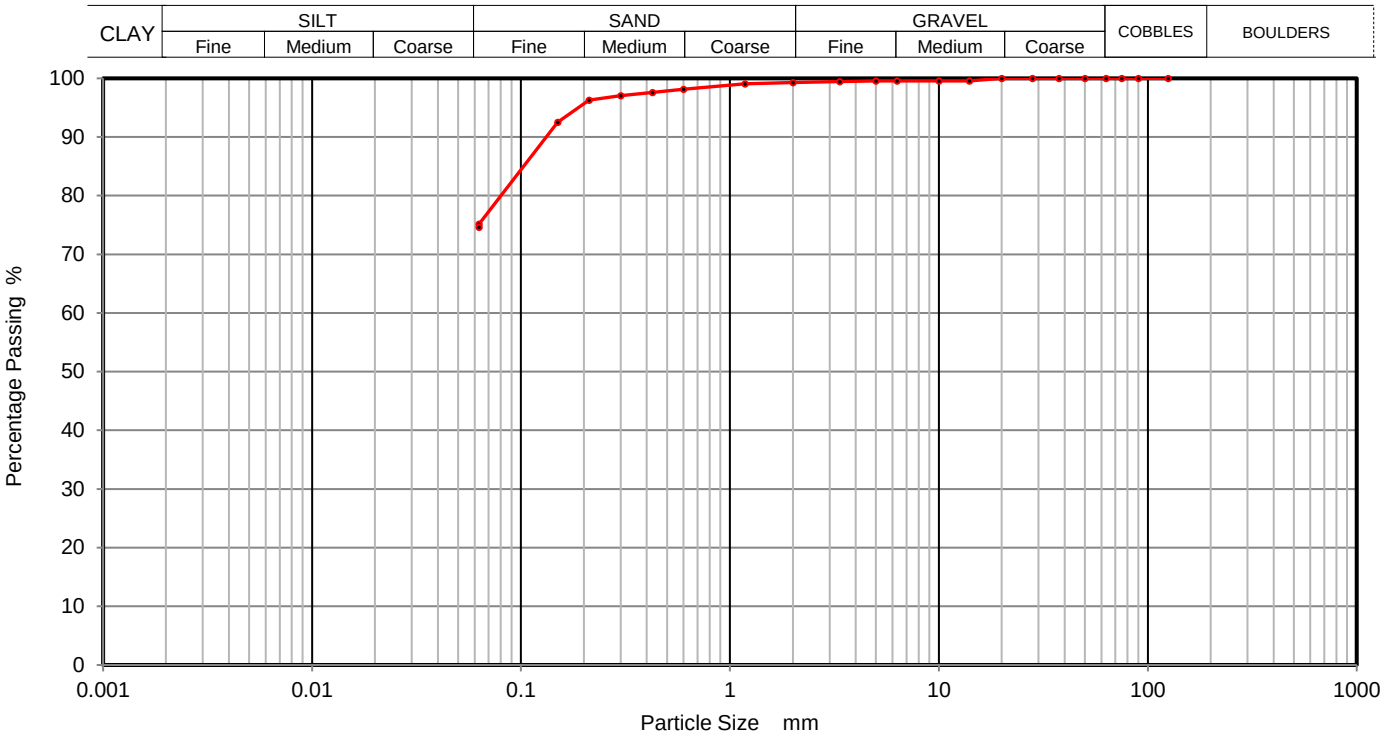
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	96		
0.15	93		
0.063	75		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	24
Silt and Clay	75

Grading Analysis	
Uniformity Coefficient	

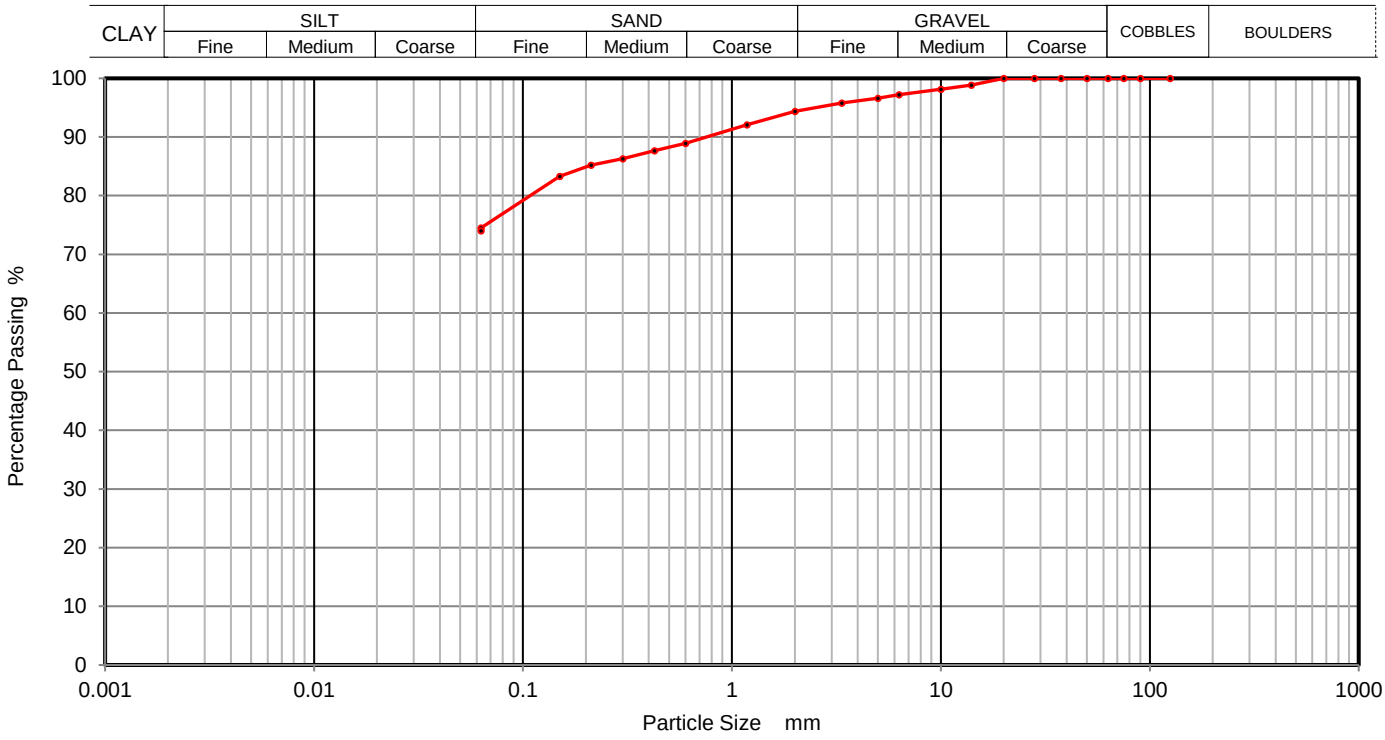
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly fine to medium gravelly fine to coarse sandy SILT/CLAY	Depth Top	9.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	97		
5	97		
3.35	96		
2	94		
1.18	92		
0.6	89		
0.425	88		
0.3	86		
0.212	85		
0.15	83		
0.063	75		

Sample Proportions	% dry mass
Cobbles	0
Gravel	6
Sand	19
Silt and Clay	75

Grading Analysis	
Uniformity Coefficient	

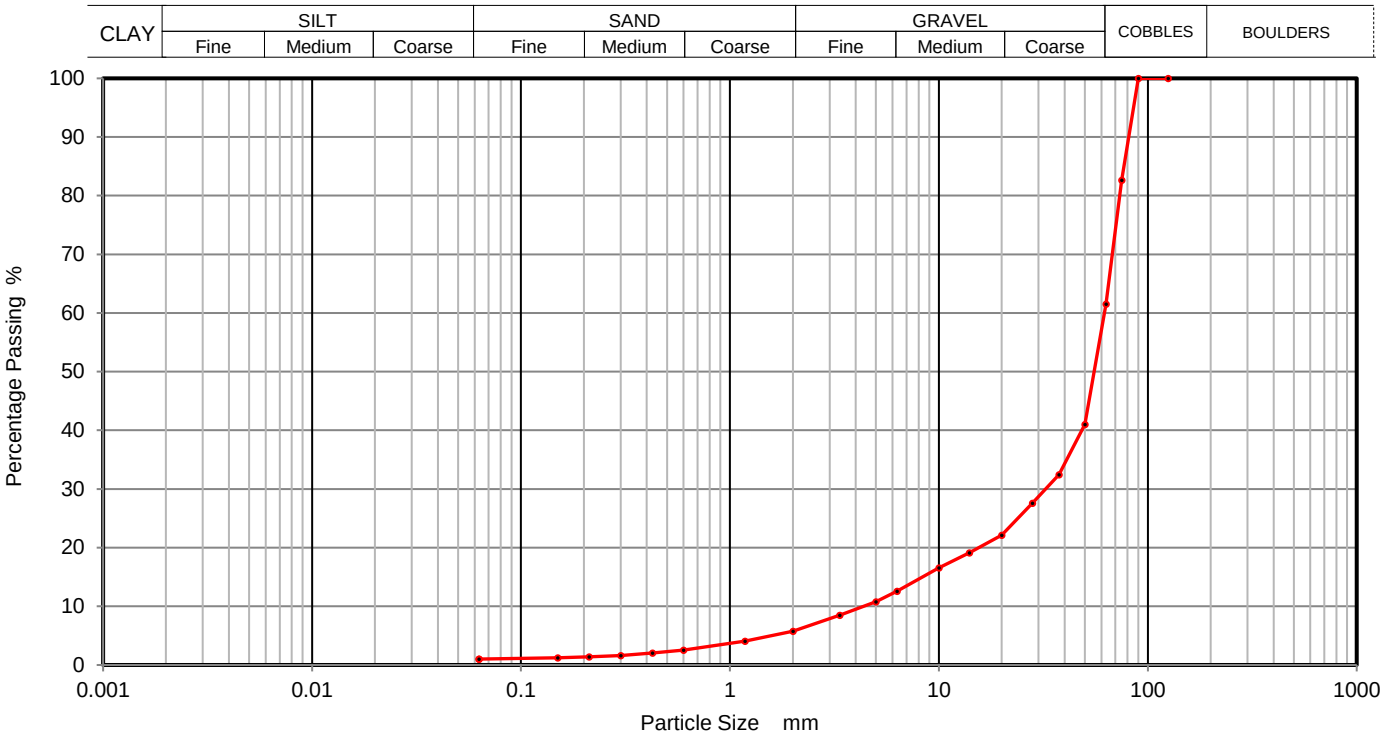
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Brown slightly silty slightly fine to coarse sandy fine to coarse GRAVEL with many cobbles	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	83	0.0019	
63	62		
50	41		
37.5	32		
28	28		
20	22		
14	19		
10	17		
6.3	13		
5	11		
3.35	8		
2	6		
1.18	4		
0.6	3		
0.425	2		
0.3	2		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	38
Gravel	56
Sand	5
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

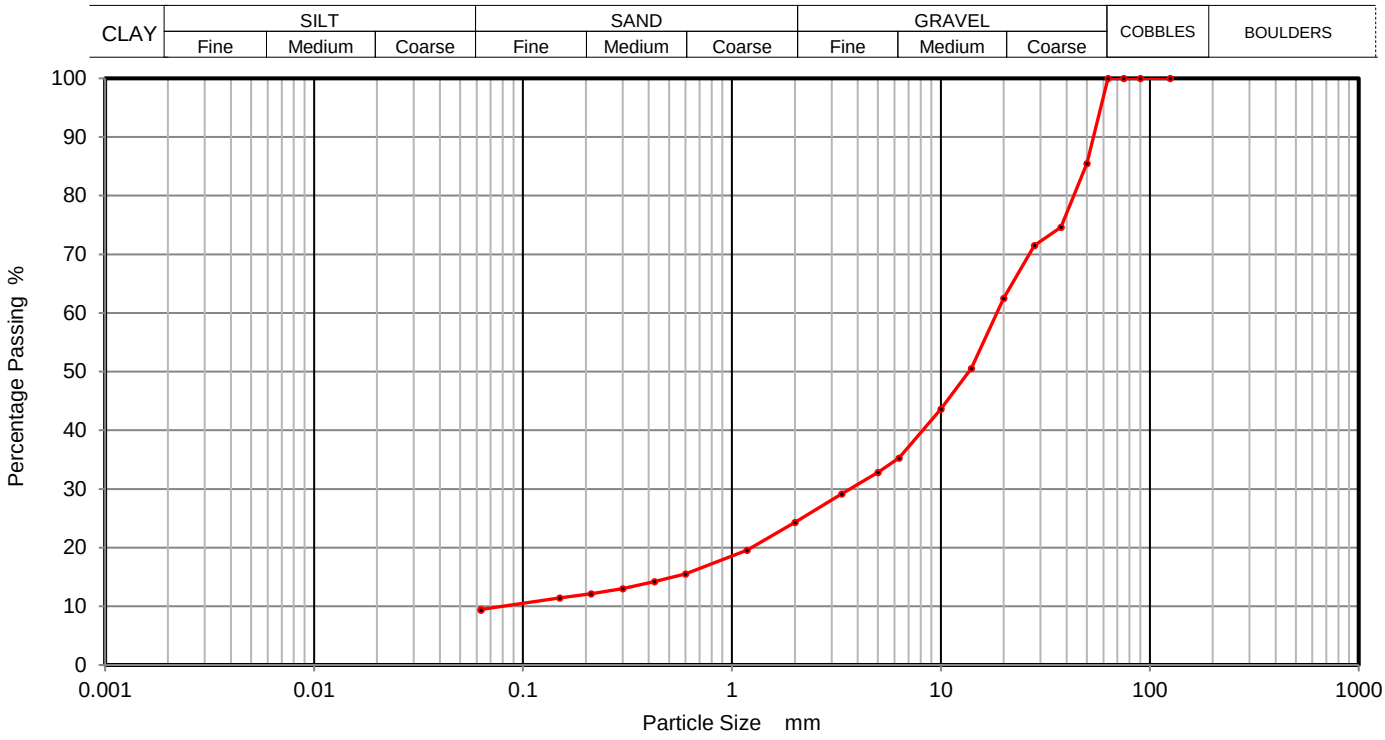
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	20/07/2017	Wayne Honey	W. Honey
RO/MH	Approved	21/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	35579
		Borehole/Pit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly silty slightly clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	12.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	85		
37.5	75		
28	72		
20	63		
14	51		
10	44		
6.3	35		
5	33		
3.35	29		
2	24		
1.18	20		
0.6	16		
0.425	14		
0.3	13		
0.212	12		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	76
Sand	15
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

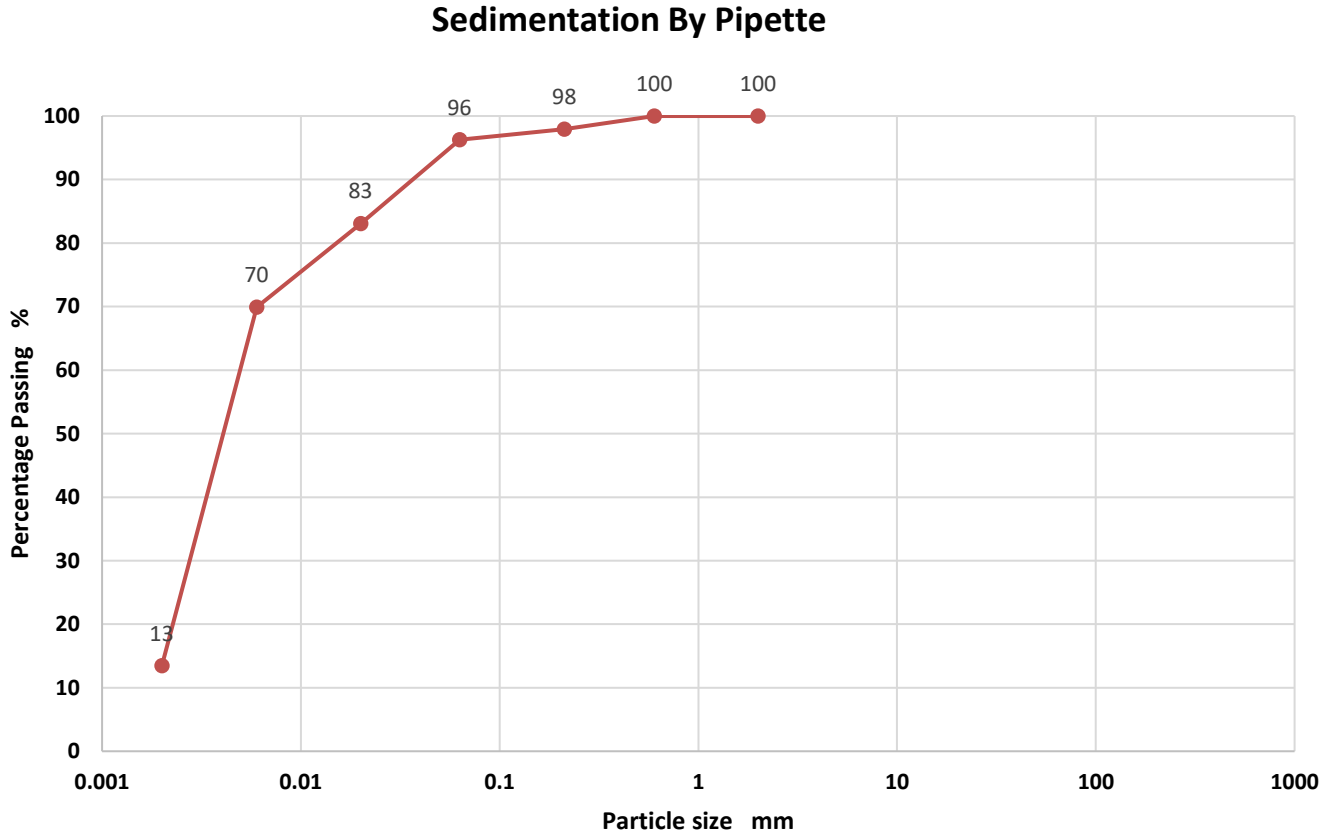
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
RO/MH	Approved	08/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy clayey SILT	Depth Top	3.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	98
0.063	96

Sedimentation Analysis

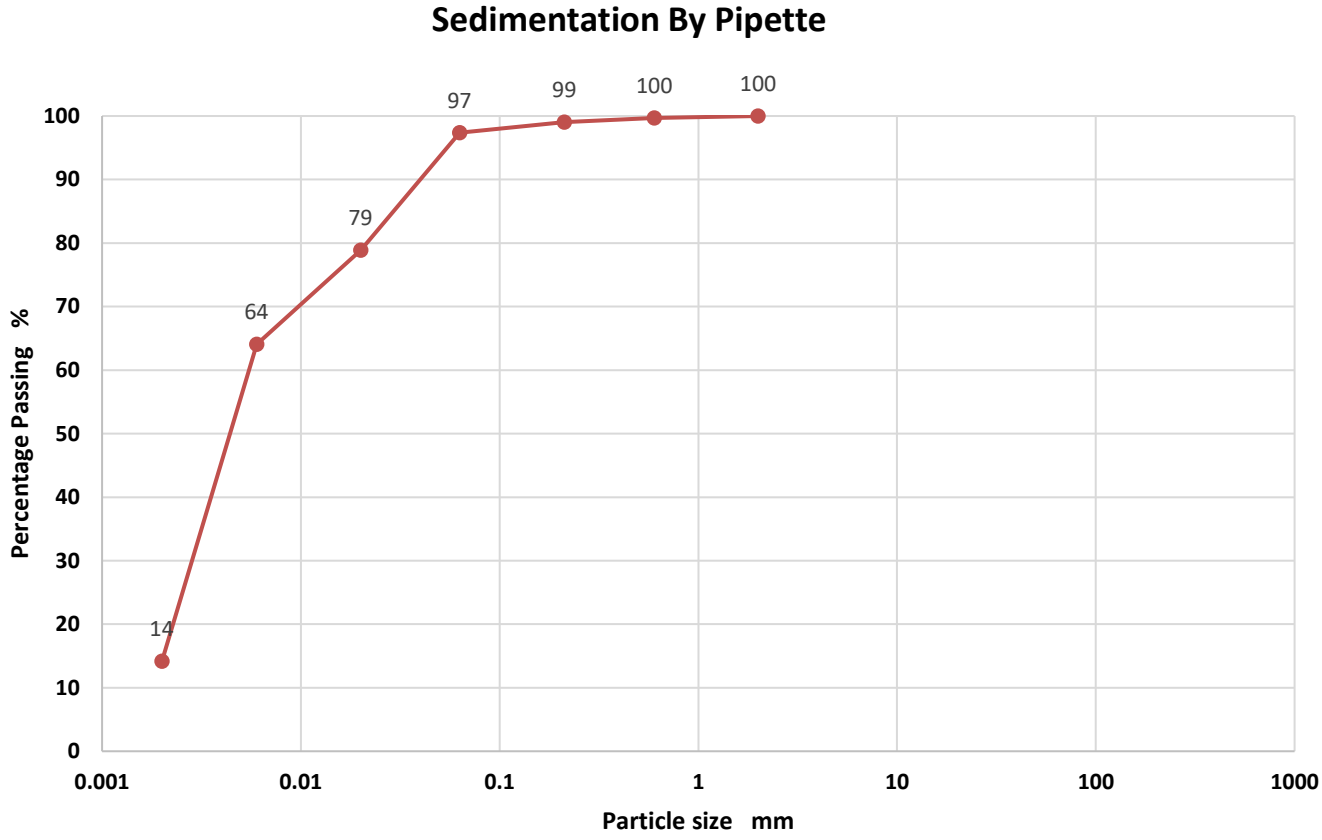
Particle Diameter	Percentage Passing
0.02	83
0.006	70
0.002	13

Soil Fraction	Total Percentage
Gravel	0
Sand	4
Silt	83
Clay	13

Operators	Checked	01/08/2017	Wayne Honey	W. Honey
RO	Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy clayey SILT	Depth Top	3.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	99
0.063	97

Sedimentation Analysis

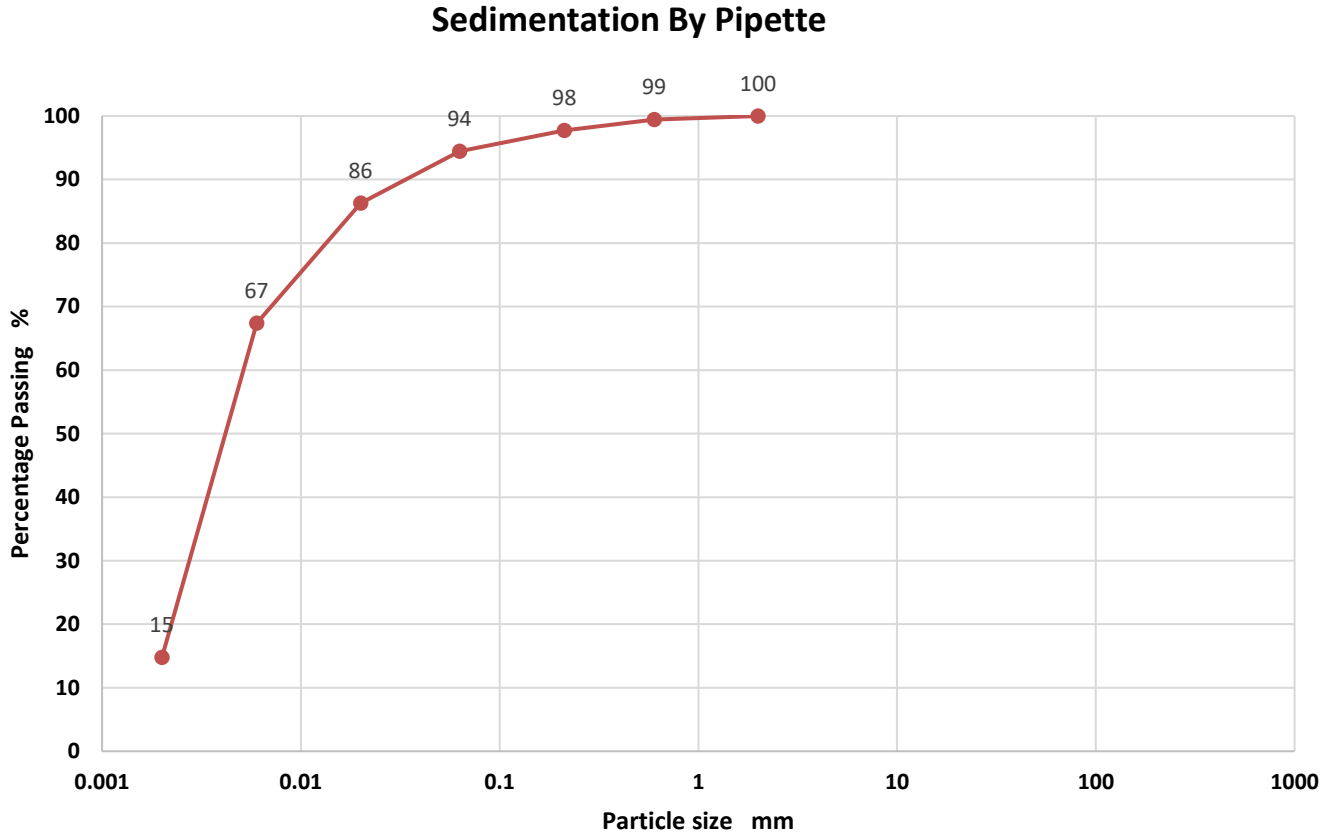
Particle Diameter	Percentage Passing
0.02	79
0.006	64
0.002	14

Soil Fraction	Total Percentage
Gravel	0
Sand	3
Silt	83
Clay	14

Operators	Checked	22/07/2017	Wayne Honey	W. Honey
RO	Approved	23/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy clayey SILT	Depth Top	4.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	99
0.212	98
0.063	94

Sedimentation Analysis

Particle Diameter	Percentage Passing
0.02	86
0.006	67
0.002	15

Soil Fraction	Total Percentage
Gravel	0
Sand	6
Silt	80
Clay	15

Operators	Checked	22/07/2017	Wayne Honey	W. Honey
RO	Approved	23/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	SUMMARY OF SHEAR STRENGTH TESTS (TOTAL STRESS) (BS 1377 : PART 7 : 3 : 1990)	
Contract Number	**35579**	
Site Name	**Foynes Port**	

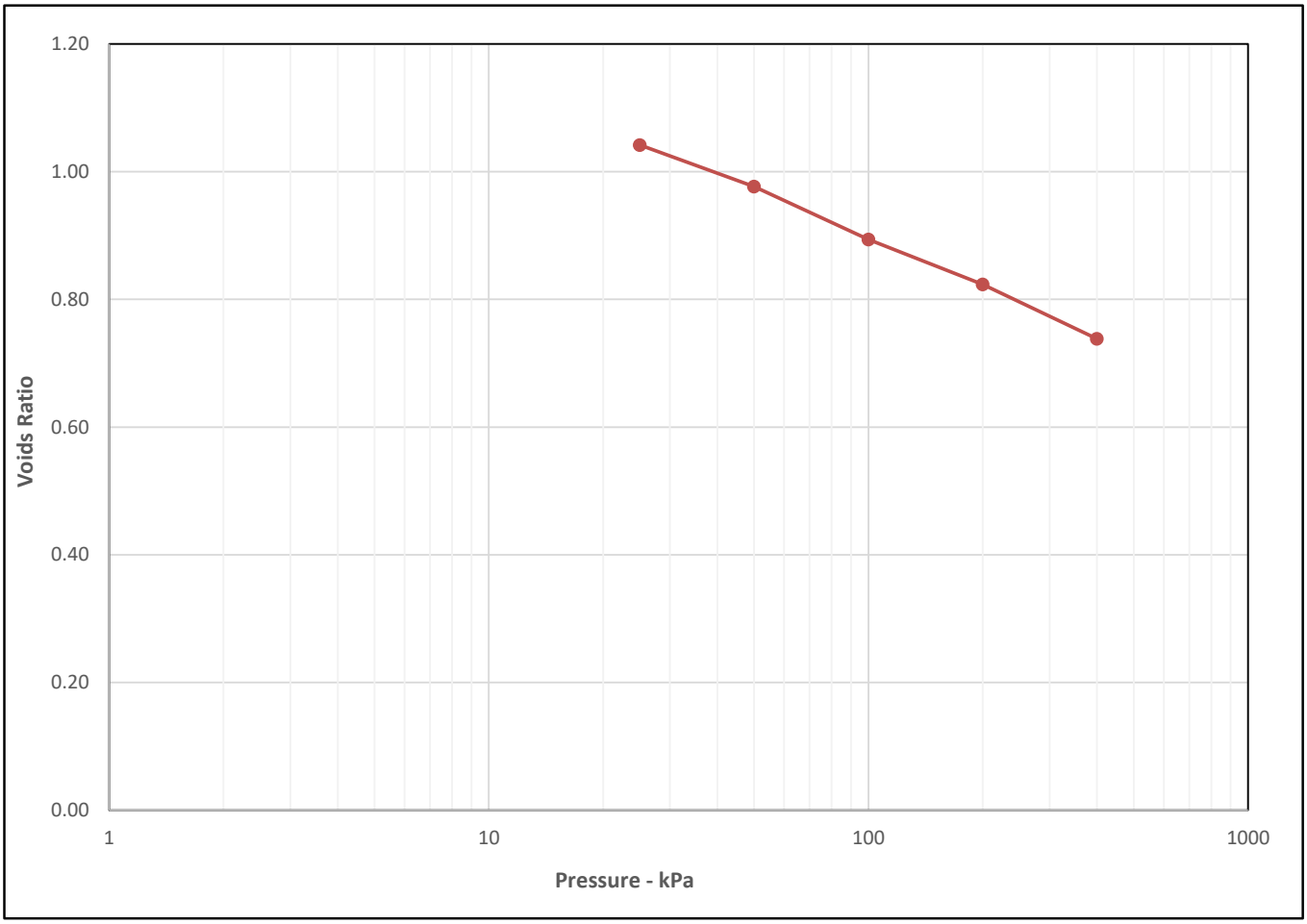
BH Borehole	Sample Number	Sample Type	Depth (m)			Moisture Content	Location of Test Horizon	Diameter of Tube (mm)	Vane Size	Disturbed / Undisturbed	Hand Vane	
											Peak	Residual
BHL04		UT	1.00	-		48			33mm	Undisturbed	10	4
BHL04		UT	6.50	-		35			33mm	Undisturbed	9	3
BHL05		UT	2.00	-		59			33mm	Undisturbed	19	6
BHL05		UT	3.00	-		53			33mm	Undisturbed	22	7
BHL05		UT	11.00	-		54			33mm	Undisturbed	29	10
BHM03		UT	2.00	-		50			33mm	Undisturbed	5	1
BHM03		UT	3.00	-		58			33mm	Undisturbed	15	4
BHM03		UT	9.00	-		28			33mm	Undisturbed	19	8
BHM04		UT	6.50	-		29			33mm	Undisturbed	32	8
BHM04		UT	9.50	-		37			33mm	Undisturbed	18	6
BHM04		UT	13.00	-		37			33mm	Undisturbed	11	7
BHM05		UT	1.00	-		63			33mm	Undisturbed	8	4
BHM05		UT	5.00	-		45			33mm	Undisturbed	12	8
BHM05		UT	9.00	-		52			33mm	Undisturbed	9	9.5
BHM05		UT	9.50	-		50			33mm	Undisturbed	21	7
BHM05		UT	12.00	-		44			33mm	Undisturbed	28	7
BHM06		UT	7.50	-		43			33mm	Undisturbed	30	6
BHM06		UT	10.50	-		43			33mm	Undisturbed	33	9
BHM08		UT	1.00	-		63			33mm	Undisturbed	7	2
BHM08		UT	2.00	-		49			33mm	Undisturbed	13	7
BHM08		UT	3.00	-		55			33mm	Undisturbed	13	7
BHM08		UT	4.00	-		48			33mm	Undisturbed	7	1
BHM11		UT	3.00	-		45			33mm	Undisturbed	17	7
BHM11		UT	5.00	-		34			33mm	Undisturbed	14	8
BHM11		UT	8.00	-		41			33mm	Undisturbed	17	4
BHM11		UT	11.00	-		47			33mm	Undisturbed	29	11
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key	**Reported As**
Moisture Content	%
Hand Vane	kPa

Operators	Checked	07/08/2017	Wayne Honey	W. Honey
CJ/JJ	Approved	08/08/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	1.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

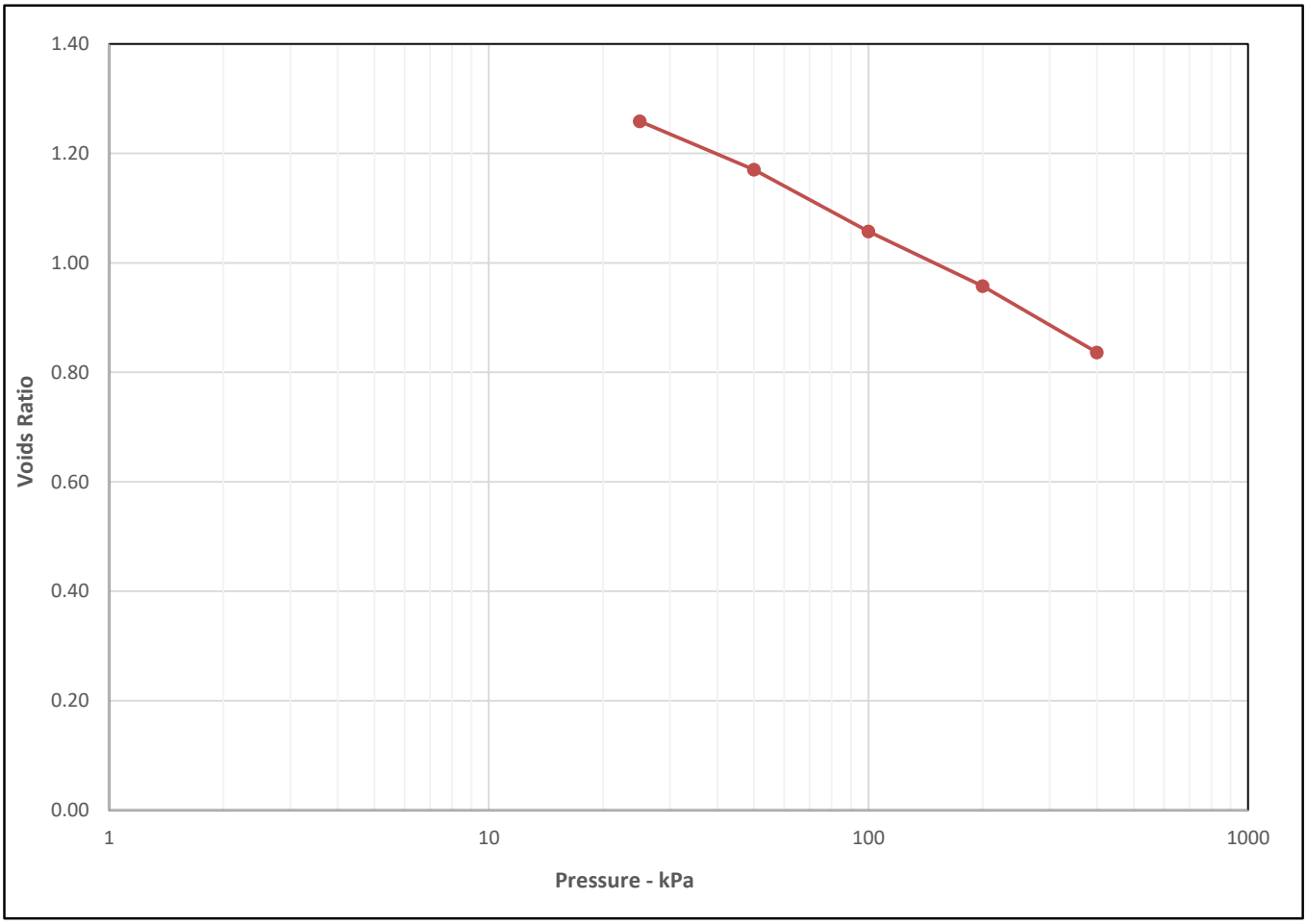


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	49	0	-	25	4.9	6.3		-			
Bulk Density (Mg/m3)	1.70	25	-	50	1.3	5.3		-			
Dry Density (Mg/m3)	1.14	50	-	100	0.84	7.1		-			
Voids Ratio	1.3247	100	-	200	0.370	9		-			
Degree of saturation	98.0	200	-	400	0.23	10		-			
Height (mm)	18.84		-					-			
Diameter (mm)	74.85		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	2.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

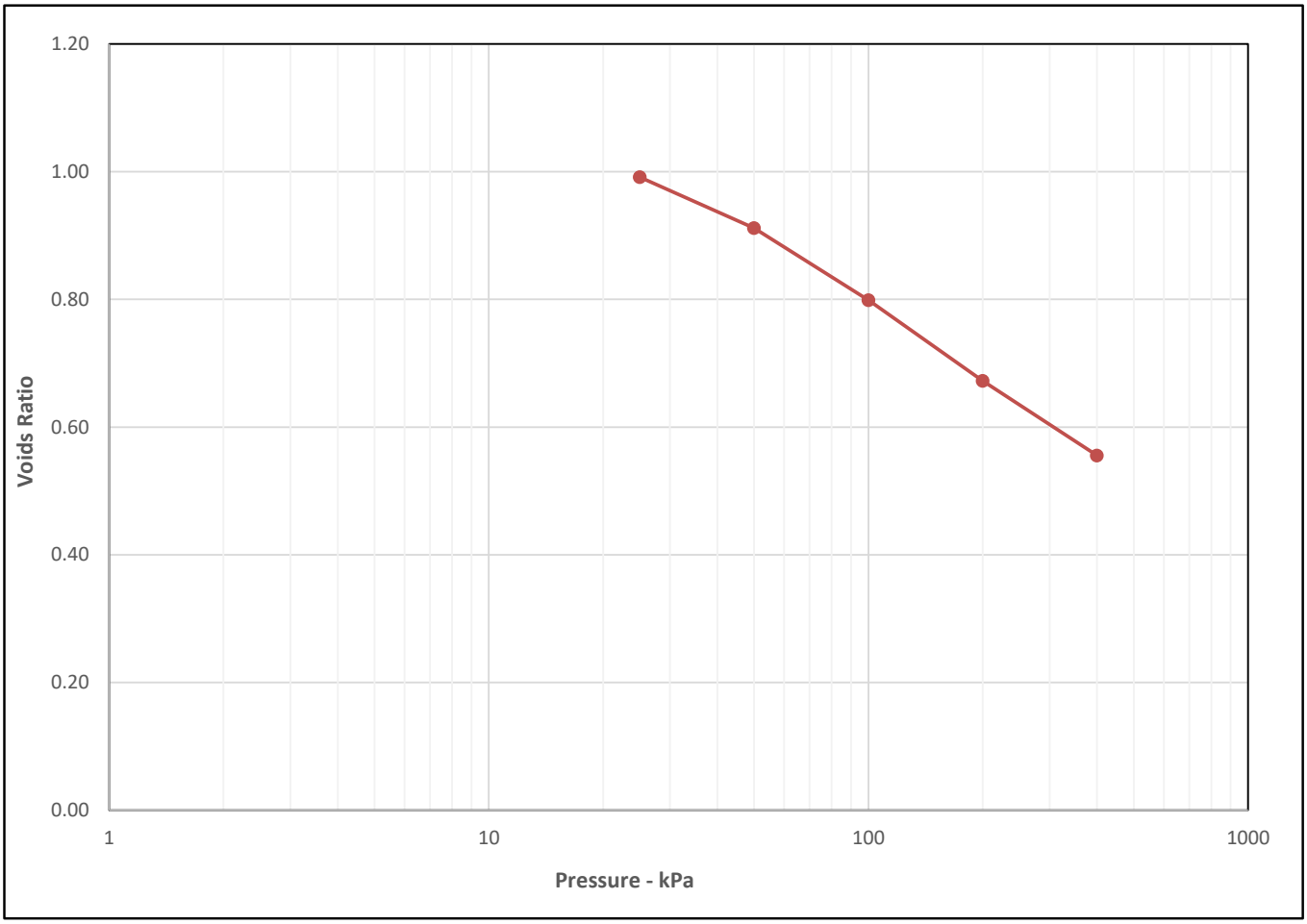


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	66	0	-	25	5.6	2.2		-			
Bulk Density (Mg/m3)	1.67	25	-	50	1.6	2		-			
Dry Density (Mg/m3)	1.01	50	-	100	1	1.2		-			
Voids Ratio	1.6268	100	-	200	0.480	2.6		-			
Degree of saturation	106.9	200	-	400	0.31	3.8		-			
Height (mm)	19.77		-					-			
Diameter (mm)	74.91		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	3.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

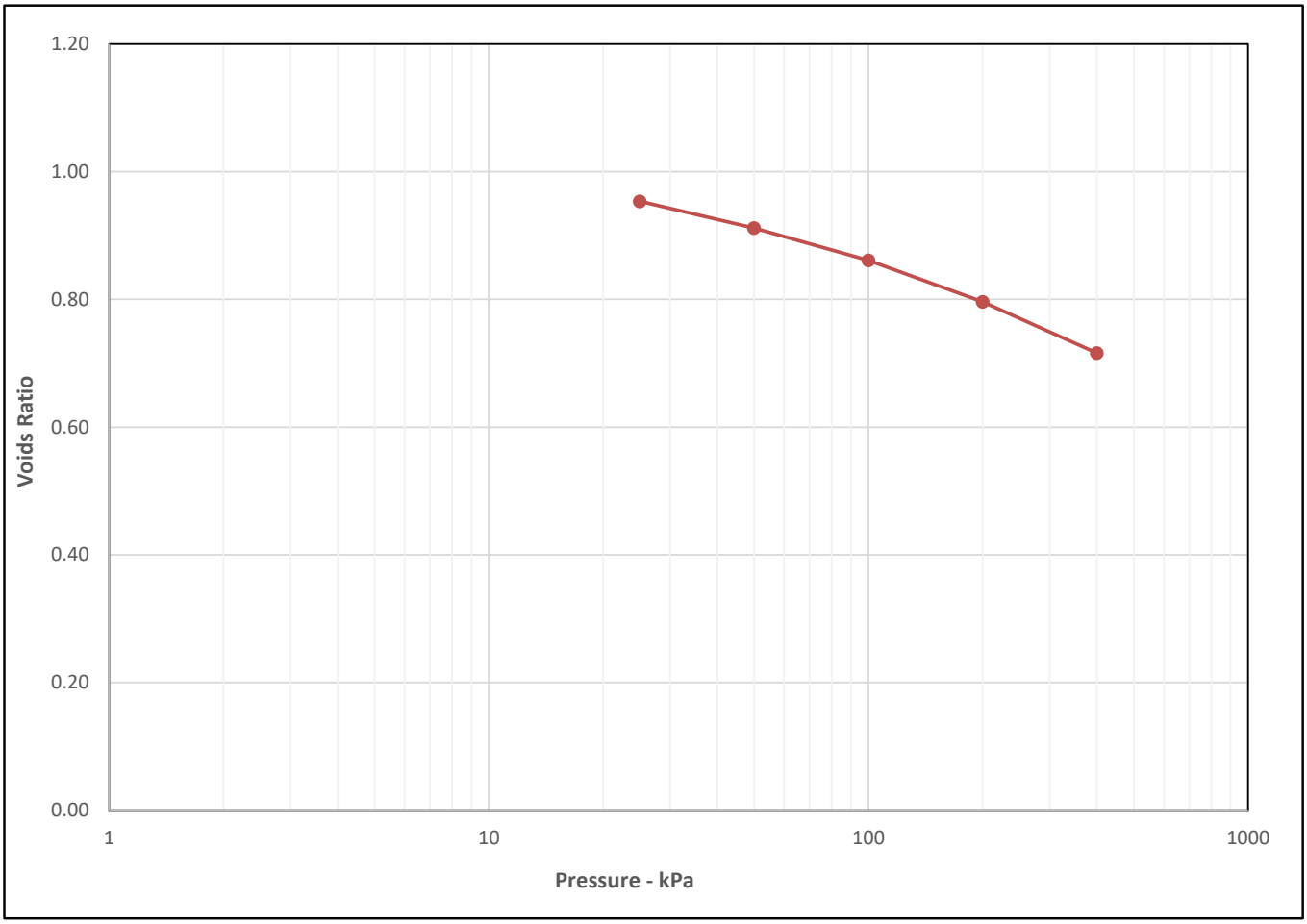


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	61	0	-	25	5.5	5.3		-			
Bulk Density (Mg/m3)	1.84	25	-	50	1.6	4.6		-			
Dry Density (Mg/m3)	1.15	50	-	100	1.2	4.6		-			
Voids Ratio	1.3082	100	-	200	0.700	0.47		-			
Degree of saturation	122.9	200	-	400	0.35	4.8		-			
Height (mm)	18.77		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	12.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

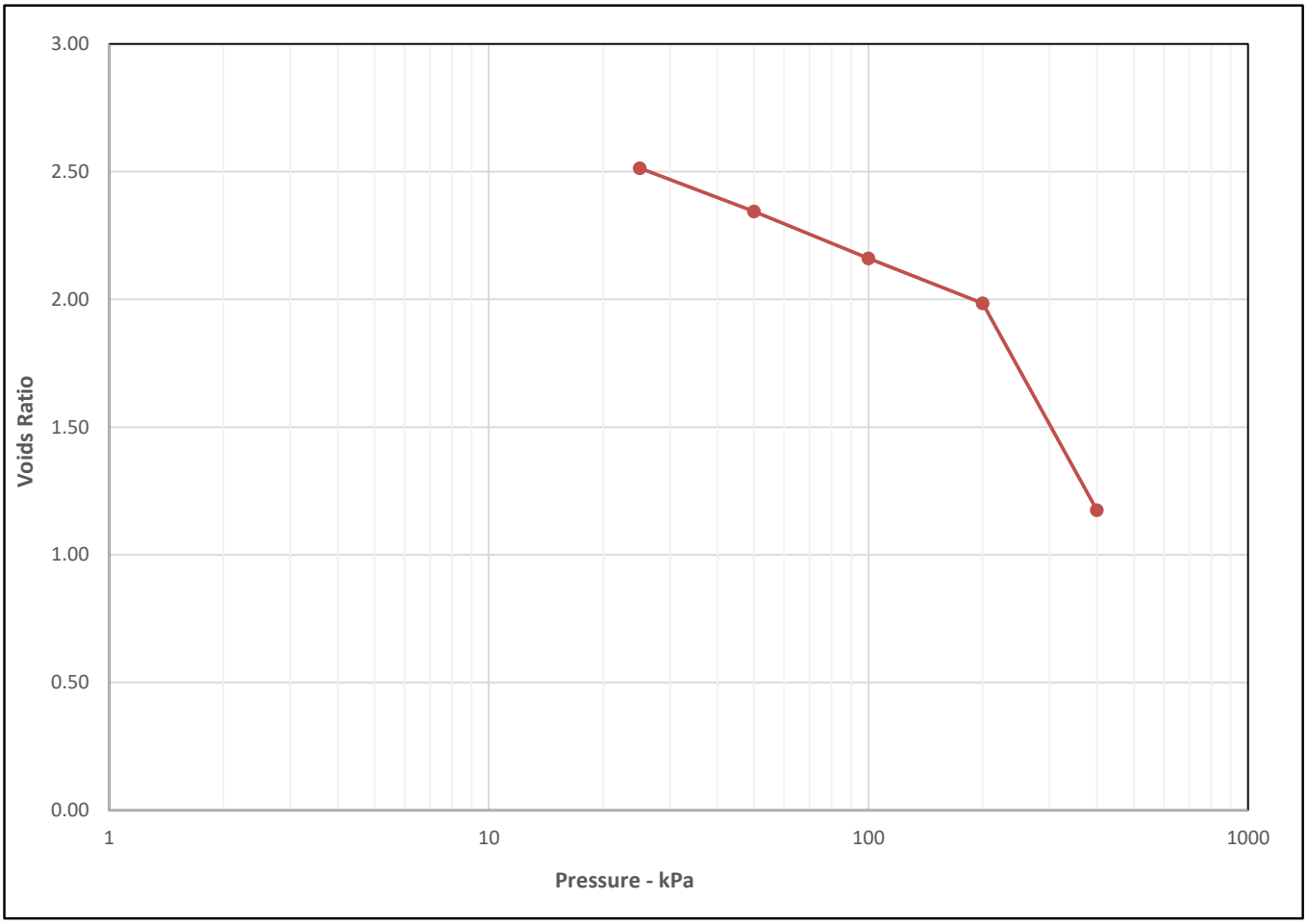


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	45	0	-	25	2.6	0.81		-			
Bulk Density (Mg/m3)	1.84	25	-	50	0.85	2.3		-			
Dry Density (Mg/m3)	1.27	50	-	100	0.53	5.8		-			
Voids Ratio	1.0866	100	-	200	0.350	5.3		-			
Degree of saturation	109.9	200	-	400	0.22	3.6		-			
Height (mm)	19.57		-					-			
Diameter (mm)	75		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	1.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

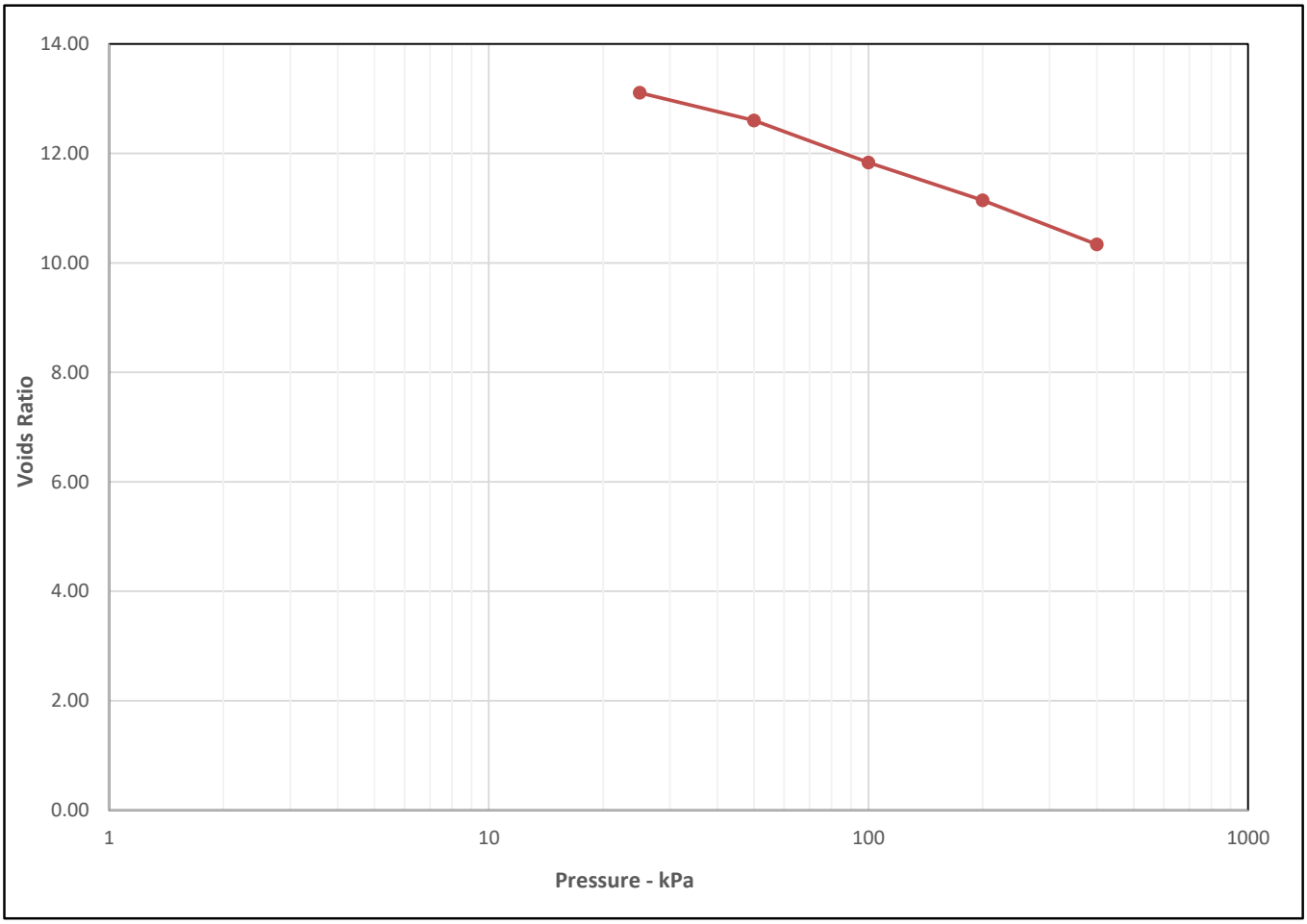


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	97	0	-	25	5.7	8.2		-			
Bulk Density (Mg/m3)	1.28	25	-	50	1.9	3.6		-			
Dry Density (Mg/m3)	0.65	50	-	100	1.1	3.2		-			
Voids Ratio	3.0998	100	-	200	0.560	5.5		-			
Degree of saturation	83.2	200	-	400	1.4	6.2		-			
Height (mm)	19.68		-					-			
Diameter (mm)	74.6		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	2.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

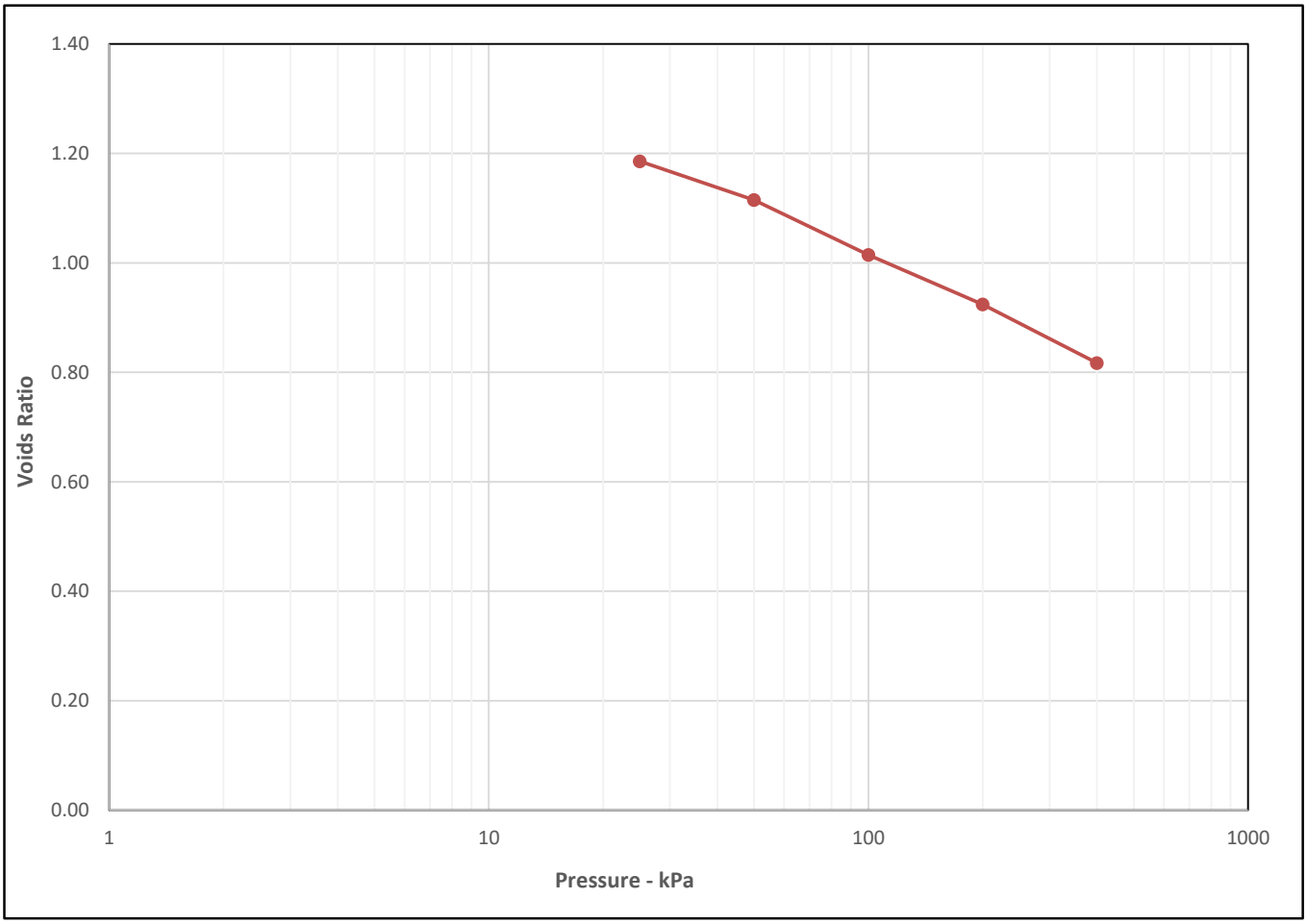


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	188	0	-	25	5.5	4.6		-			
Bulk Density (Mg/m3)	0.47	25	-	50	1.4	3		-			
Dry Density (Mg/m3)	0.16	50	-	100	1.1	0.97		-			
Voids Ratio	15.3728	100	-	200	0.540	3.2		-			
Degree of saturation	32.5	200	-	400	0.33	2		-			
Height (mm)	18.2		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	3.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

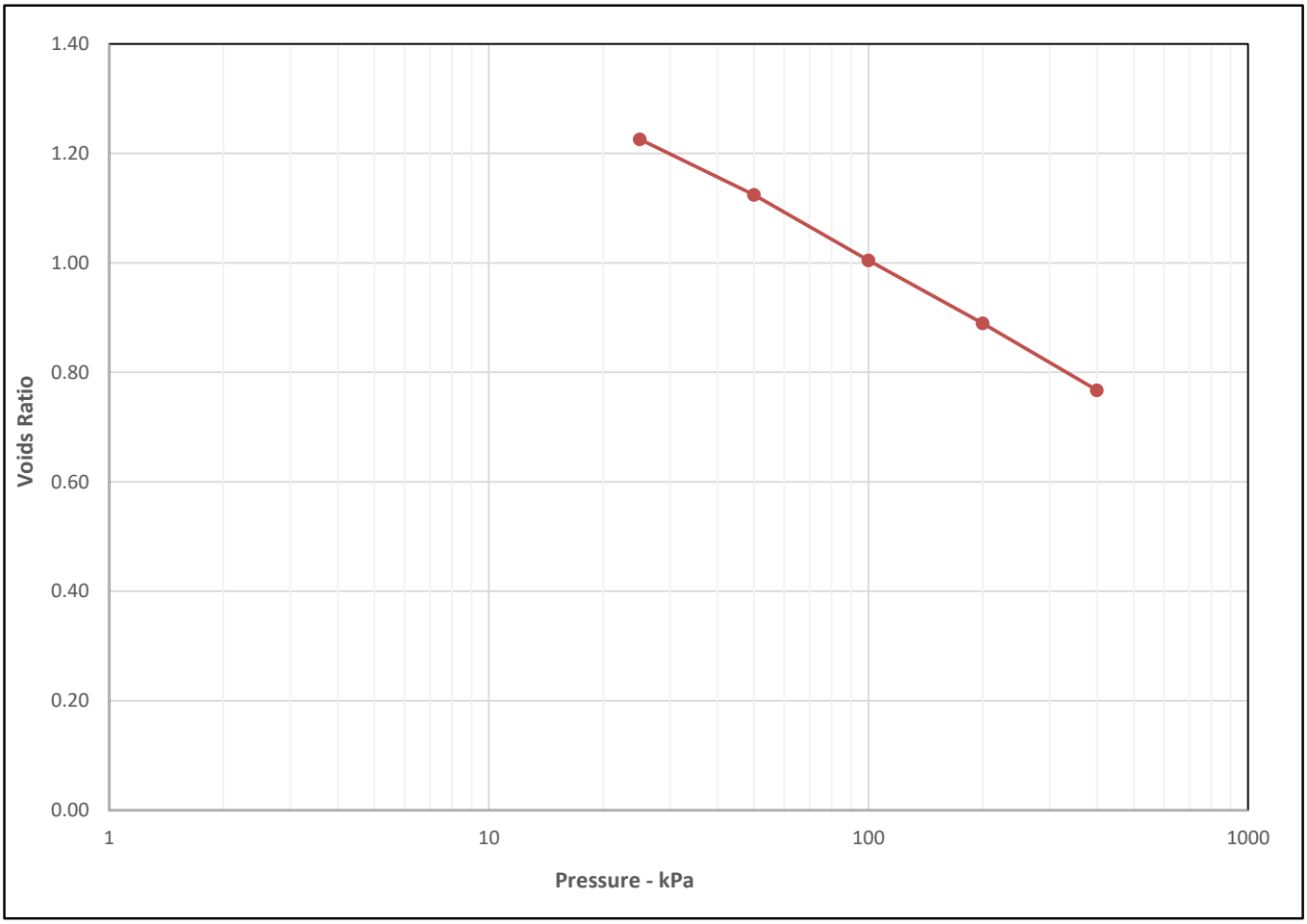


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	55	0	-	25	4	0.92		-			
Bulk Density (Mg/m3)	1.69	25	-	50	1.3	1.4		-			
Dry Density (Mg/m3)	1.09	50	-	100	0.95	1.3		-			
Voids Ratio	1.4270	100	-	200	0.450	1.6		-			
Degree of saturation	102.4	200	-	400	0.28	2.5		-			
Height (mm)	19.91		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	4.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

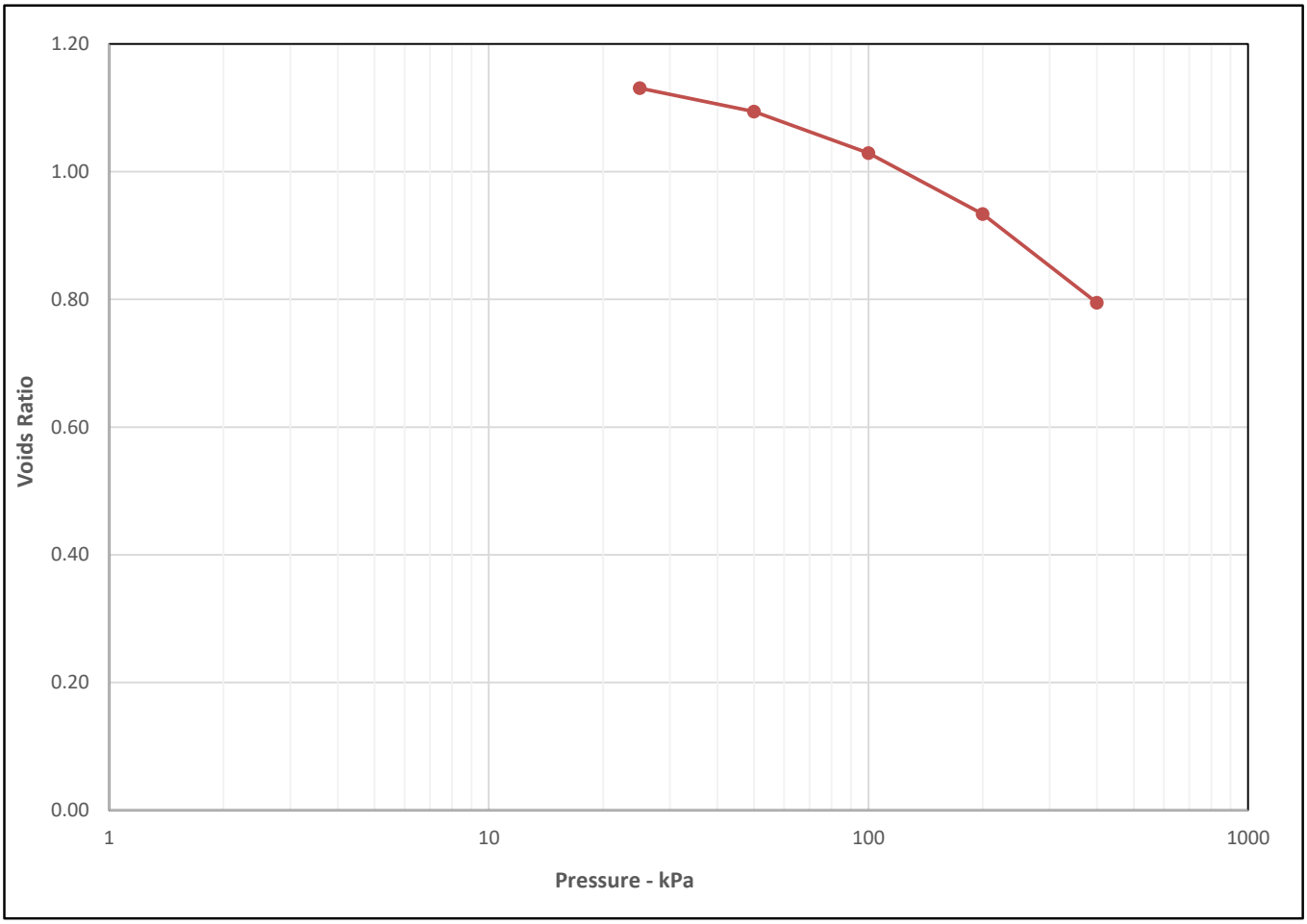


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	55	0	-	25	3.9	4.7		-			
Bulk Density (Mg/m3)	1.67	25	-	50	1.8	1.9		-			
Dry Density (Mg/m3)	1.07	50	-	100	1.1	3.6		-			
Voids Ratio	1.4695	100	-	200	0.570	2.2		-			
Degree of saturation	99.8	200	-	400	0.32	2.9		-			
Height (mm)	19.86		-					-			
Diameter (mm)	74.98		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	8.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

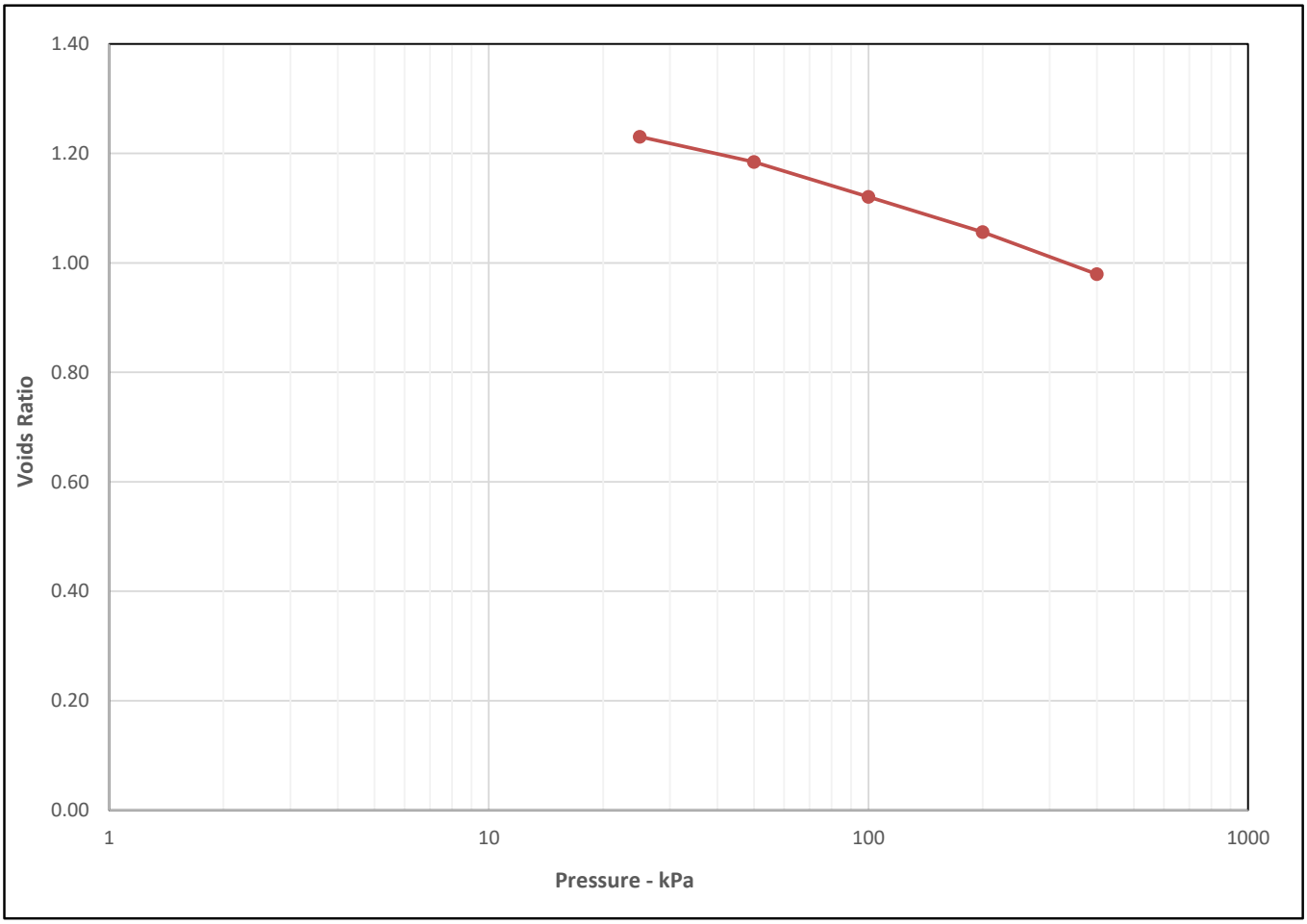


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	45	0	-	25	2.2	0.89		-			
Bulk Density (Mg/m3)	1.70	25	-	50	0.68	0.34		-			
Dry Density (Mg/m3)	1.17	50	-	100	0.62	1.8		-			
Voids Ratio	1.2559	100	-	200	0.470	0.95		-			
Degree of saturation	94.1	200	-	400	0.36	1.2		-			
Height (mm)	18.07		-					-			
Diameter (mm)	74.97		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	11.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

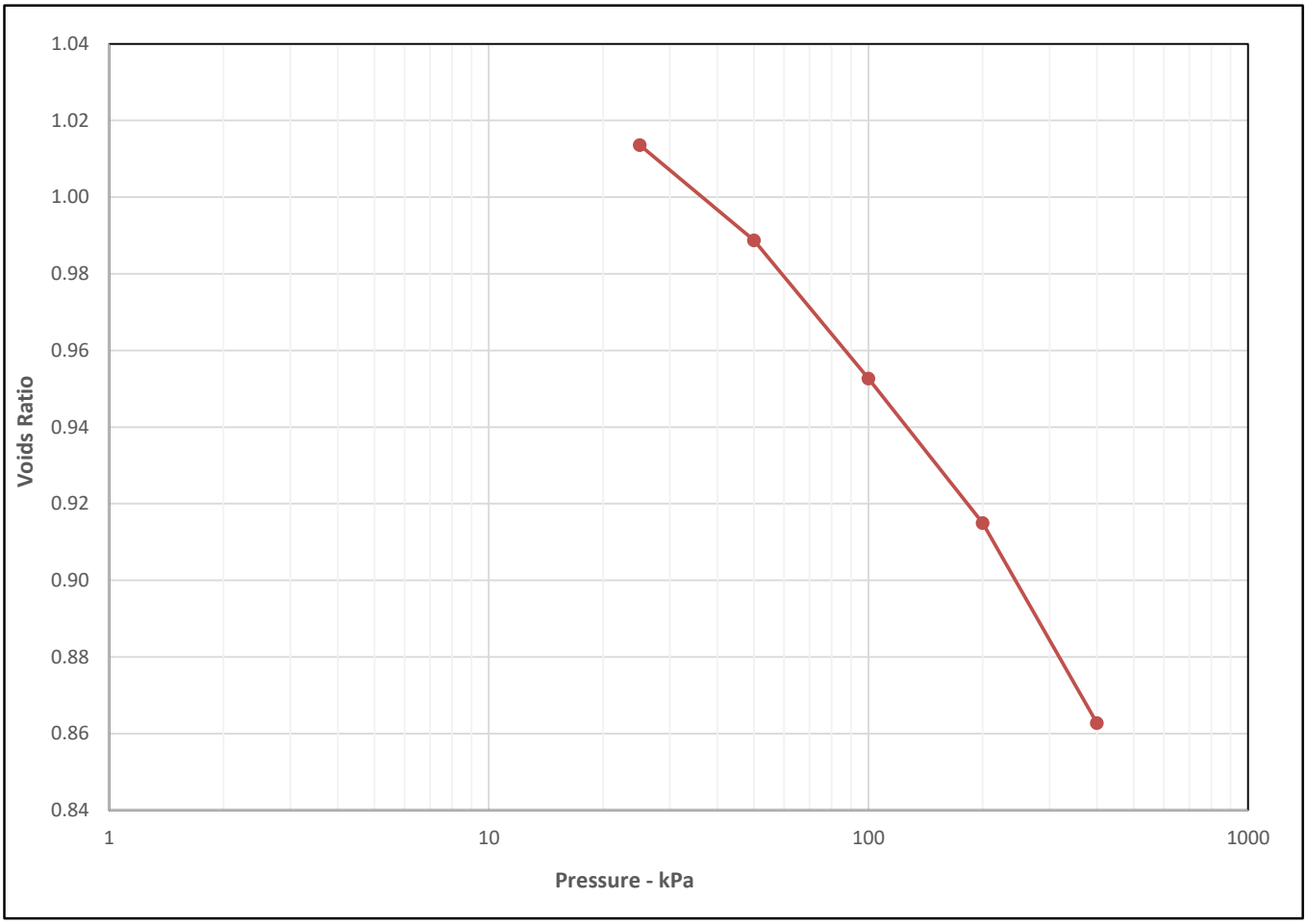


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	57	0	-	25	2.9	2.5		-			
Bulk Density (Mg/m3)	1.72	25	-	50	0.83	3.4		-			
Dry Density (Mg/m3)	1.10	50	-	100	0.58	4.2		-			
Voids Ratio	1.4061	100	-	200	0.300	5.6		-			
Degree of saturation	106.7	200	-	400	0.19	7.9		-			
Height (mm)	19.97		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	14.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	67	0	-	25	1.3	0.0074		-			
Bulk Density (Mg/m3)	2.12	25	-	50	0.49	0.84		-			
Dry Density (Mg/m3)	1.27	50	-	100	0.36	2		-			
Voids Ratio	1.0833	100	-	200	0.190	2.1		-			
Degree of saturation	163.8	200	-	400	0.14	1.8		-			
Height (mm)	18.02		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

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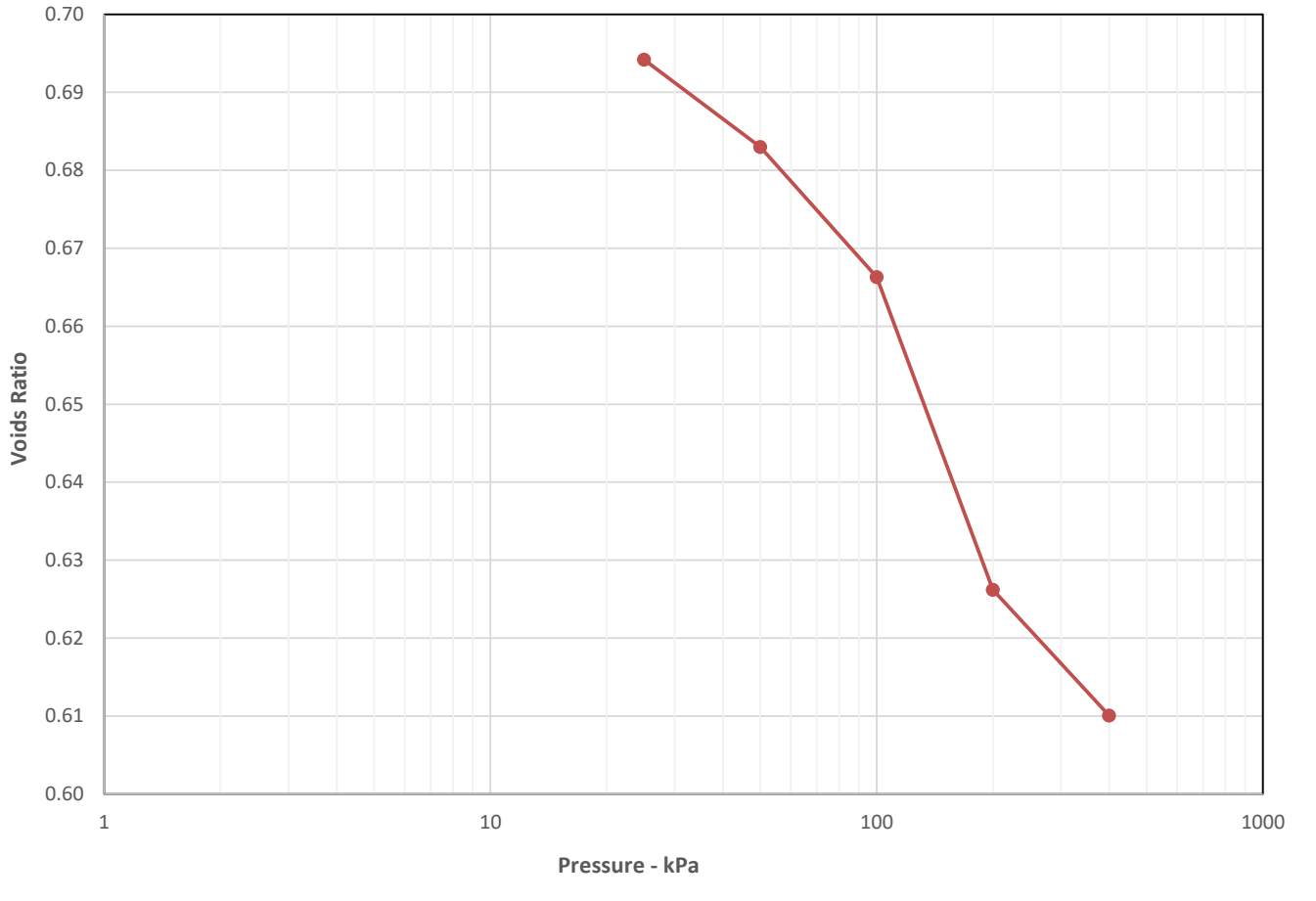
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M01
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	6.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	27	0	-	25	0.52	17		-			
Bulk Density (Mg/m3)	1.96	25	-	50	0.26	17		-			
Dry Density (Mg/m3)	1.54	50	-	100	0.2	3.3		-			
Voids Ratio	0.7165	100	-	200	0.240	16		-			
Degree of saturation	100.9	200	-	400	0.05	8.9		-			
Height (mm)	19.77		-					-			
Diameter (mm)	74.71		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

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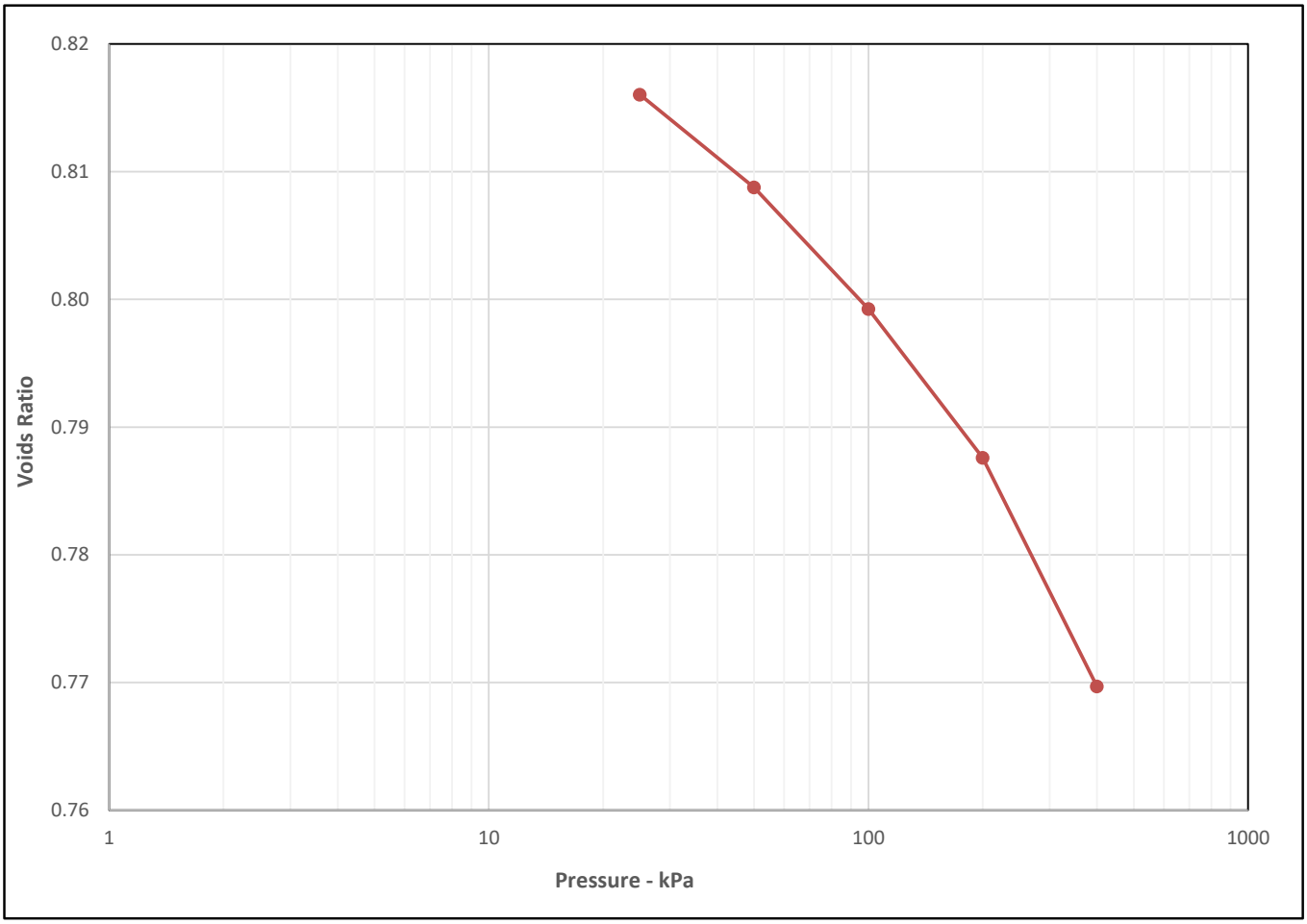
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	2.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

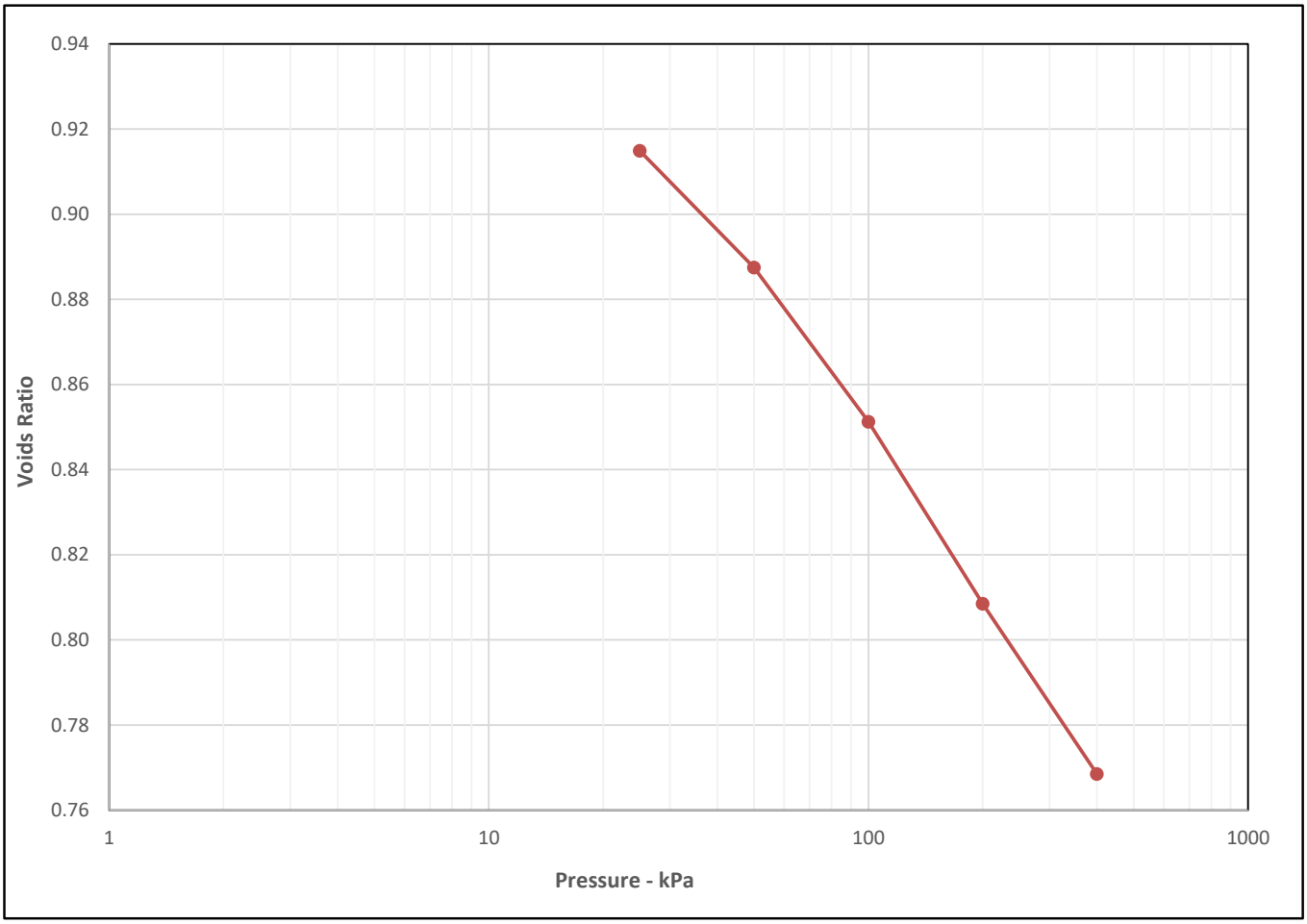


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	33	0	-	25	0.42	13		-			
Bulk Density (Mg/m3)	1.92	25	-	50	0.16	13		-			
Dry Density (Mg/m3)	1.44	50	-	100	0.11	11		-			
Voids Ratio	0.8353	100	-	200	0.065	12		-			
Degree of saturation	104.5	200	-	400	0.05	15		-			
Height (mm)	19.68		-					-			
Diameter (mm)	74.6		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M02
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	5.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

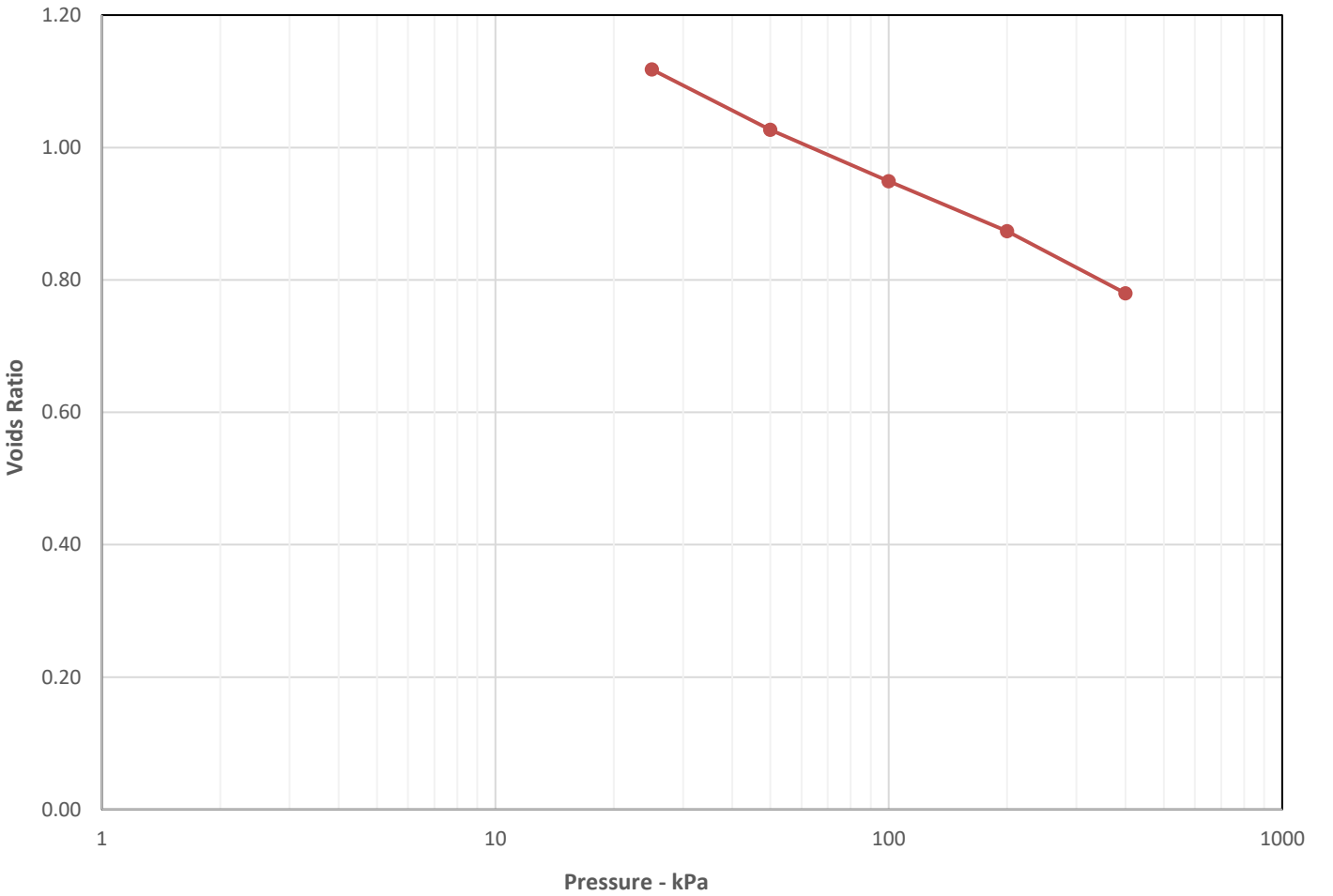


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	39	0	-	25	0.43	11		-			
Bulk Density (Mg/m3)	1.90	25	-	50	0.57	14		-			
Dry Density (Mg/m3)	1.37	50	-	100	0.38	11		-			
Voids Ratio	0.9358	100	-	200	0.230	17		-			
Degree of saturation	110.2	200	-	400	0.11	13		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.06		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05-07-17	Emma Sharp	
LG	Approved	06-07-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy CLAY containing organic material.	Depth Top (m)	1.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

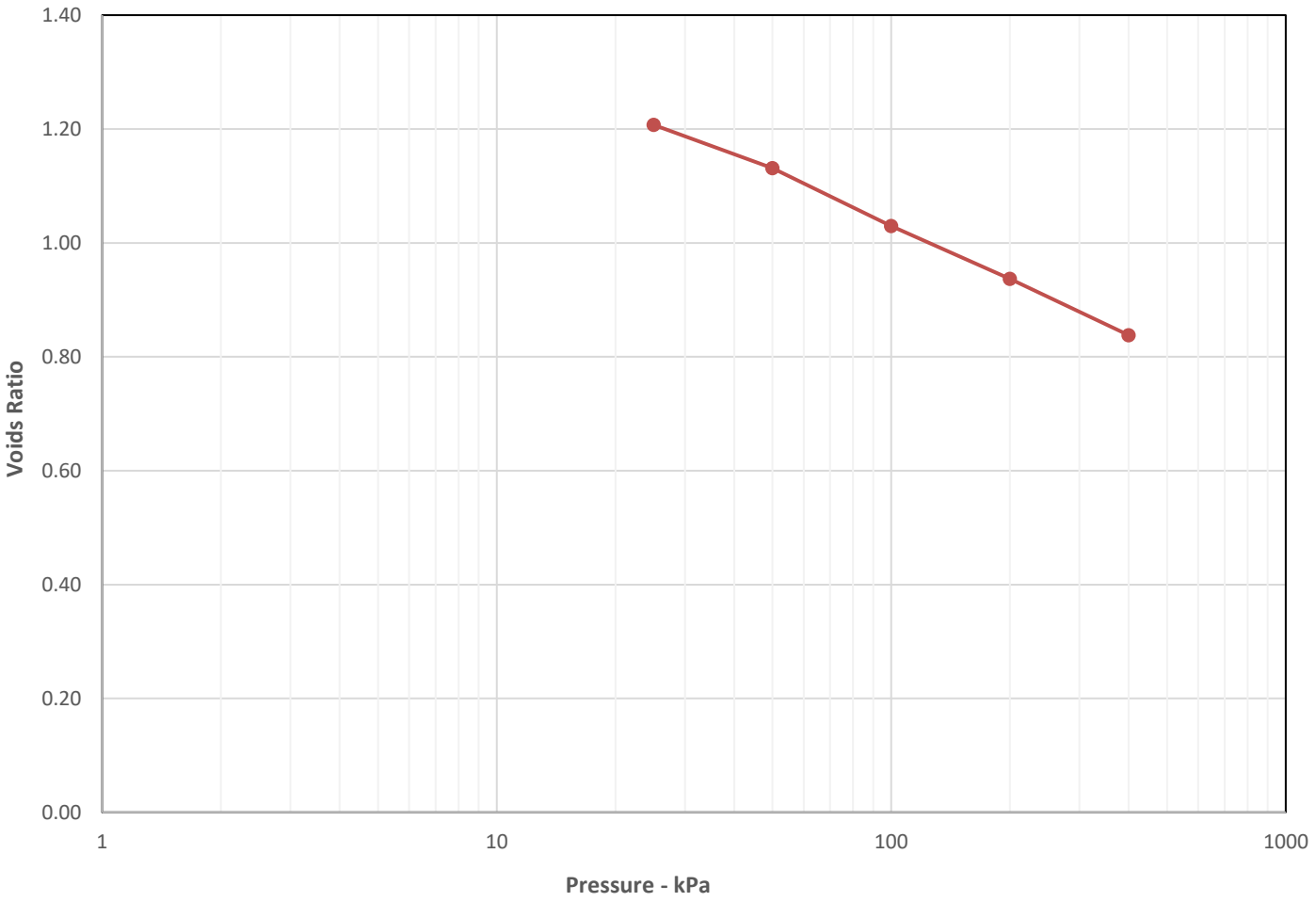


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	51	0	-	25	2.6	22		-			
Bulk Density (Mg/m3)	1.77	25	-	50	1.7	9.8		-			
Dry Density (Mg/m3)	1.17	50	-	100	0.77	9		-			
Voids Ratio	1.2670	100	-	200	0.390	13		-			
Degree of saturation	106.8	200	-	400	0.25	8.6		-			
Height (mm)	19.88		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	02/08/2017	Emma Sharp	
LG	Approved	03/08/2017	Paul Evans	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	3.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

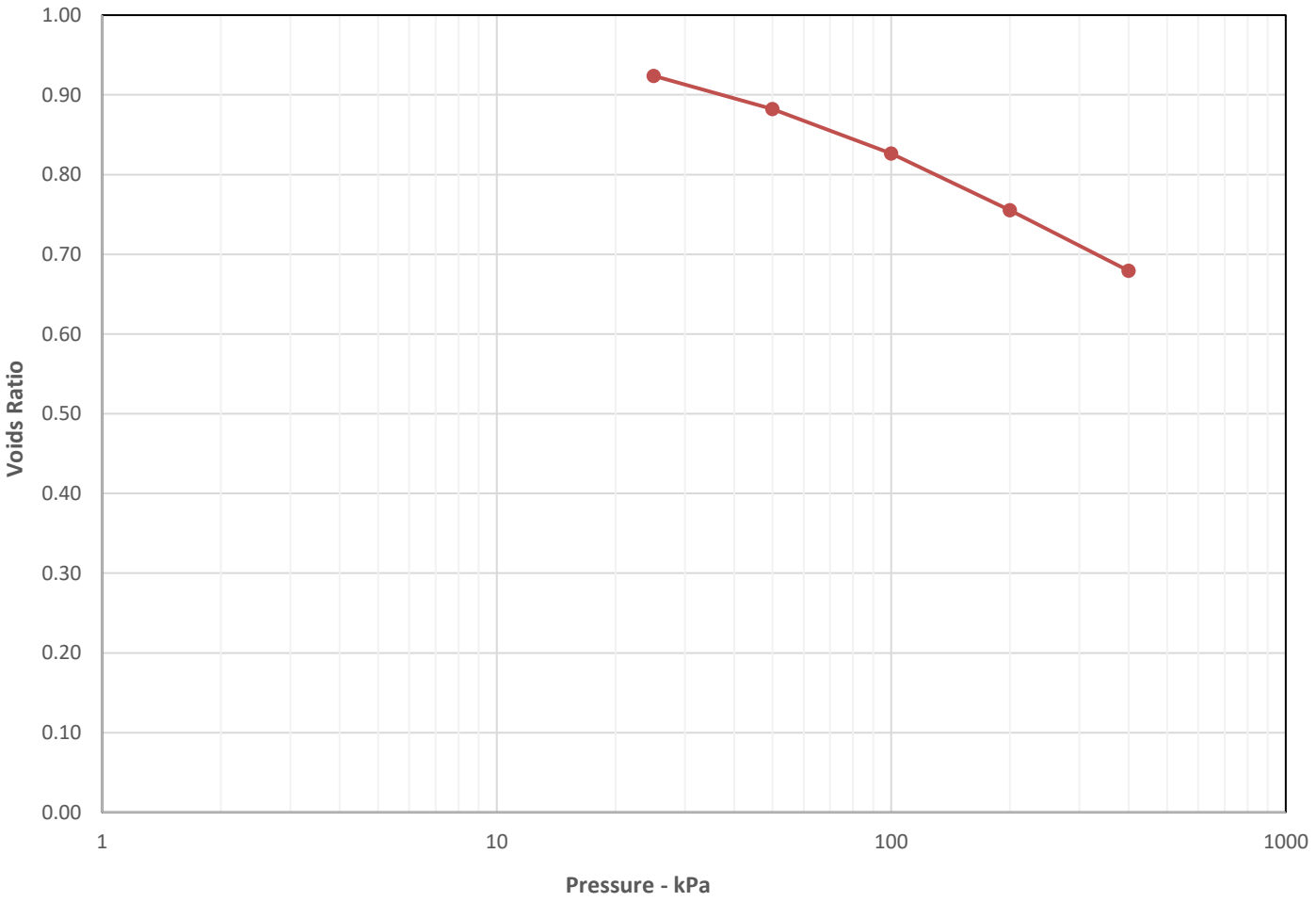


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	59	0	-	25	4.4	4.3		-			
Bulk Density (Mg/m3)	1.70	25	-	50	1.4	4.2		-			
Dry Density (Mg/m3)	1.07	50	-	100	0.95	4.6		-			
Voids Ratio	1.4810	100	-	200	0.460	7.4		-			
Degree of saturation	105.7	200	-	400	0.25	8.6		-			
Height (mm)	19.75		-					-			
Diameter (mm)	74.84		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	5.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

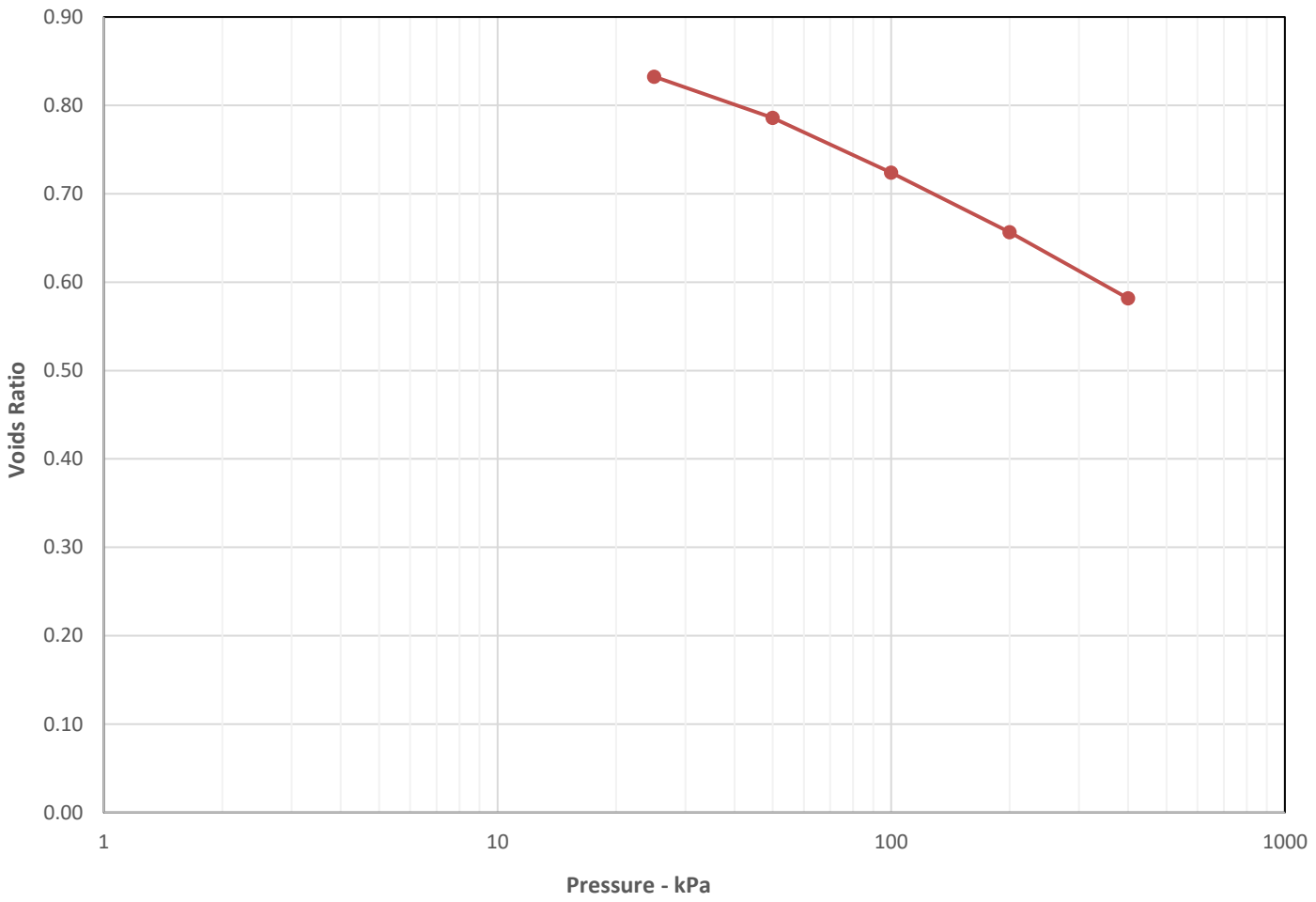


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	42	0	-	25	2.6	9.8		-			
Bulk Density (Mg/m3)	1.83	25	-	50	0.87	14		-			
Dry Density (Mg/m3)	1.29	50	-	100	0.59	13		-			
Voids Ratio	1.0554	100	-	200	0.390	9.8		-			
Degree of saturation	104.4	200	-	400	0.22	6.9		-			
Height (mm)	18.77		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	12.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

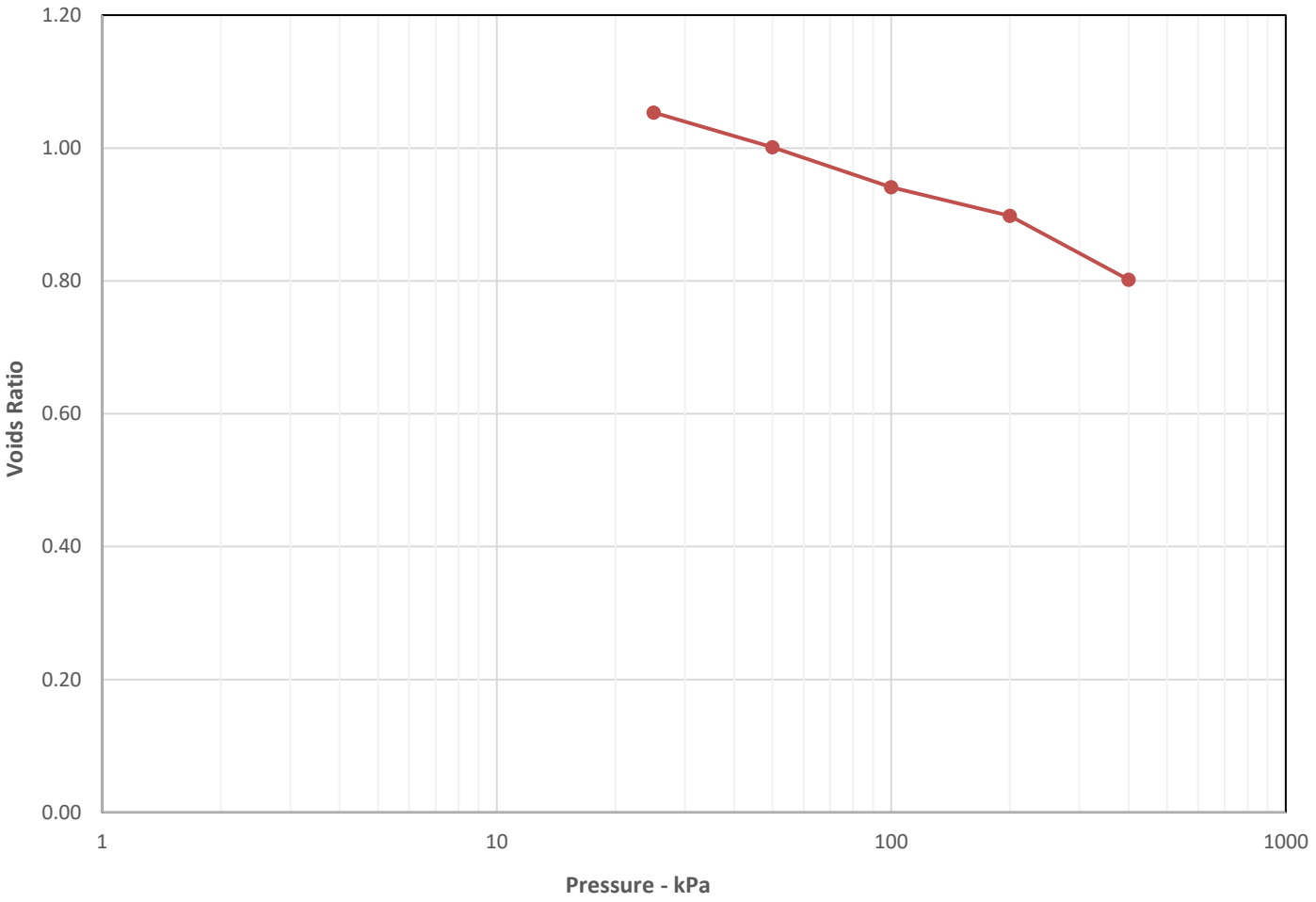


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	39	0	-	25	2.4	1.7		-			
Bulk Density (Mg/m3)	1.88	25	-	50	1	1		-			
Dry Density (Mg/m3)	1.36	50	-	100	0.69	6.2		-			
Voids Ratio	0.9489	100	-	200	0.390	7.8		-			
Degree of saturation	107.8	200	-	400	0.23	3.2		-			
Height (mm)	19.76		-					-			
Diameter (mm)	75		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	15.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

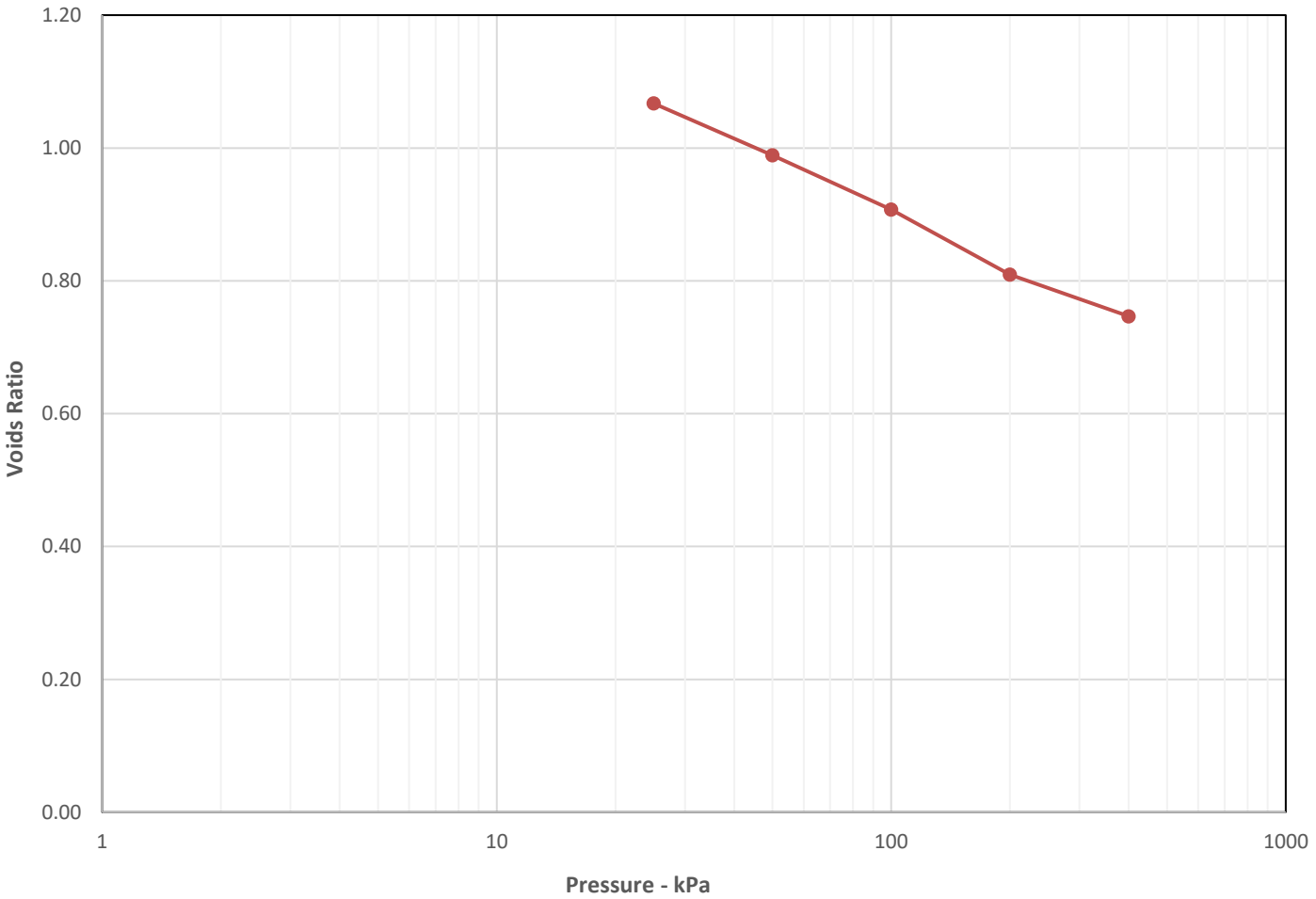


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	46	0	-	25	3	0.63		-			
Bulk Density (Mg/m3)	1.75	25	-	50	1	3.3		-			
Dry Density (Mg/m3)	1.19	50	-	100	0.6	1		-			
Voids Ratio	1.2195	100	-	200	0.220	1.4		-			
Degree of saturation	100.4	200	-	400	0.25	2.2		-			
Height (mm)	19.88		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	2.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	49	0	-	25	4	9.9		-			
Bulk Density (Mg/m3)	1.72	25	-	50	1.5	5.9		-			
Dry Density (Mg/m3)	1.15	50	-	100	0.82	3.5		-			
Voids Ratio	1.2977	100	-	200	0.510	5.3		-			
Degree of saturation	100.1	200	-	400	0.17	6.5		-			
Height (mm)	19.75		-					-			
Diameter (mm)	74.84		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

UKAS TESTING
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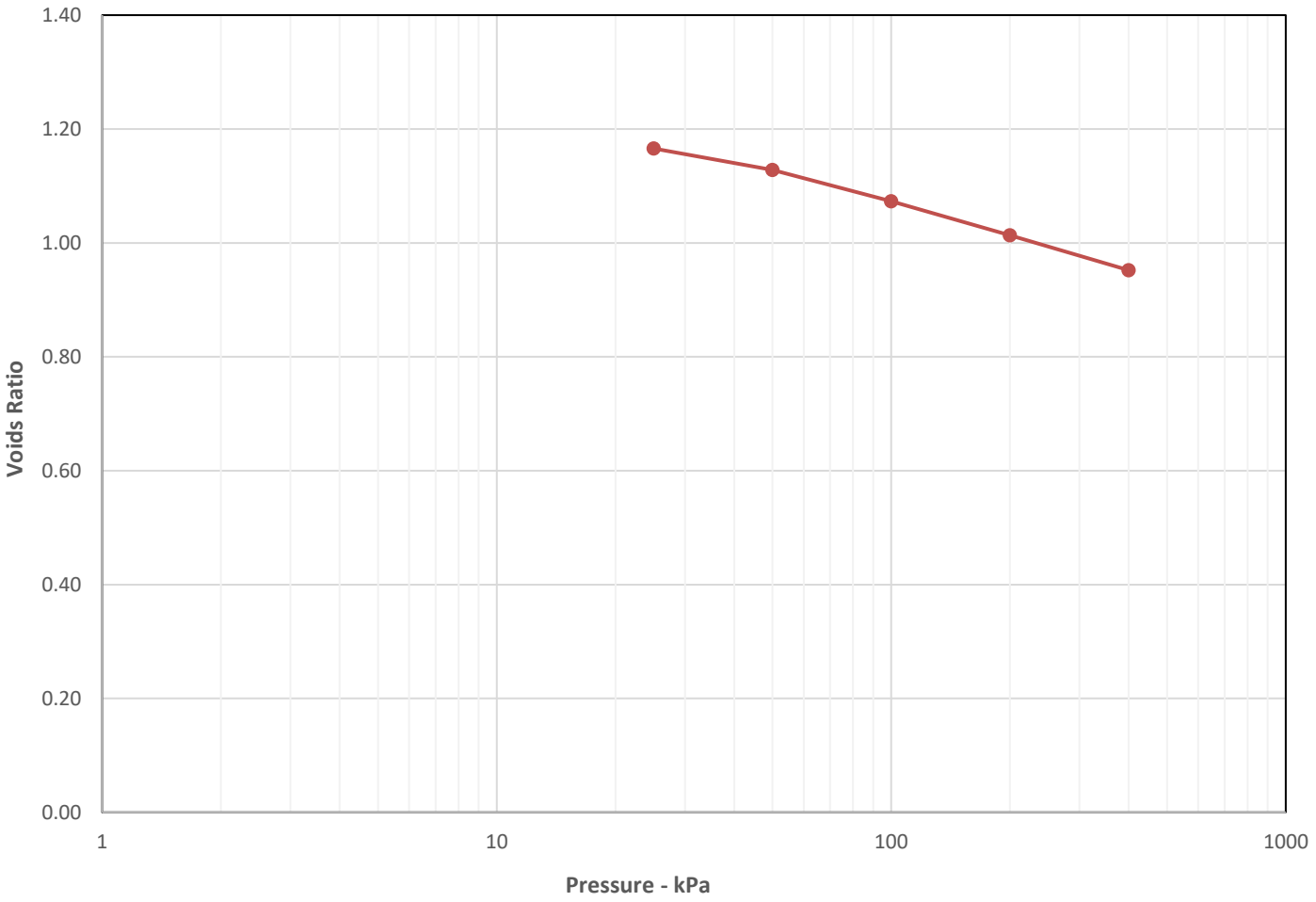
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey very sandy organic CLAY	Depth Top (m)	4.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	49	0	-	25	1.6	7.7		-			
Bulk Density (Mg/m3)	1.75	25	-	50	0.7	16		-			
Dry Density (Mg/m3)	1.17	50	-	100	0.51	16		-			
Voids Ratio	1.2574	100	-	200	0.290	9		-			
Degree of saturation	103.3	200	-	400	0.15	9.7		-			
Height (mm)	19.96		-					-			
Diameter (mm)	50.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

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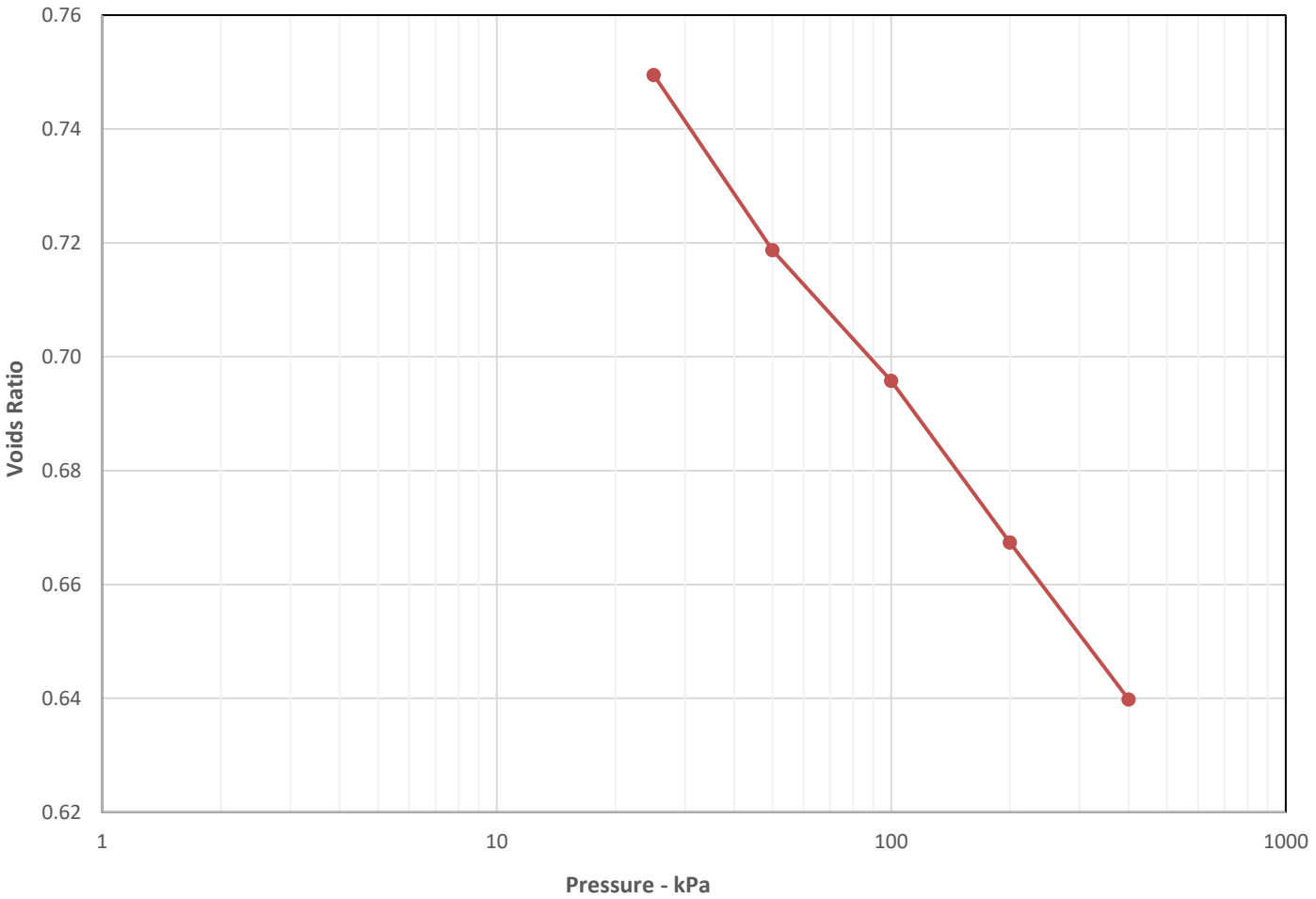
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	9.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	36	0	-	25	3	4.1		-			
Bulk Density (Mg/m3)	1.91	25	-	50	0.7	4.2		-			
Dry Density (Mg/m3)	1.40	50	-	100	0.27	4.1		-			
Voids Ratio	0.8900	100	-	200	0.170	6.4		-			
Degree of saturation	108.5	200	-	400	0.083	12		-			
Height (mm)	19.76		-					-			
Diameter (mm)	75		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	16/07/2017	Wayne Honey	W. Honey
LG	Approved	17/07/2017	Ben Sharp	

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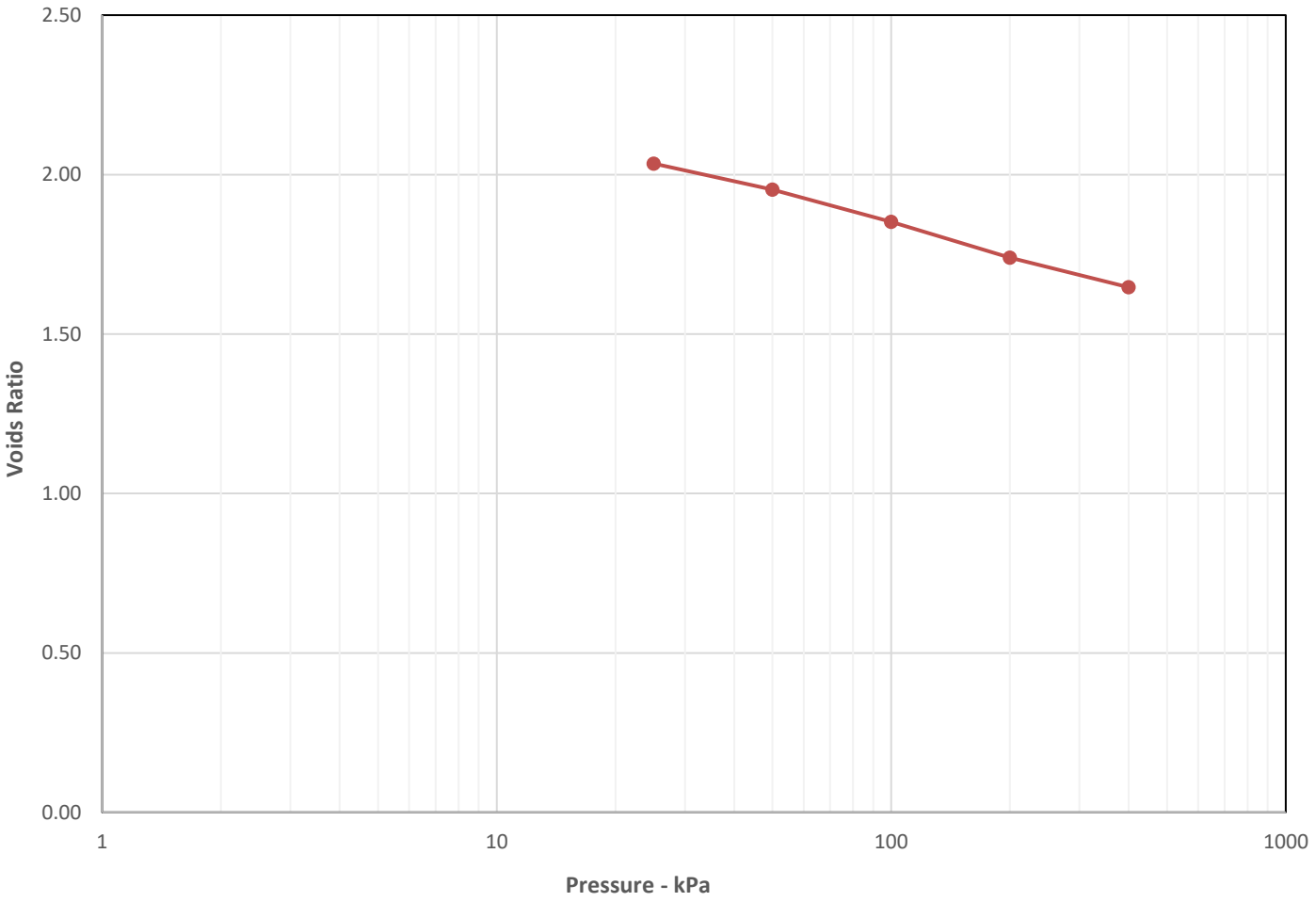
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	3.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	103	0	-	25	2.3	11		-			
Bulk Density (Mg/m3)	1.67	25	-	50	1.1	13		-			
Dry Density (Mg/m3)	0.82	50	-	100	0.69	12		-			
Voids Ratio	2.2209	100	-	200	0.390	15		-			
Degree of saturation	123.0	200	-	400	0.17	11		-			
Height (mm)	19.91		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

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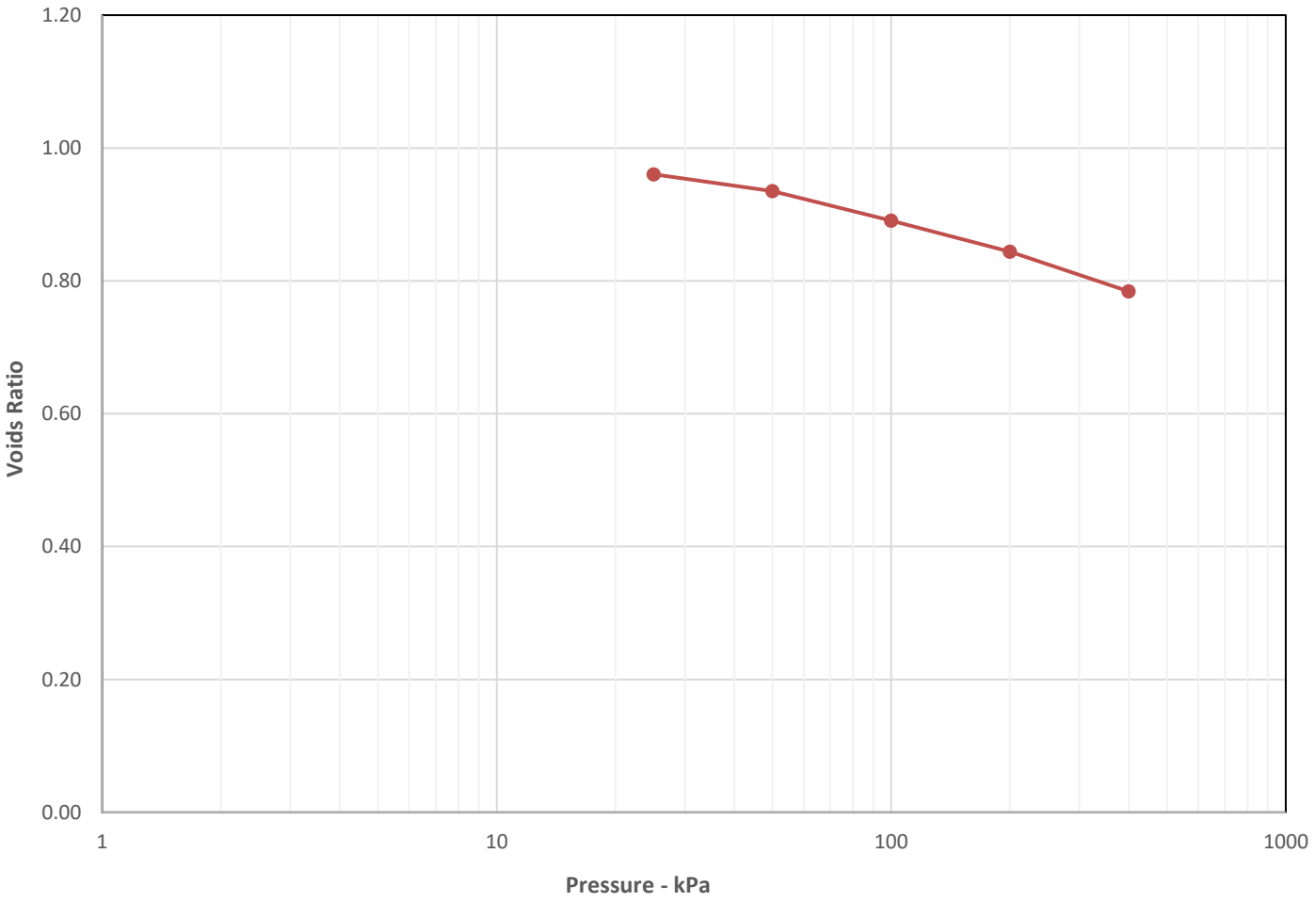
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	7.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	44	0	-	25	1.7	1.5		-			
Bulk Density (Mg/m3)	1.86	25	-	50	0.52	0.043		-			
Dry Density (Mg/m3)	1.29	50	-	100	0.46	1.3		-			
Voids Ratio	1.0501	100	-	200	0.250	2.3		-			
Degree of saturation	110.4	200	-	400	0.16	3.3		-			
Height (mm)	18.64		-					-			
Diameter (mm)	74.63		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

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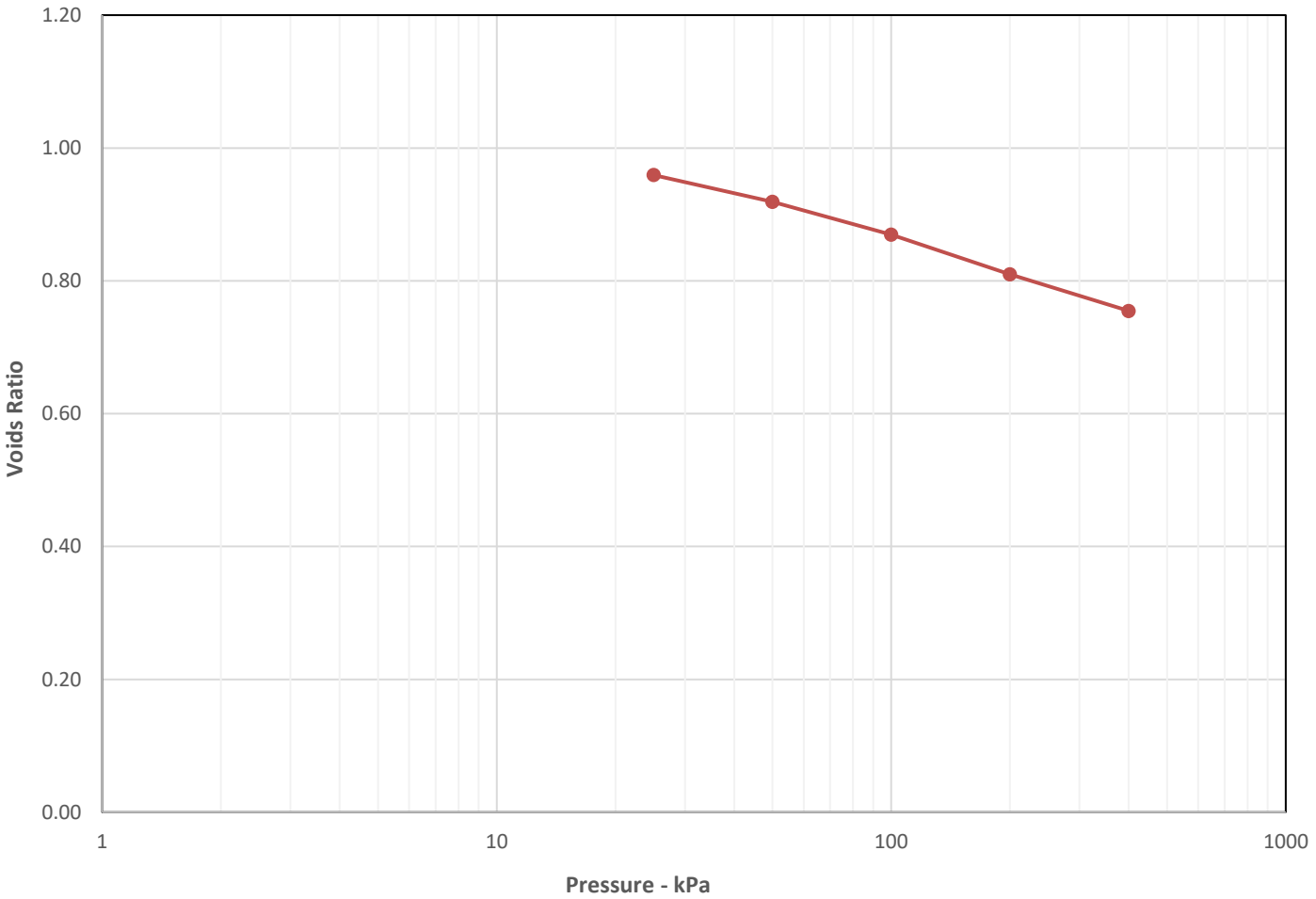
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	9.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	50	0	-	25	2.7	1.9		-			
Bulk Density (Mg/m3)	1.89	25	-	50	0.83	2.5		-			
Dry Density (Mg/m3)	1.26	50	-	100	0.51	3.3		-			
Voids Ratio	1.1034	100	-	200	0.320	7.2		-			
Degree of saturation	120.5	200	-	400	0.15	7.3		-			
Height (mm)	19.88		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

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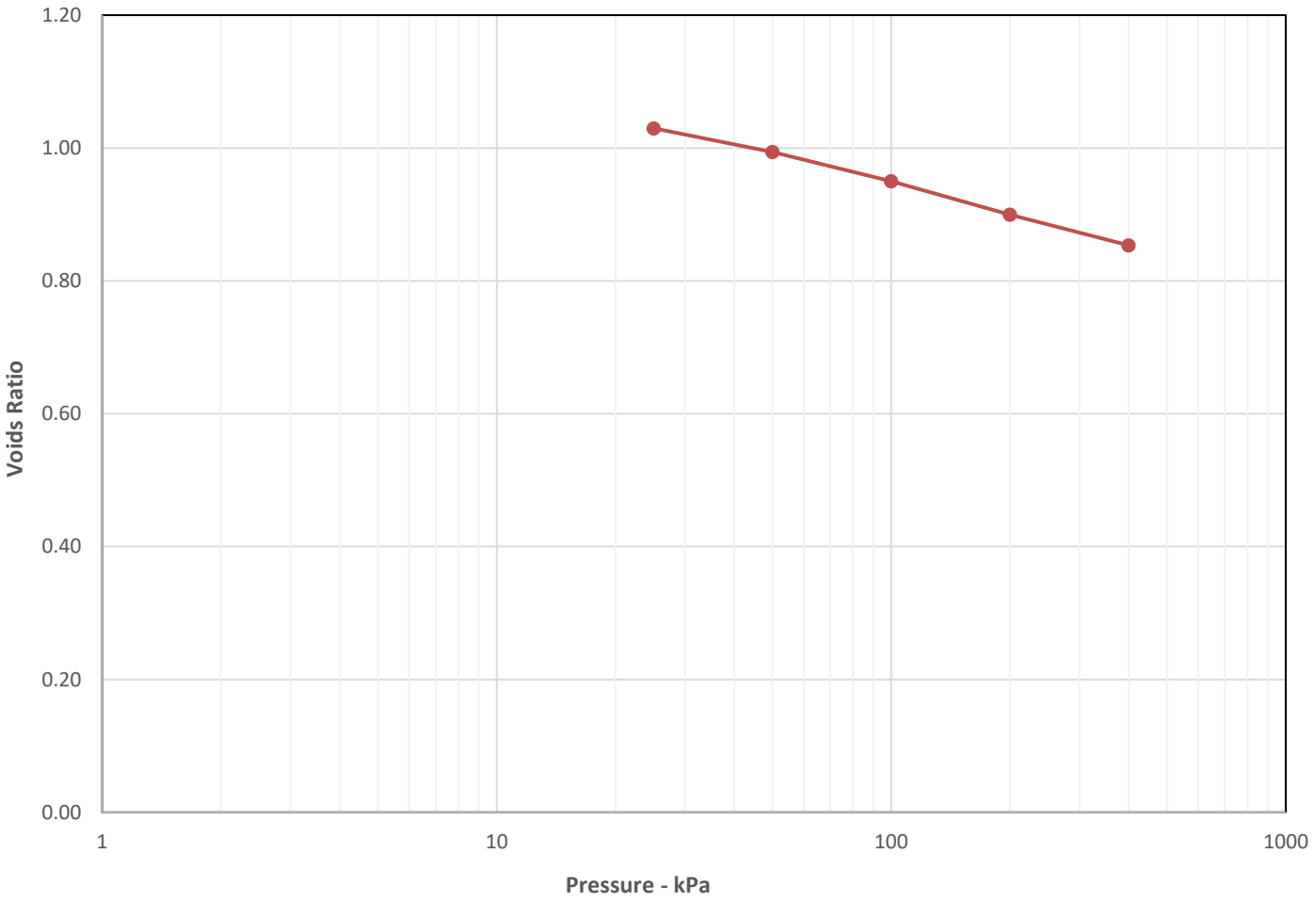
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	9.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	51	0	-	25	1.7	1.8		-			
Bulk Density (Mg/m3)	1.89	25	-	50	0.71	2.6		-			
Dry Density (Mg/m3)	1.25	50	-	100	0.44	3.2		-			
Voids Ratio	1.1216	100	-	200	0.260	7.1		-			
Degree of saturation	121.4	200	-	400	0.12	6.9		-			
Height (mm)	19.82		-					-			
Diameter (mm)	75.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	03/08/2017	Wayne Honey	W. Honey
LG	Approved	04/08/2017	Ben Sharp	

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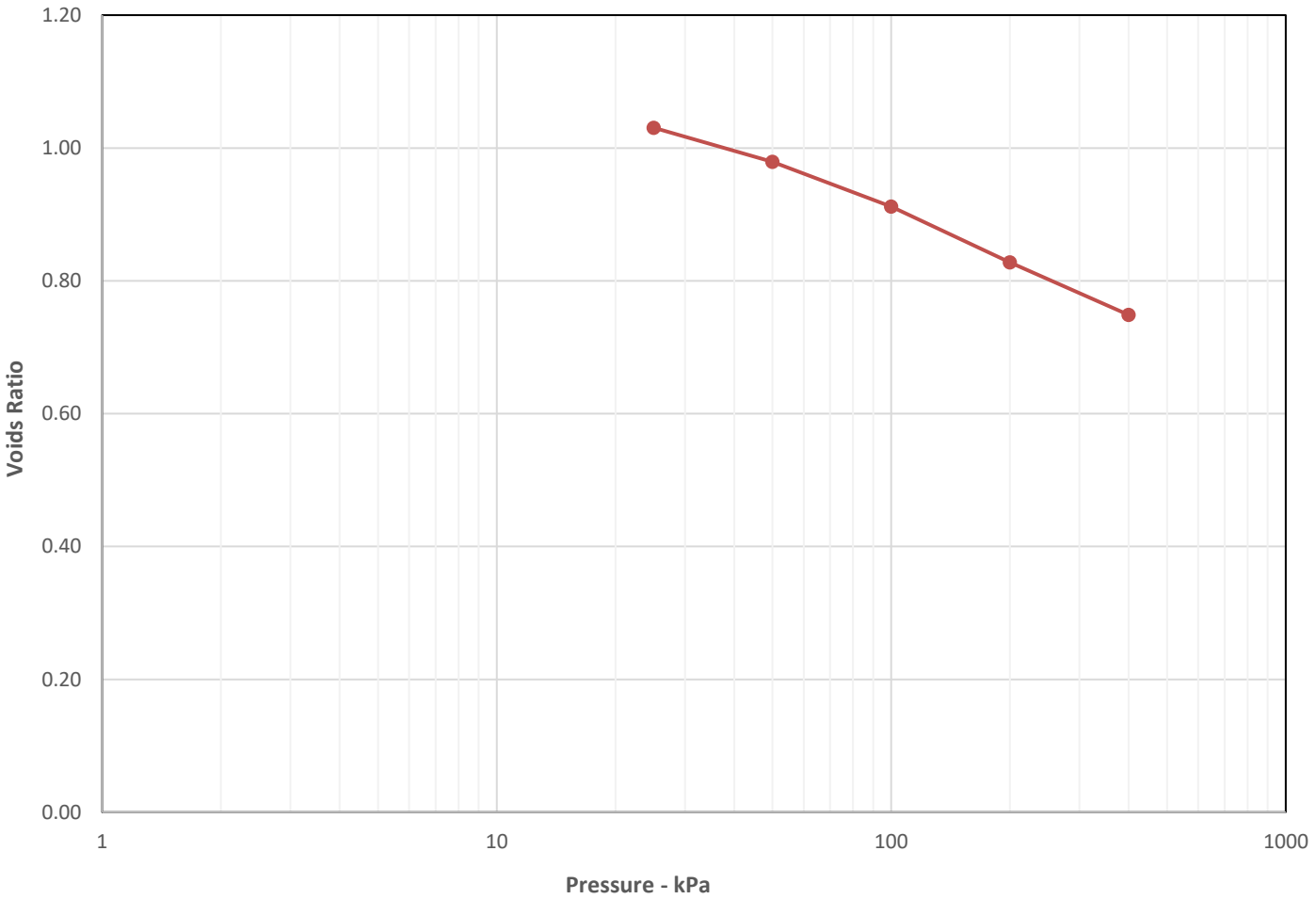
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	12.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	48	0	-	25	3.1	1.2		-			
Bulk Density (Mg/m3)	1.78	25	-	50	1	1.9		-			
Dry Density (Mg/m3)	1.20	50	-	100	0.68	2.3		-			
Voids Ratio	1.2007	100	-	200	0.440	3.1		-			
Degree of saturation	105.2	200	-	400	0.22	3.4		-			
Height (mm)	19.95		-					-			
Diameter (mm)	49.91		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

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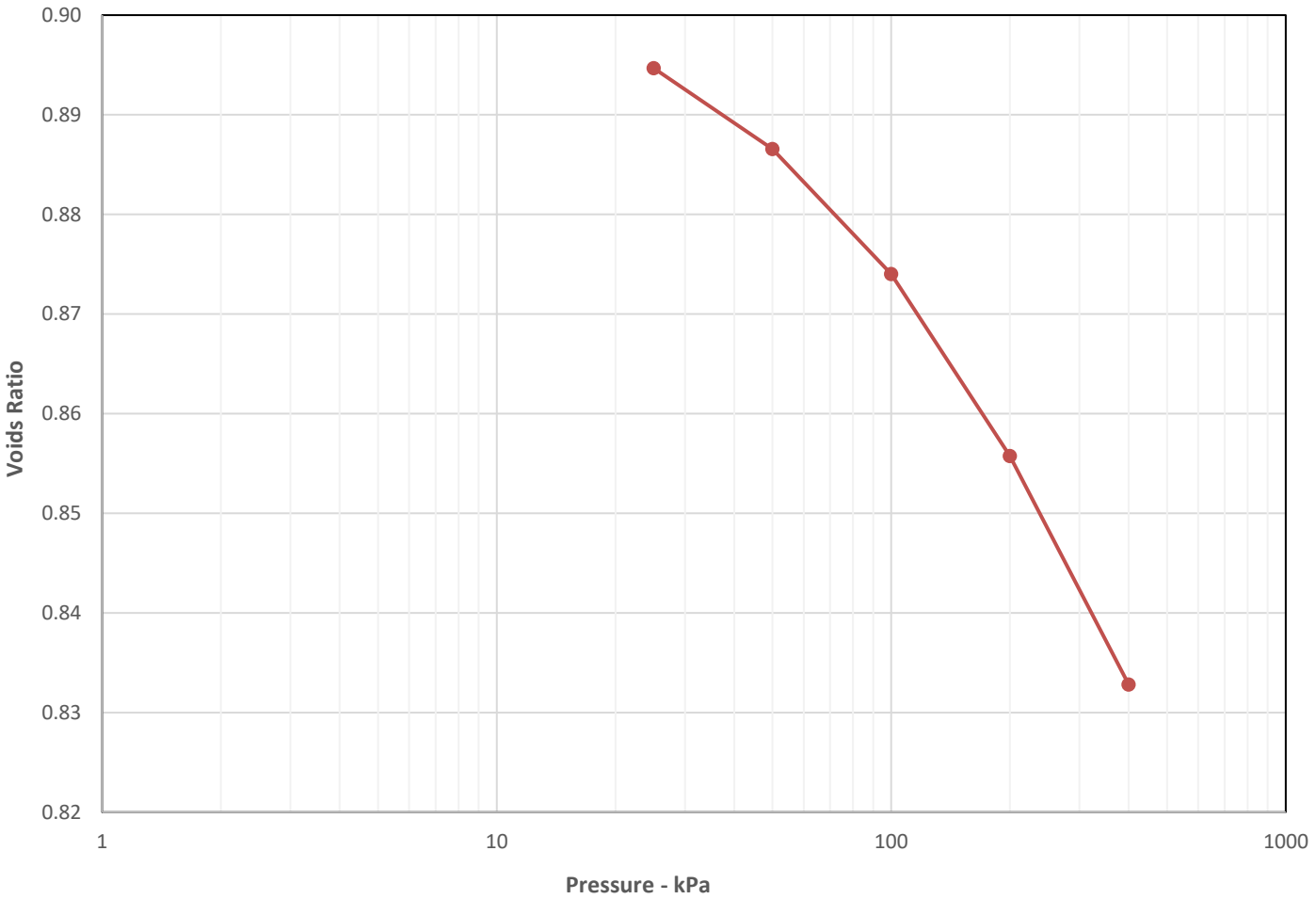
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey clayey SAND	Depth Top (m)	4.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	32	0	-	25	0.32	25		-			
Bulk Density (Mg/m3)	1.84	25	-	50	0.17	8.4		-			
Dry Density (Mg/m3)	1.39	50	-	100	0.13	7.1		-			
Voids Ratio	0.9098	100	-	200	0.097	5.4		-			
Degree of saturation	94.4	200	-	400	0.062	12		-			
Height (mm)	19.97		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
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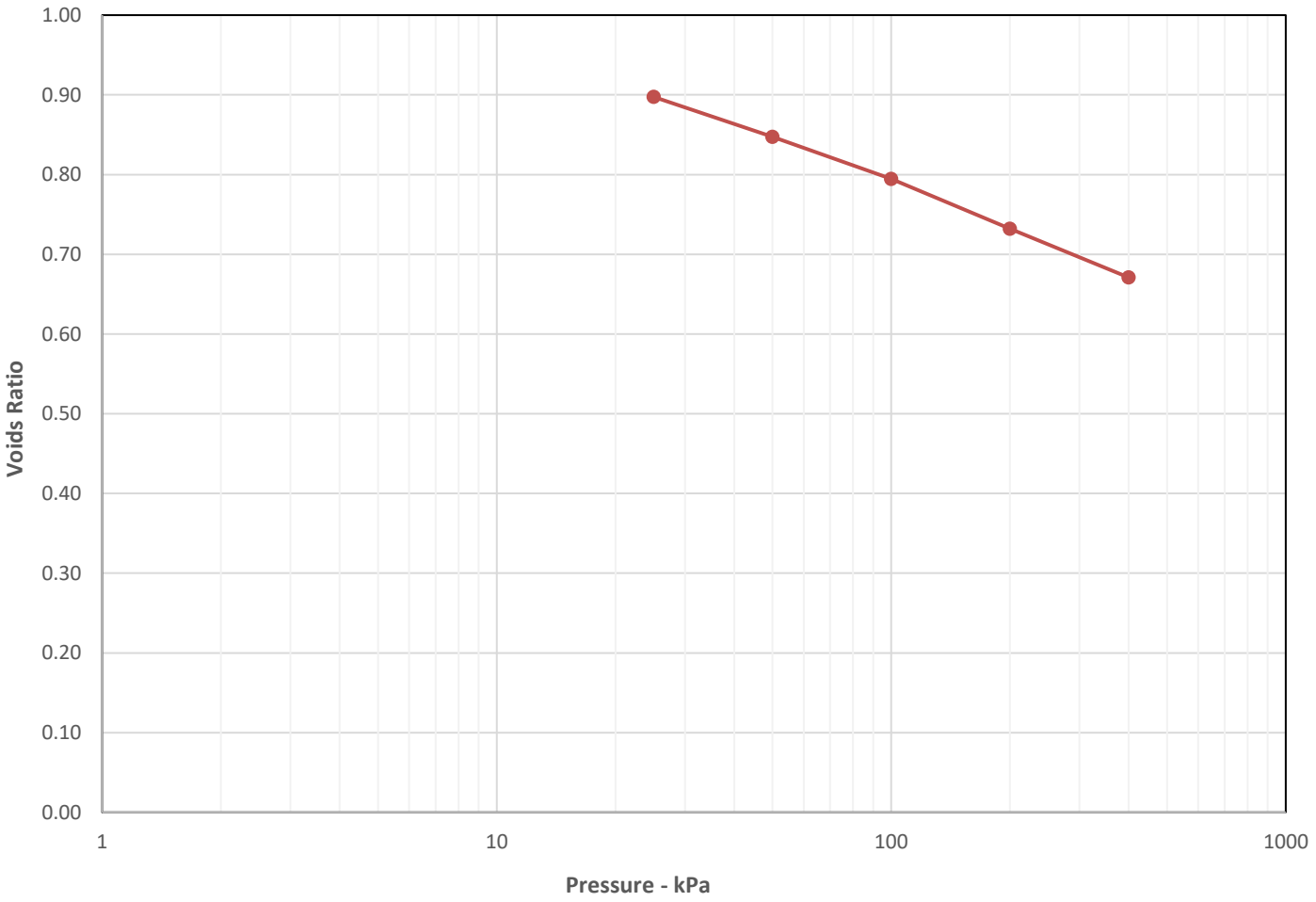
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy organic CLAY	Depth Top (m)	7.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

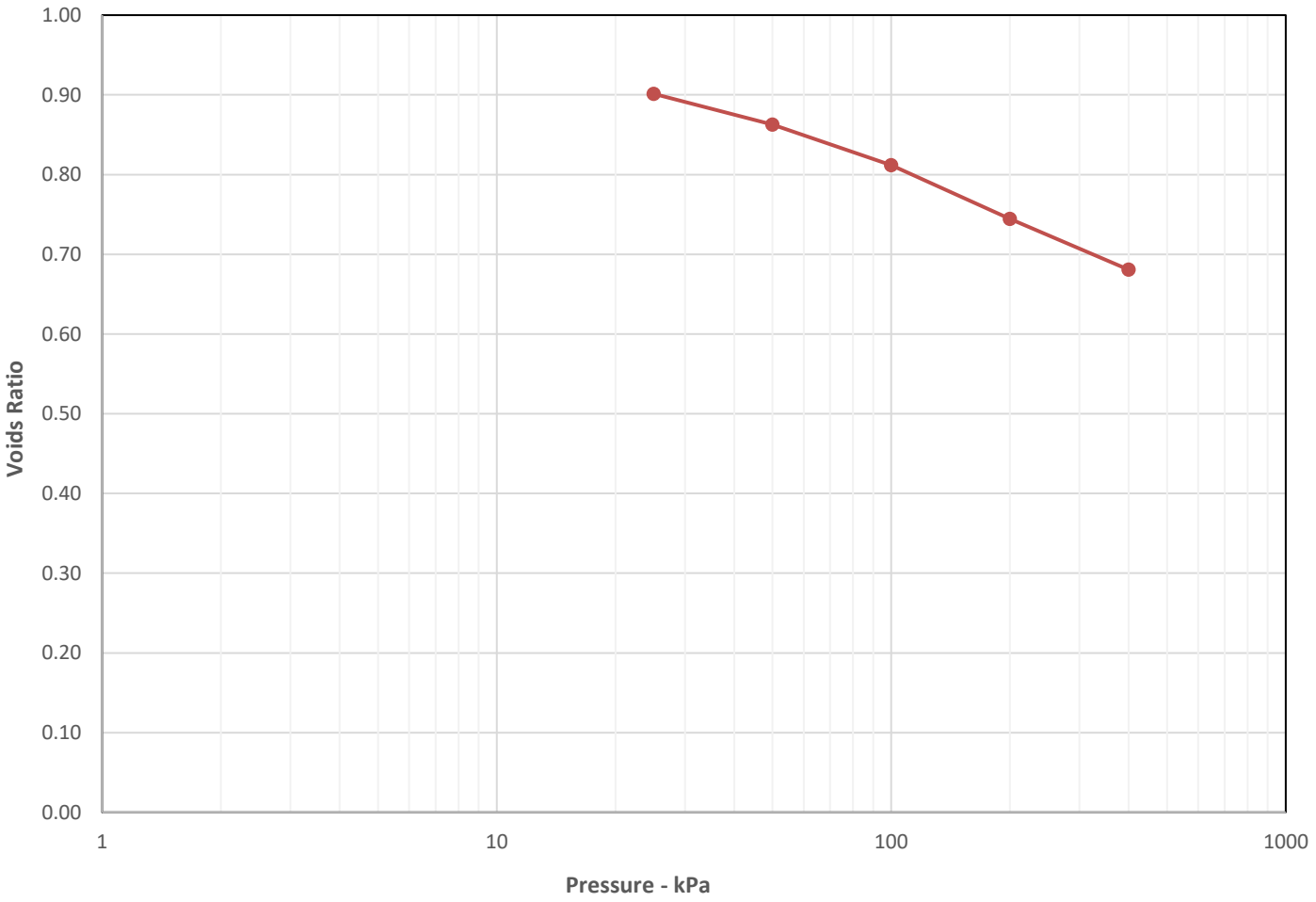


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	43	0	-	25	2.7	2.2		-			
Bulk Density (Mg/m3)	1.86	25	-	50	1.1	0.88		-			
Dry Density (Mg/m3)	1.30	50	-	100	0.57	0.52		-			
Voids Ratio	1.0329	100	-	200	0.350	1.5		-			
Degree of saturation	110.3	200	-	400	0.18	2.6		-			
Height (mm)	18.2		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	8.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

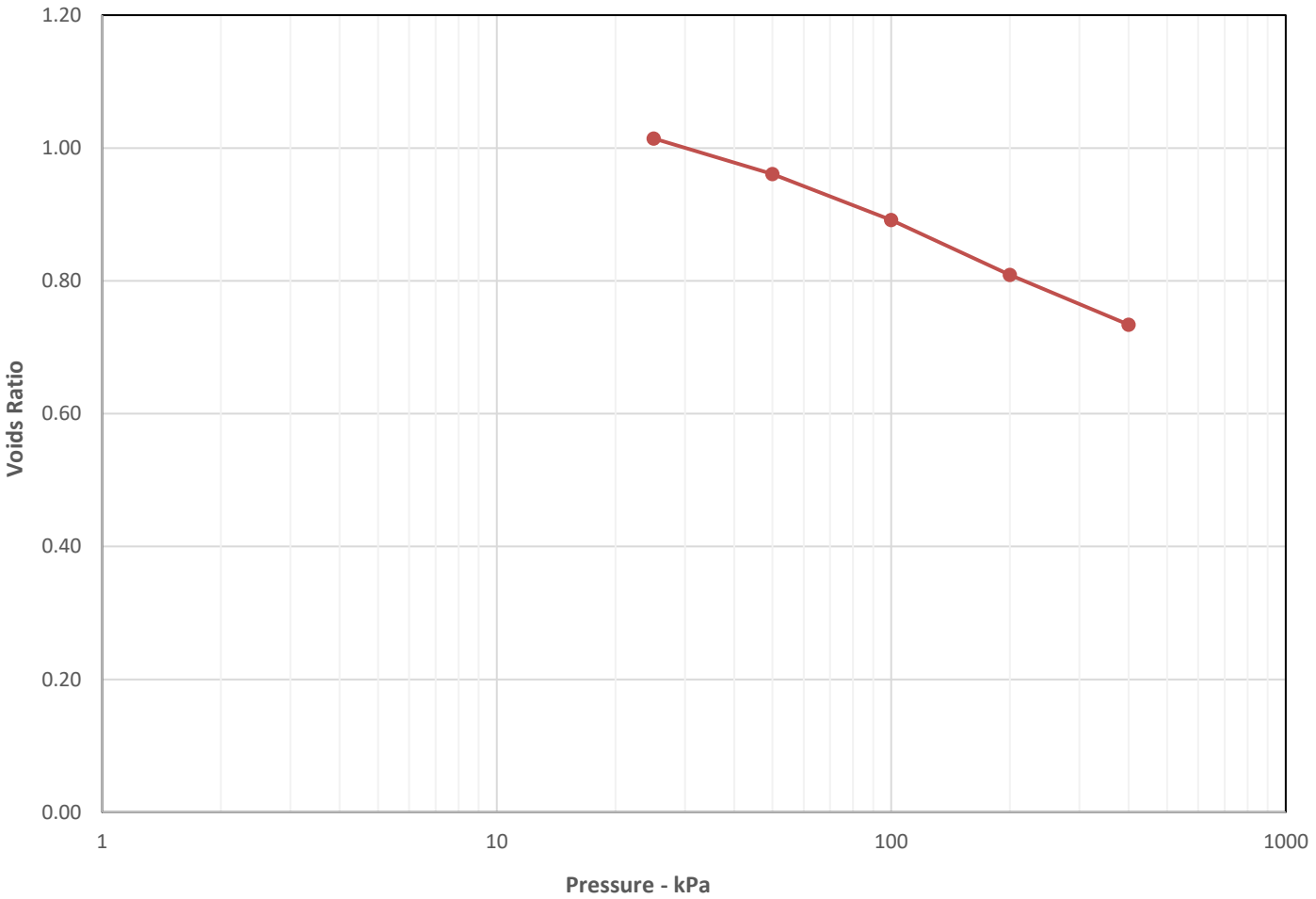


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	35	0	-	25	2.6	5.5		-			
Bulk Density (Mg/m3)	1.76	25	-	50	0.81	4.5		-			
Dry Density (Mg/m3)	1.30	50	-	100	0.54	5.7		-			
Voids Ratio	1.0317	100	-	200	0.370	7.2		-			
Degree of saturation	89.0	200	-	400	0.18	6.5		-			
Height (mm)	19.86		-					-			
Diameter (mm)	49.97		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy organic CLAY	Depth Top (m)	10.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

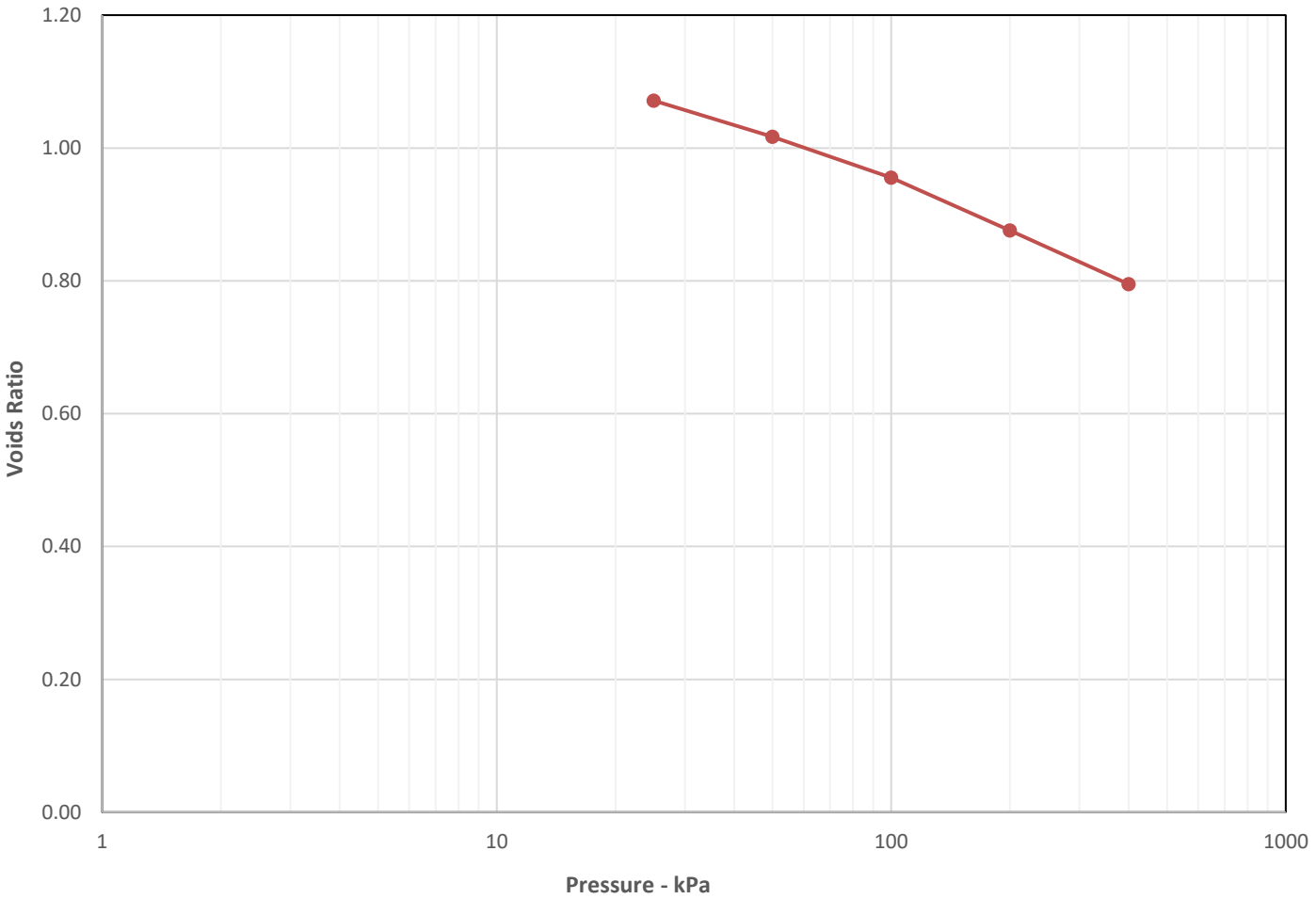


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	46	0	-	25	2.8	5.3		-			
Bulk Density (Mg/m3)	1.78	25	-	50	1.1	3.7		-			
Dry Density (Mg/m3)	1.22	50	-	100	0.71	3.9		-			
Voids Ratio	1.1675	100	-	200	0.440	3.8		-			
Degree of saturation	104.2	200	-	400	0.21	4.6		-			
Height (mm)	19.91		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	2.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

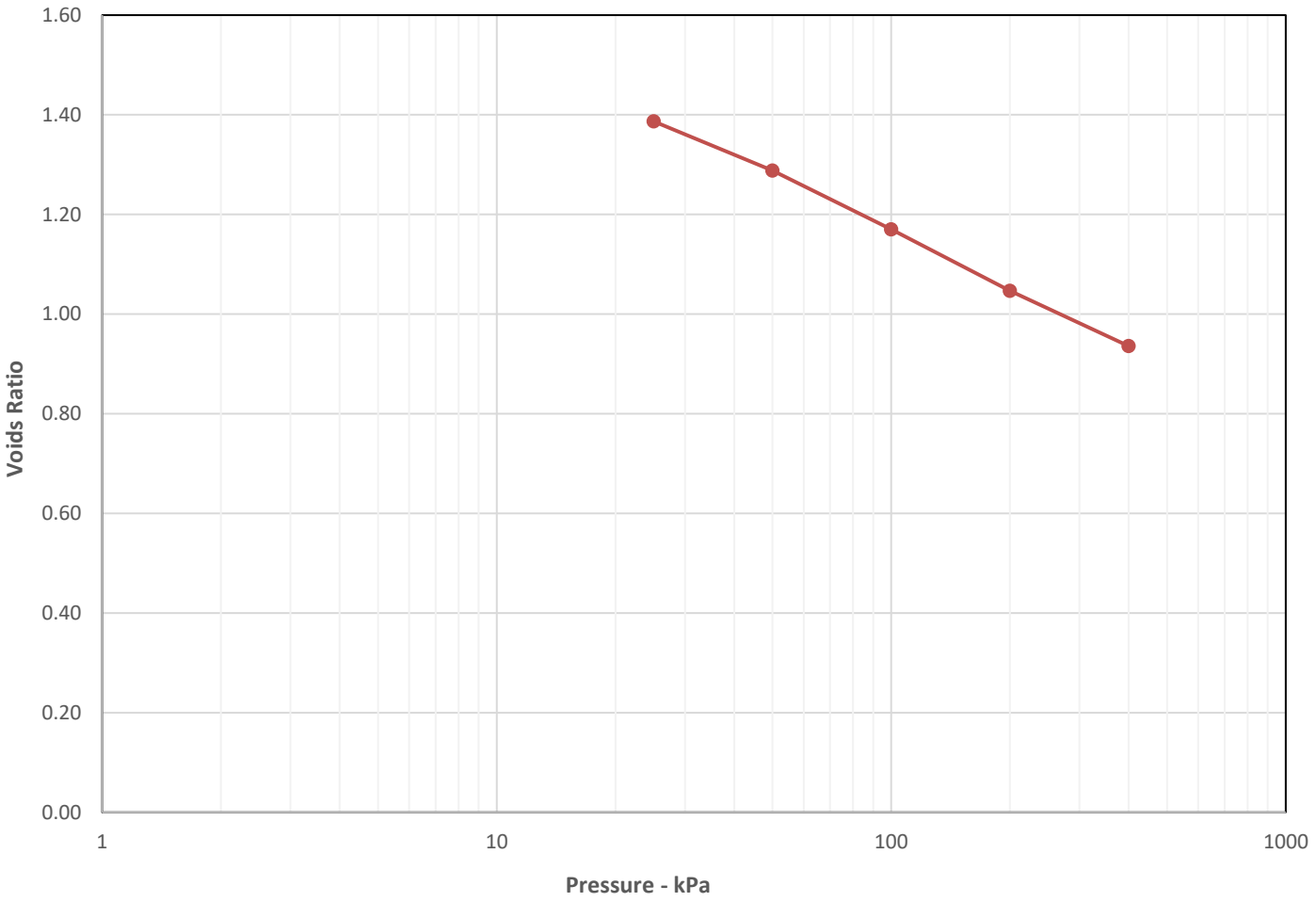


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	53	0	-	25	4.1	6.3		-			
Bulk Density (Mg/m3)	1.76	25	-	50	1.1	8.8		-			
Dry Density (Mg/m3)	1.15	50	-	100	0.61	6.1		-			
Voids Ratio	1.3074	100	-	200	0.410	4.8		-			
Degree of saturation	107.9	200	-	400	0.22	7.3		-			
Height (mm)	19.96		-					-			
Diameter (mm)	50.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	5.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

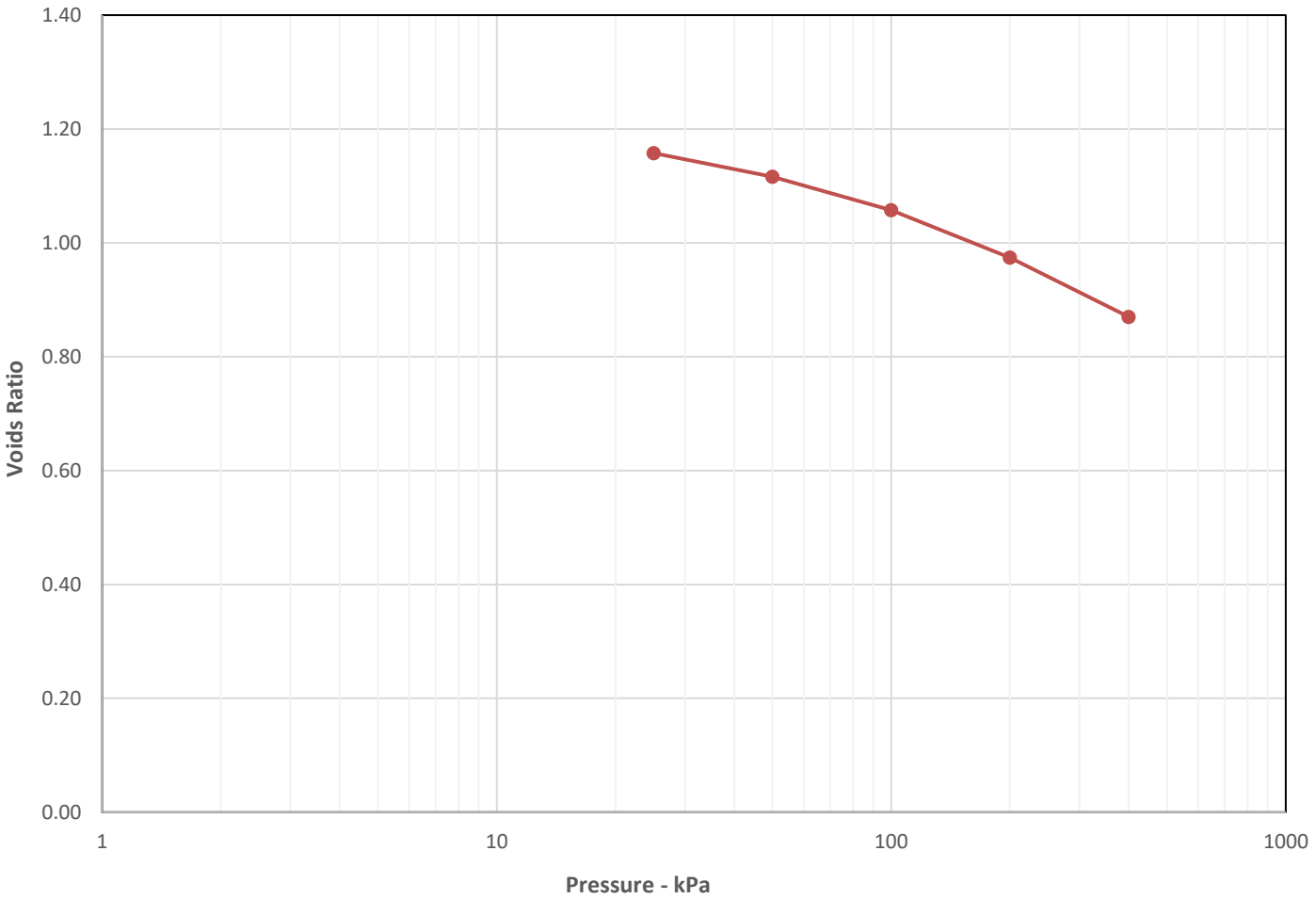


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	63	0	-	25	3.4	10		-			
Bulk Density (Mg/m3)	1.65	25	-	50	1.7	6.1		-			
Dry Density (Mg/m3)	1.02	50	-	100	1	4.8		-			
Voids Ratio	1.6108	100	-	200	0.570	5		-			
Degree of saturation	103.4	200	-	400	0.27	4.1		-			
Height (mm)	19.82		-					-			
Diameter (mm)	75.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Grey slightly sandy silty organic CLAY	Depth Top (m)	11.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

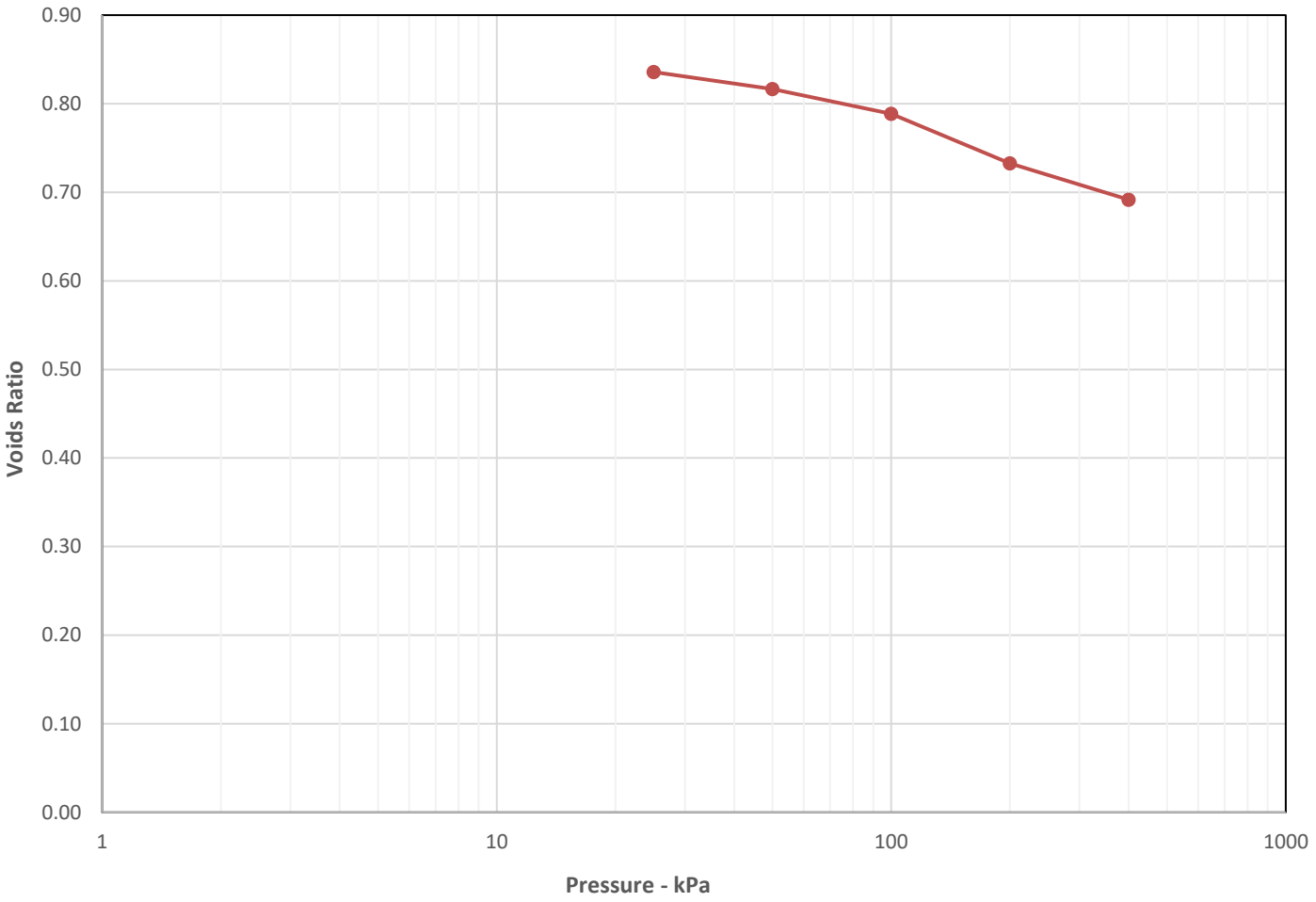


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	50	0	-	25	1.6	7.8		-			
Bulk Density (Mg/m3)	1.76	25	-	50	0.77	4.1		-			
Dry Density (Mg/m3)	1.18	50	-	100	0.56	6		-			
Voids Ratio	1.2486	100	-	200	0.400	5.6		-			
Degree of saturation	105.4	200	-	400	0.26	5		-			
Height (mm)	19.86		-					-			
Diameter (mm)	49.97		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	6.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

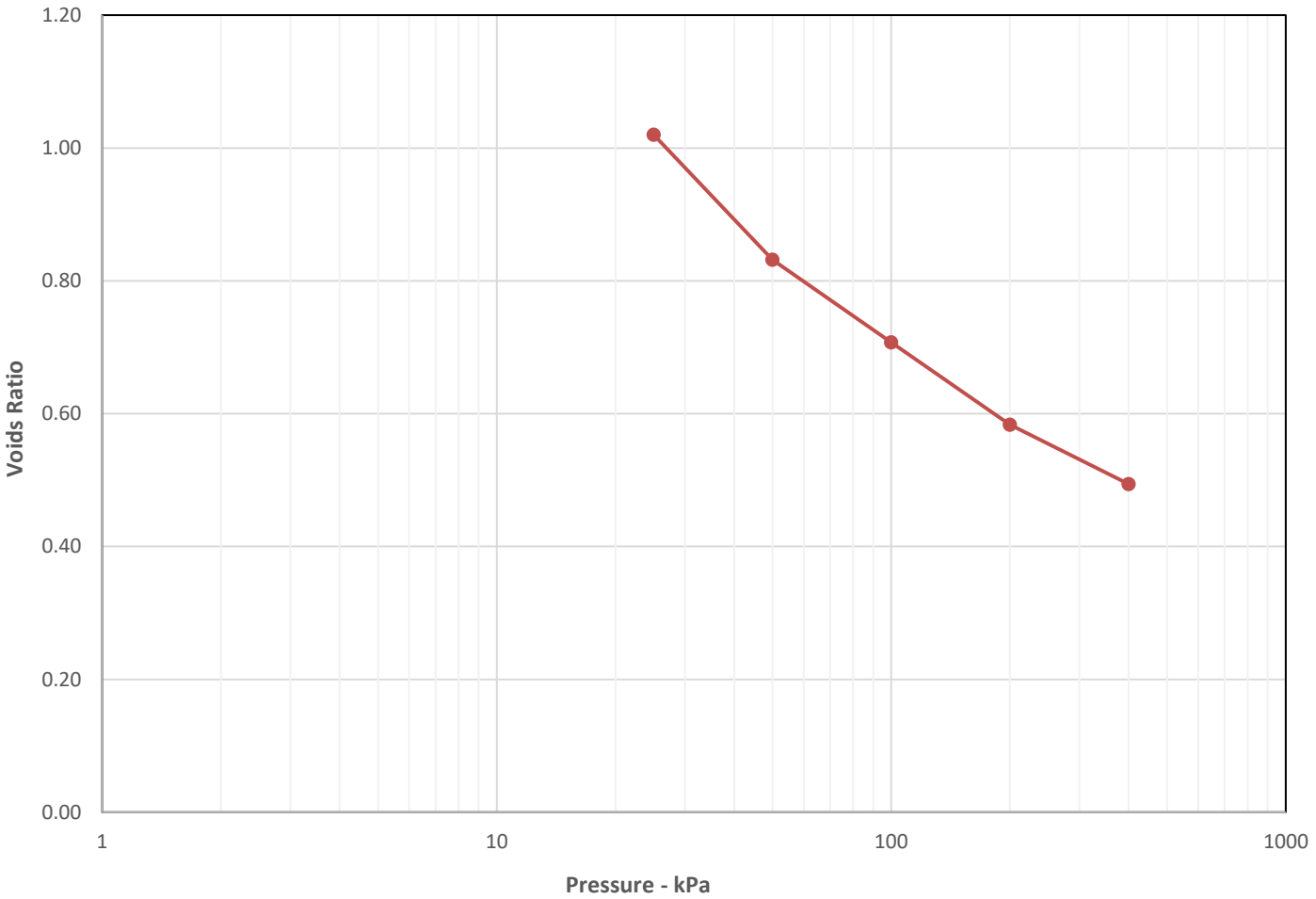


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	33	0	-	25	1	4.7		-			
Bulk Density (Mg/m3)	1.86	25	-	50	0.42	4.4		-			
Dry Density (Mg/m3)	1.41	50	-	100	0.31	4.3		-			
Voids Ratio	0.8849	100	-	200	0.310	2.1		-			
Degree of saturation	97.5	200	-	400	0.12	9.4		-			
Height (mm)	19.77		-					-			
Diameter (mm)	74.91		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M13
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	2.10
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	49	0	-	25	4.5	4.8		-			
Bulk Density (Mg/m3)	1.74	25	-	50	3.7	8		-			
Dry Density (Mg/m3)	1.17	50	-	100	1.4	5.5		-			
Voids Ratio	1.2739	100	-	200	0.730	5.4		-			
Degree of saturation	102.6	200	-	400	0.28	6		-			
Height (mm)	18.02		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

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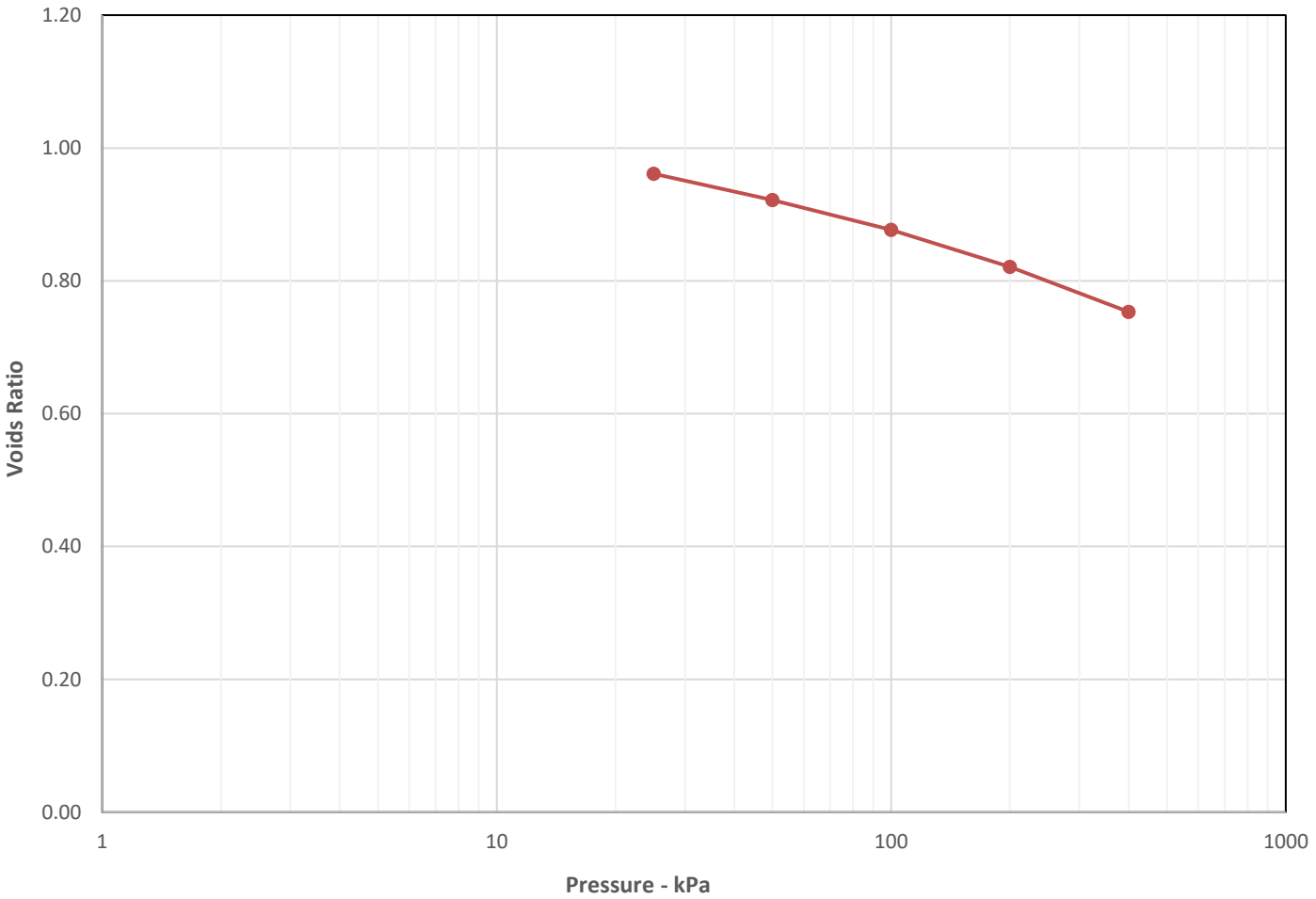
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	2.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

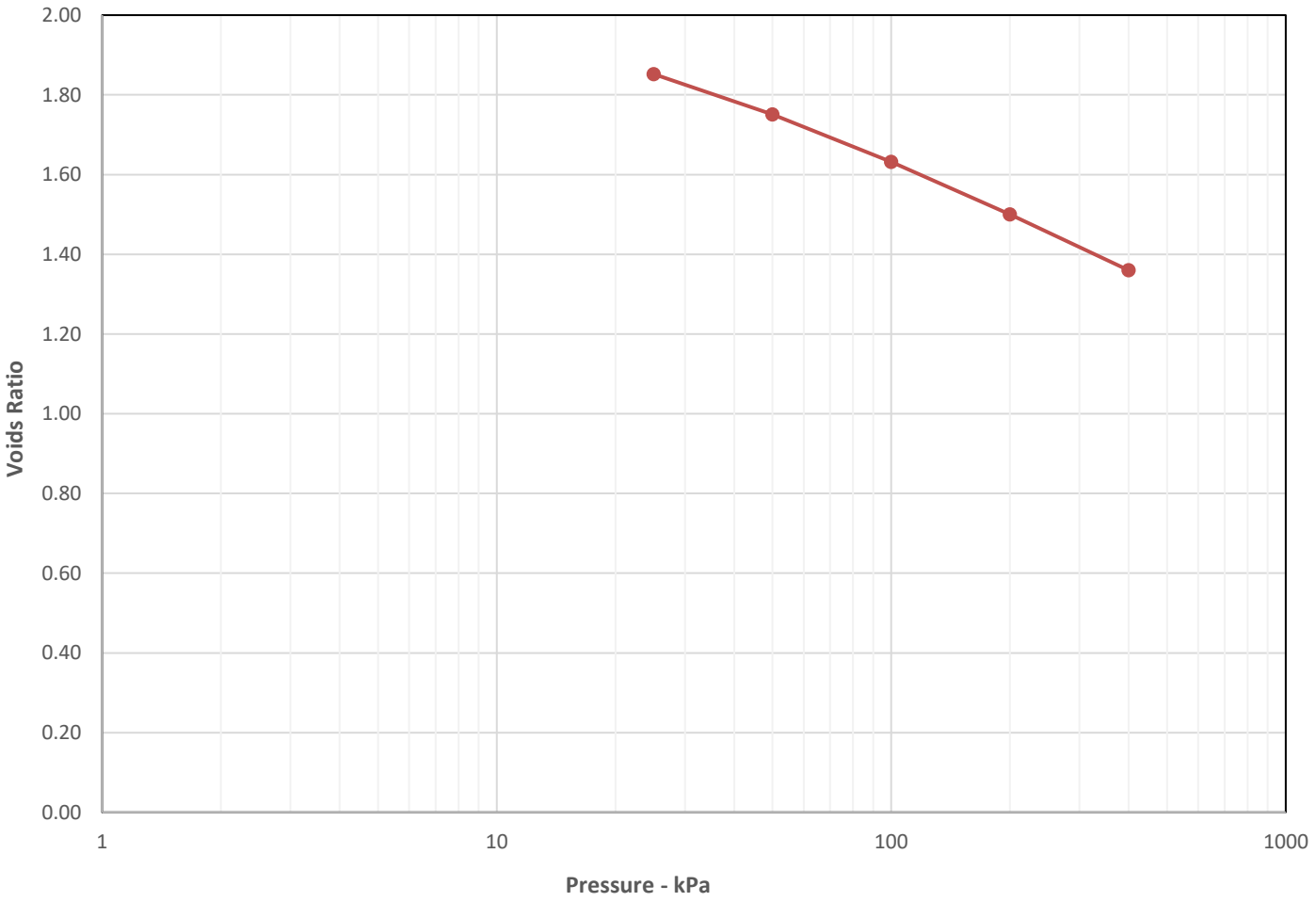


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	44	0	-	25	2.1	6.1		-			
Bulk Density (Mg/m3)	1.84	25	-	50	0.81	5.2		-			
Dry Density (Mg/m3)	1.28	50	-	100	0.47	4.6		-			
Voids Ratio	1.0685	100	-	200	0.300	9.1		-			
Degree of saturation	108.7	200	-	400	0.19	9.1		-			
Height (mm)	18.2		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	35579
		Borehole/Trialpit No.	M15
Site Name	Foynes Port	Sample No.	
Soil Description	Dark grey sandy organic CLAY	Depth Top (m)	6.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

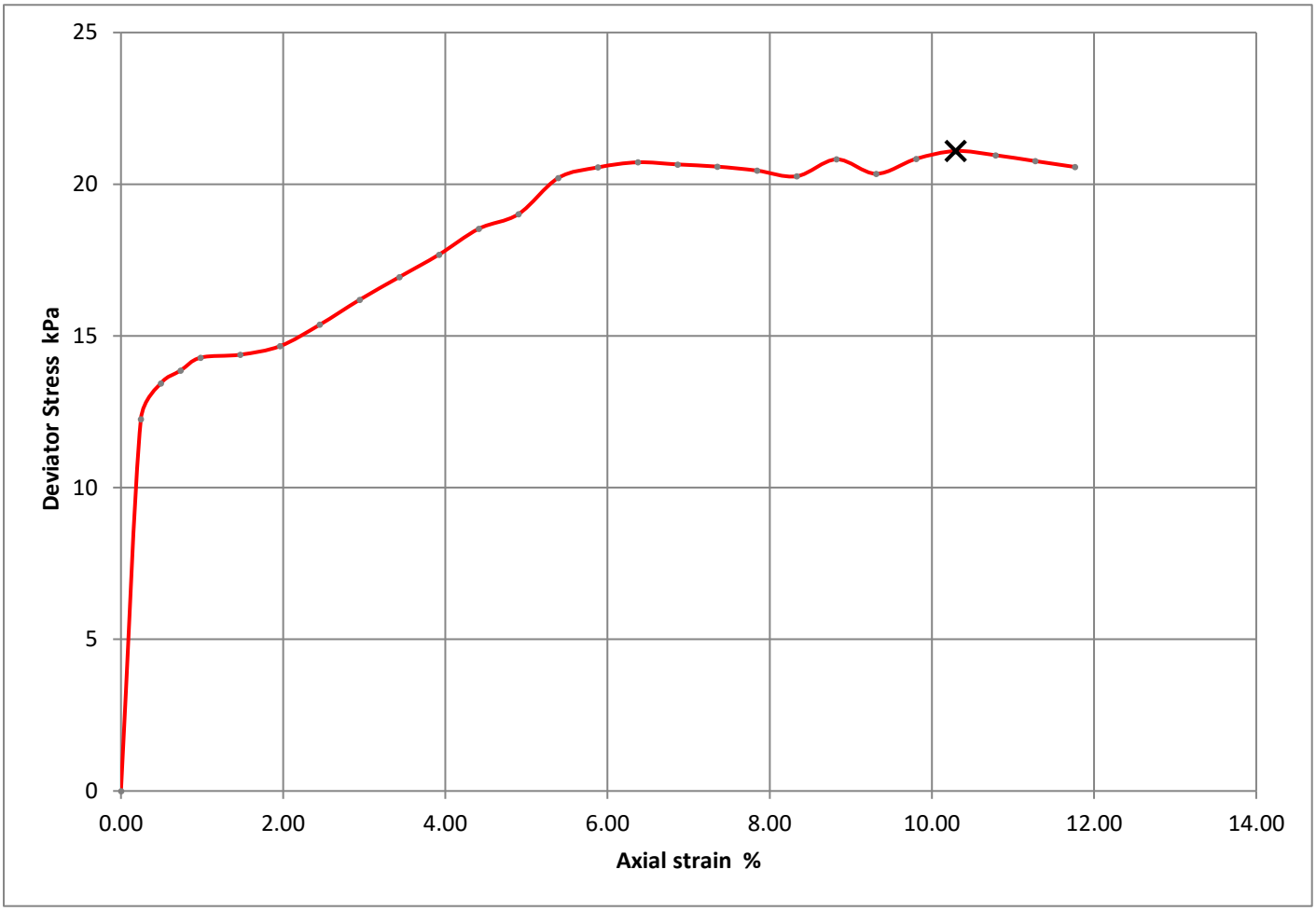


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	98	0	-	25	3	10		-			
Bulk Density (Mg/m3)	1.70	25	-	50	1.4	2.4		-			
Dry Density (Mg/m3)	0.86	50	-	100	0.87	3.3		-			
Voids Ratio	2.0846	100	-	200	0.500	3		-			
Degree of saturation	124.9	200	-	400	0.28	4.3		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.06		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	17/07/2017	Wayne Honey	W. Honey
LG	Approved	18/07/2017	Ben Sharp	

UKAS TESTING
2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	L04
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	6.50
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	53
Bulk Density (Mg/m^3)	1.71
Dry Density (Mg/m^3)	1.12
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	180
Deviator Stress (kPa)	21
Undrained Shear Strength (kPa)	11
Failure Strain (%)	10.29
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

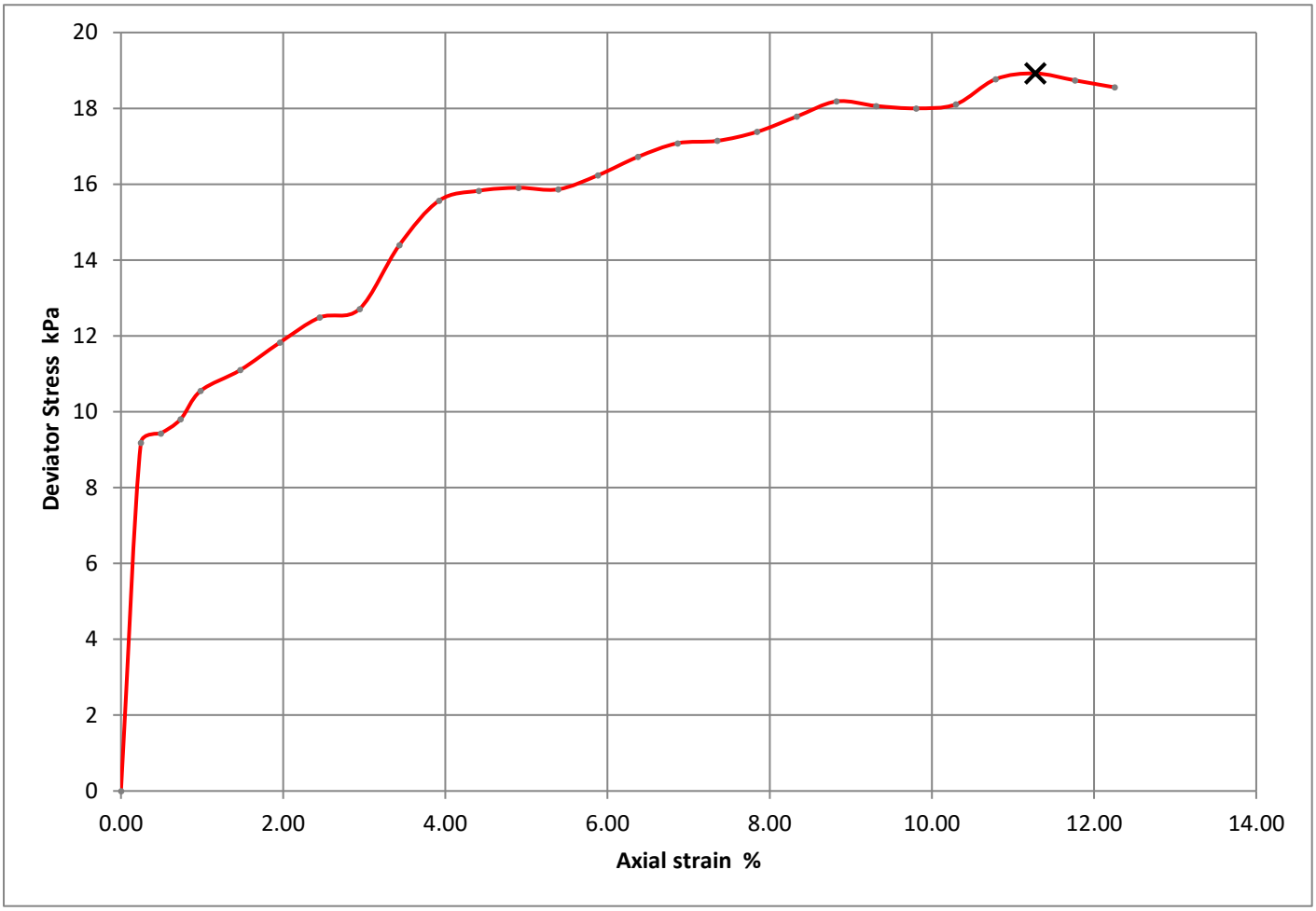
Specimen Post Test

Sample Split

Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

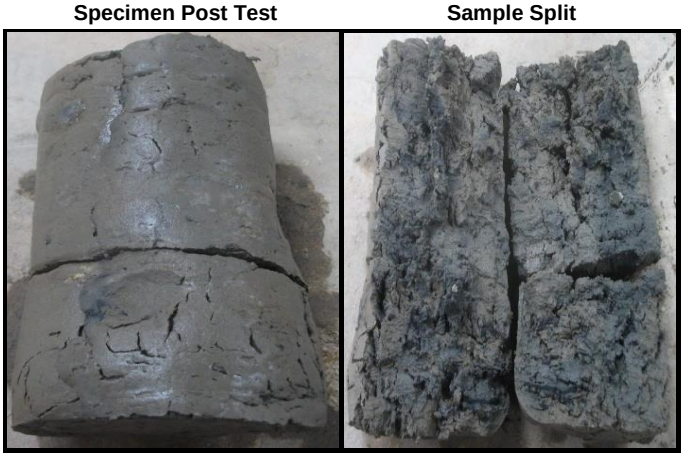
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	1.00
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	51
Bulk Density (Mg/m^3)	1.62
Dry Density (Mg/m^3)	1.07
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	70
Deviator Stress (kPa)	19
Undrained Shear Strength (kPa)	9
Failure Strain (%)	11.27
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

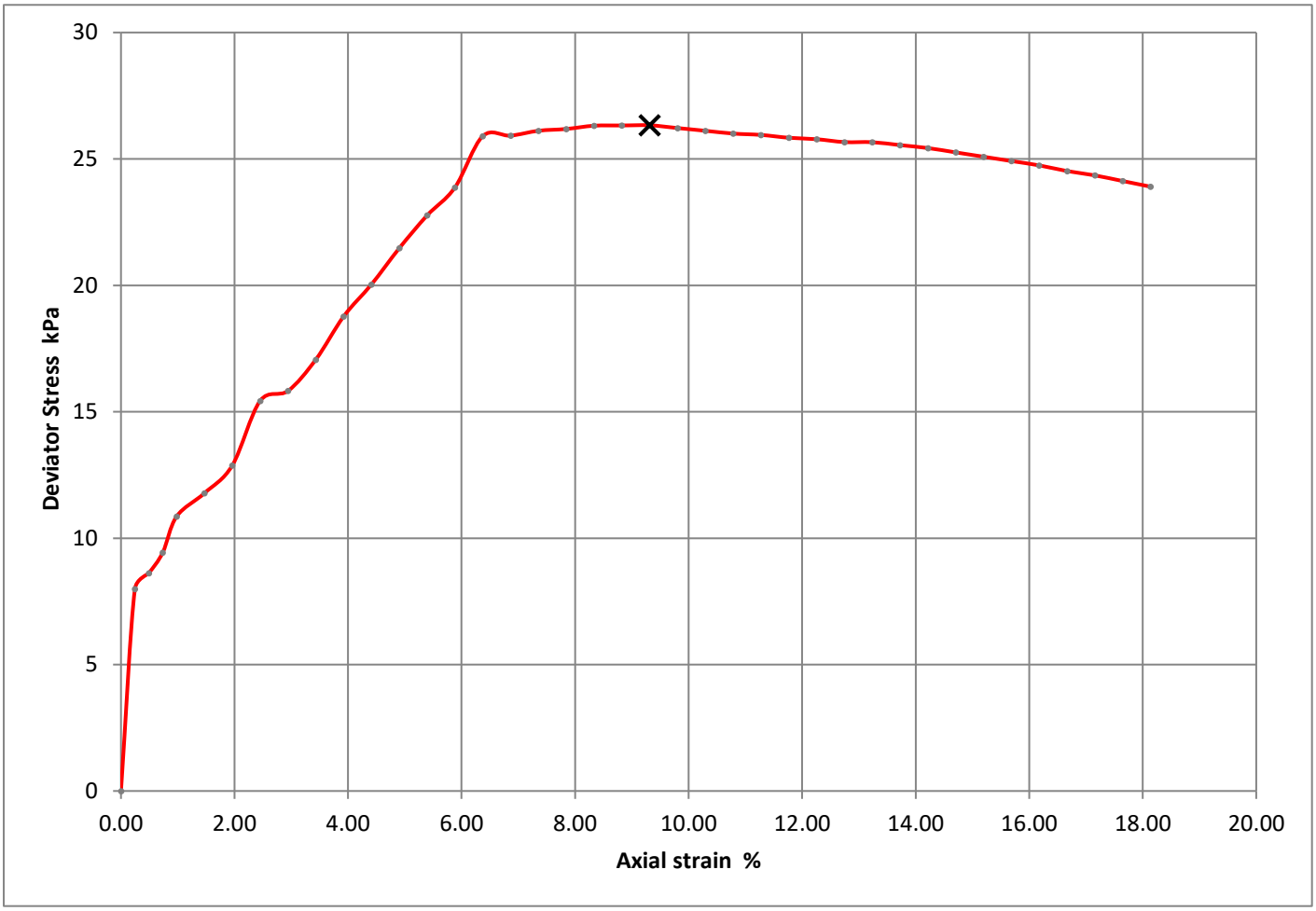
Specimen Post Test **Sample Split**



Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	L05
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	4.00
		Depth Base (m)	
		Sample Type	UT



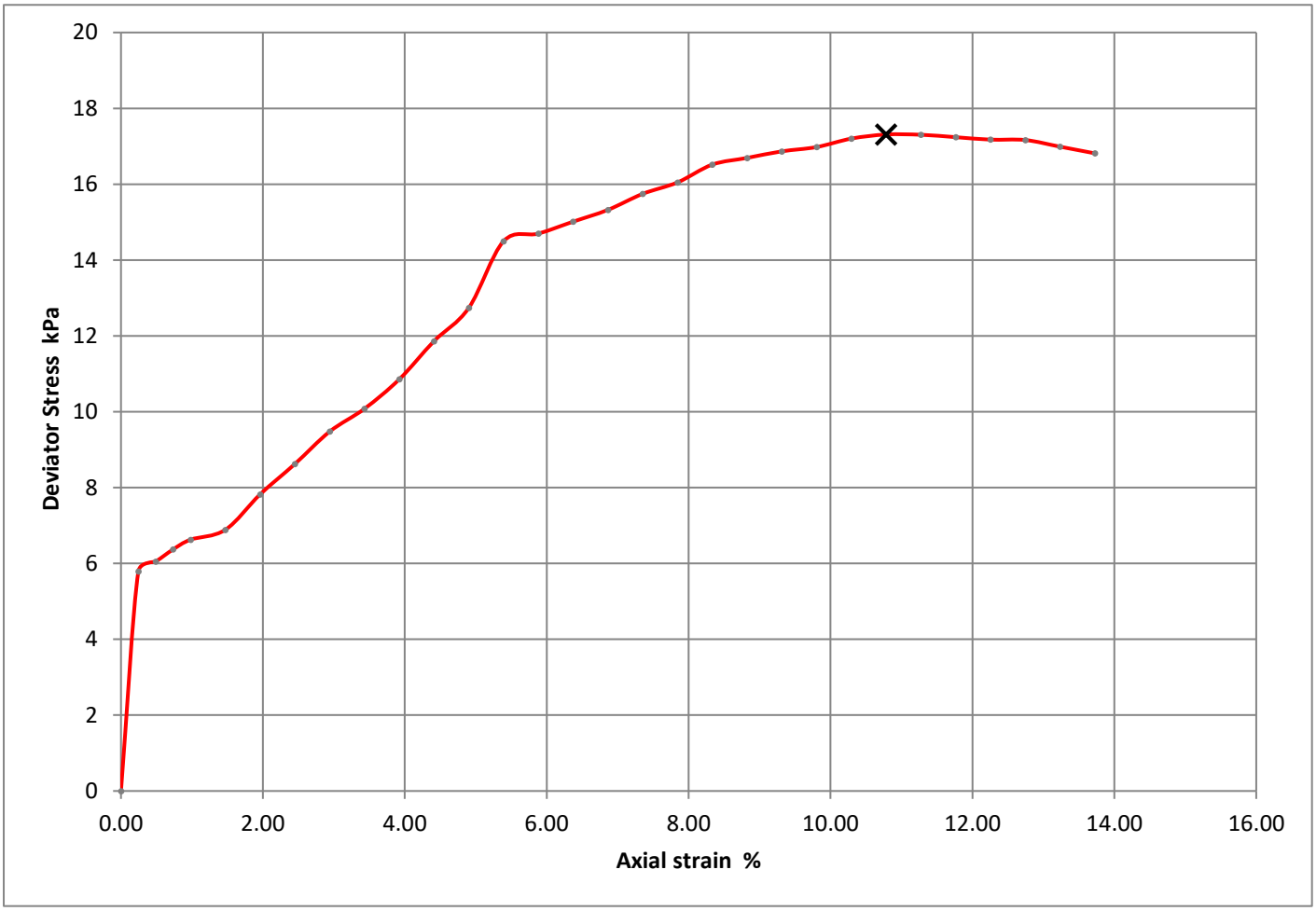
Moisture Content (%)	55
Bulk Density (Mg/m^3)	1.64
Dry Density (Mg/m^3)	1.06
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	130
Deviator Stress (kPa)	26
Undrained Shear Strength (kPa)	13
Failure Strain (%)	9.31
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

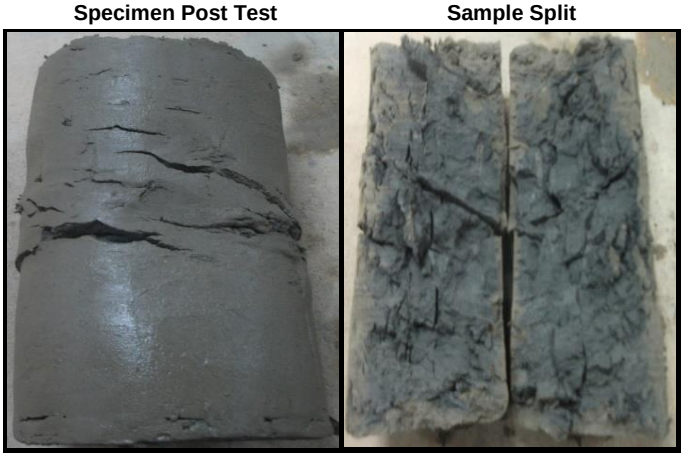
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	2.00
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	50
Bulk Density (Mg/m^3)	1.70
Dry Density (Mg/m^3)	1.13
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	90
Deviator Stress (kPa)	17
Undrained Shear Strength (kPa)	9
Failure Strain (%)	10.78
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

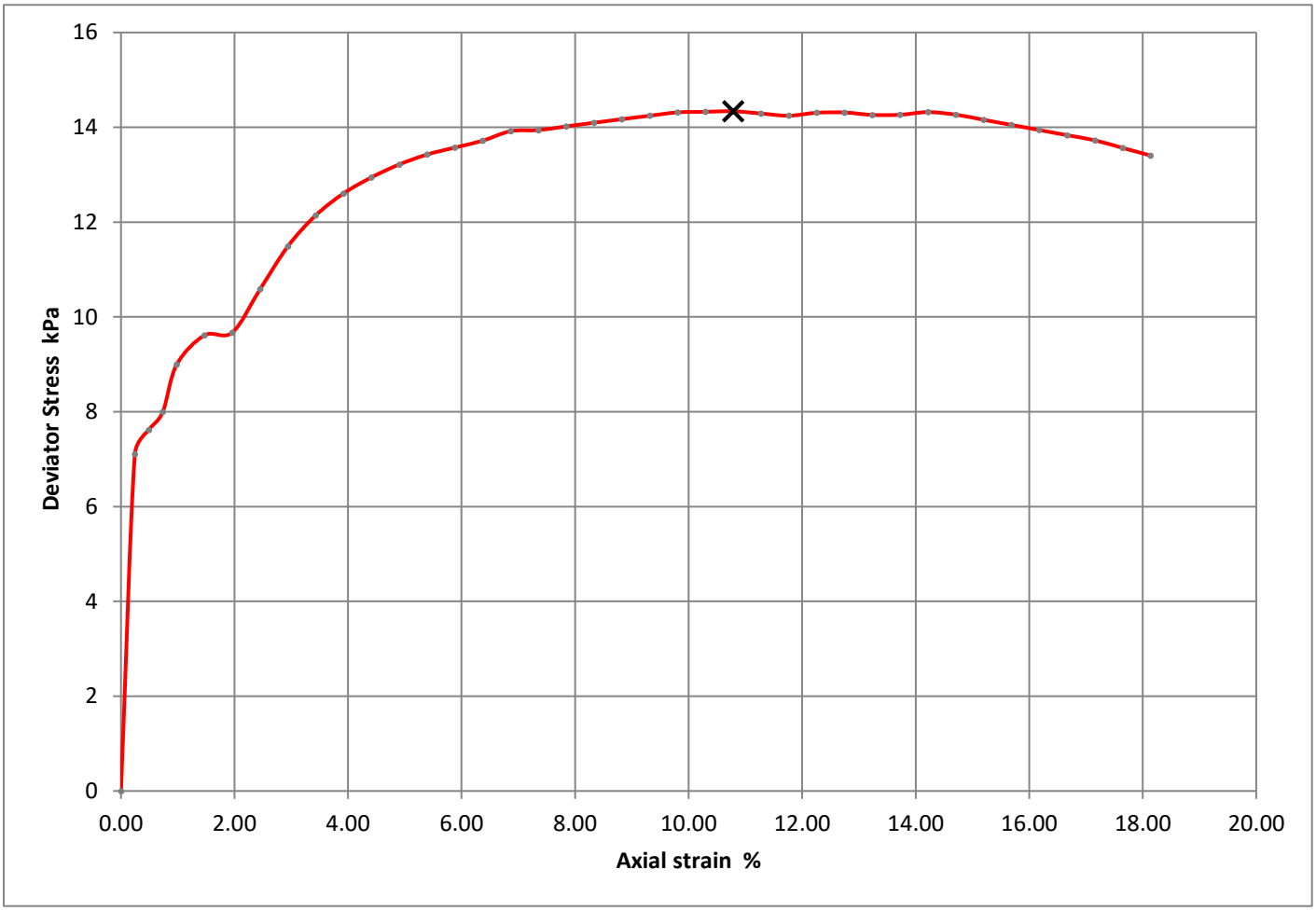
Specimen Post Test **Sample Split**



Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M03
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	4.00
		Depth Base (m)	
		Sample Type	UT



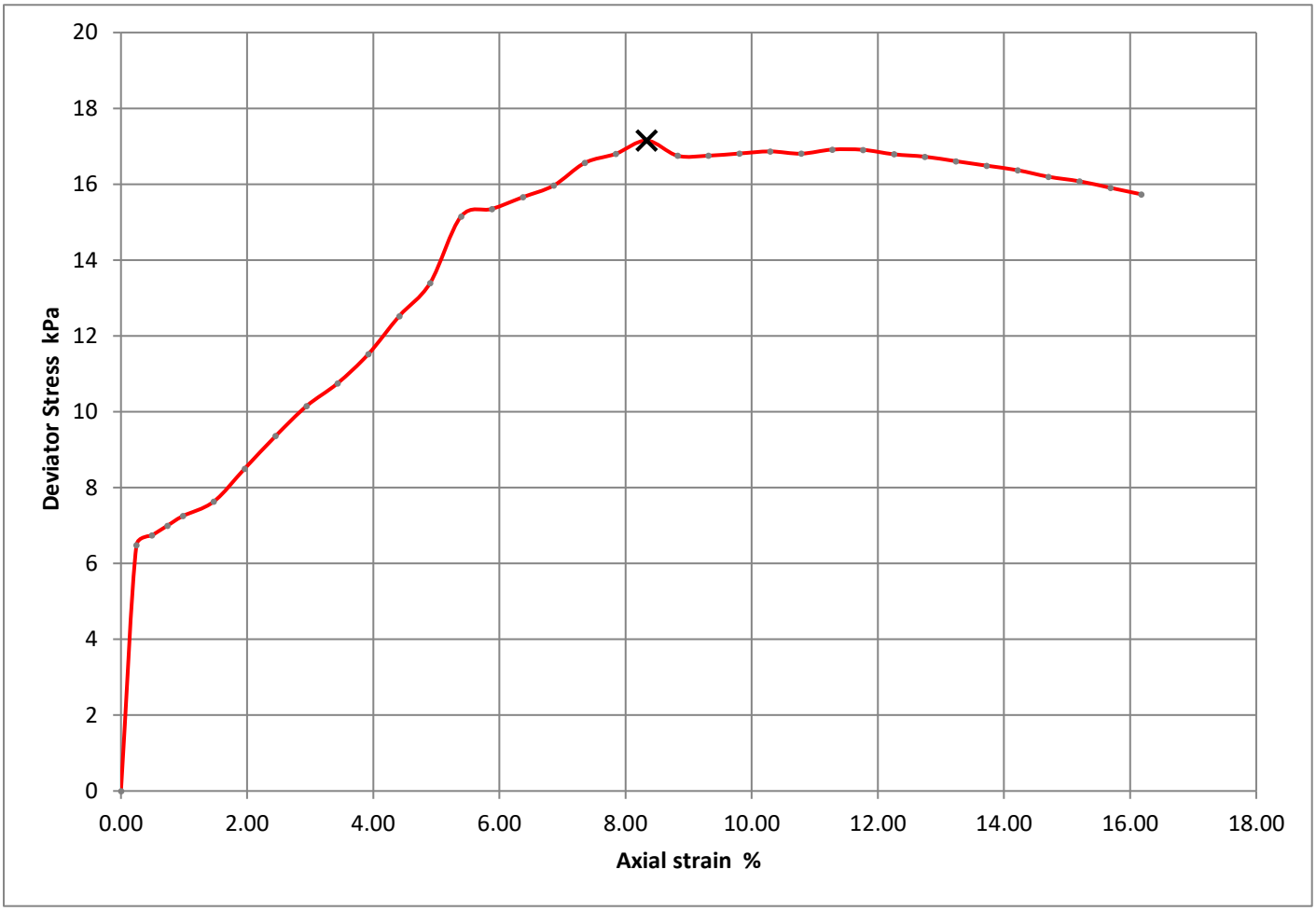
Moisture Content (%)	51
Bulk Density (Mg/m^3)	1.70
Dry Density (Mg/m^3)	1.13
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	130
Deviator Stress (kPa)	14
Undrained Shear Strength (kPa)	7
Failure Strain (%)	10.78
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	3.50
		Depth Base (m)	
		Sample Type	UT



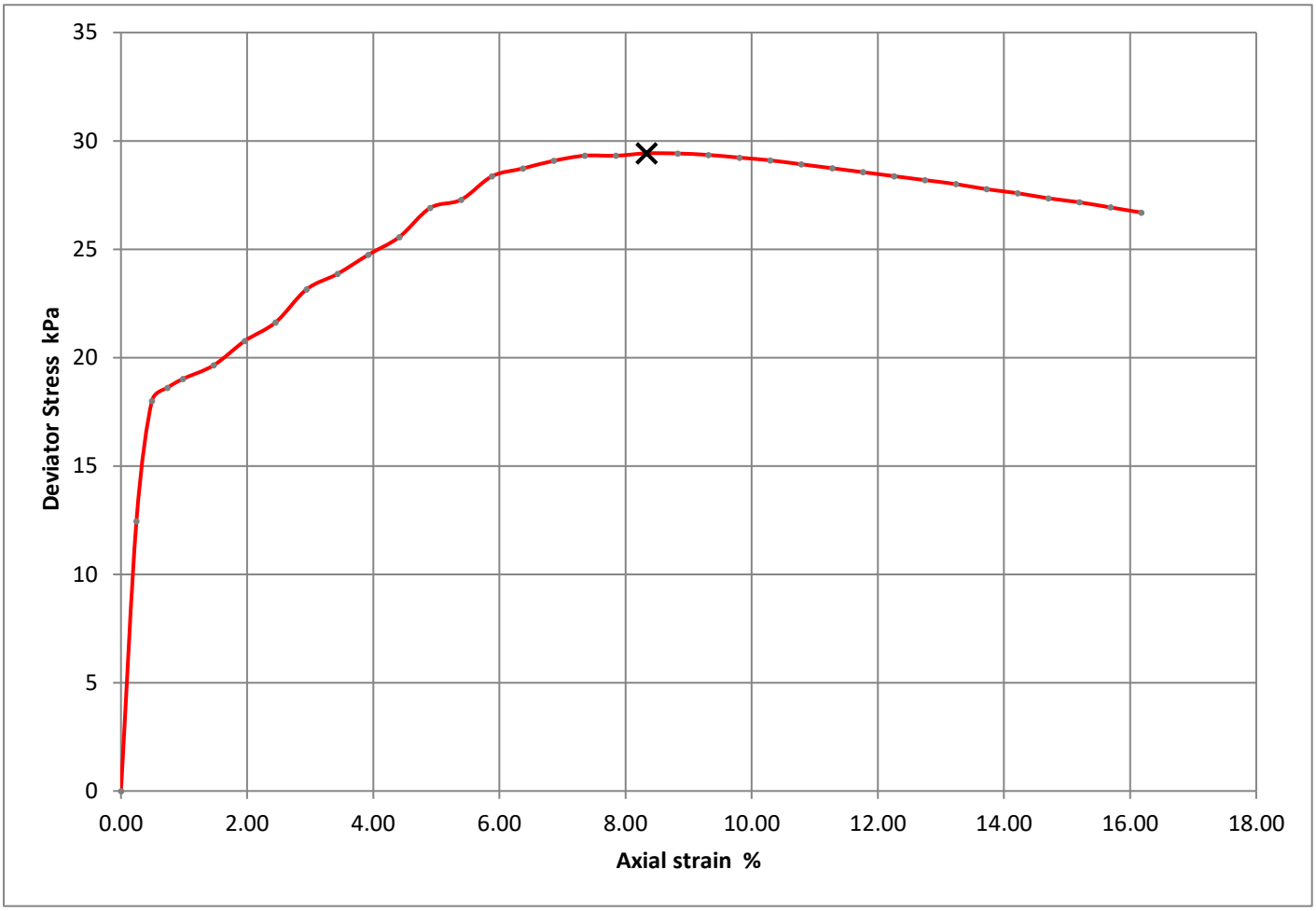
Moisture Content (%)	57
Bulk Density (Mg/m^3)	1.72
Dry Density (Mg/m^3)	1.09
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	120
Deviator Stress (kPa)	17
Undrained Shear Strength (kPa)	9
Failure Strain (%)	8.33
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M04
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	4.00
		Depth Base (m)	
		Sample Type	UT



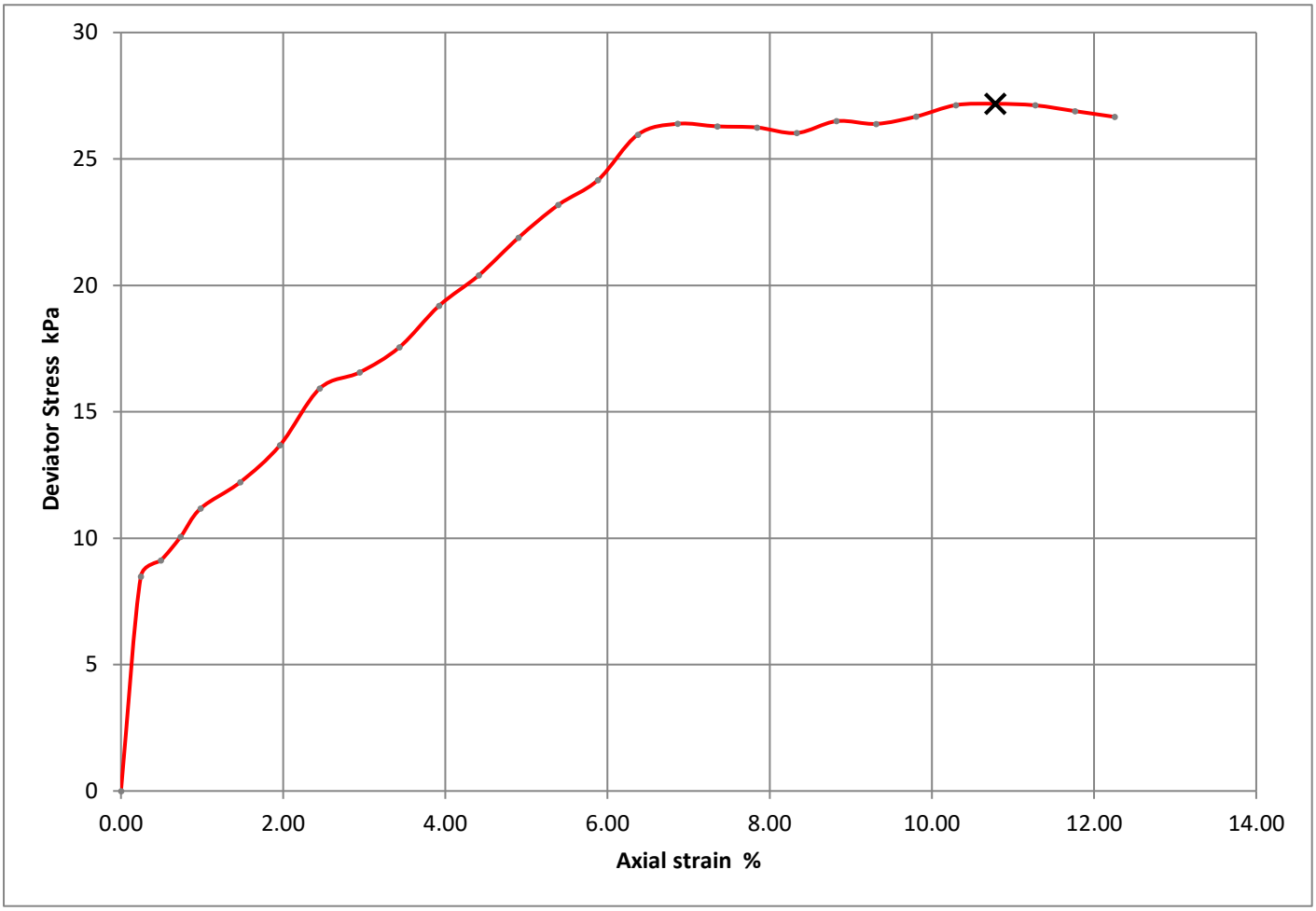
Moisture Content (%)	50
Bulk Density (Mg/m^3)	1.73
Dry Density (Mg/m^3)	1.16
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	130
Deviator Stress (kPa)	29
Undrained Shear Strength (kPa)	15
Failure Strain (%)	8.33
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M05
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	3.00
		Depth Base (m)	3.50
		Sample Type	UT



Moisture Content (%)	48
Bulk Density (Mg/m^3)	1.67
Dry Density (Mg/m^3)	1.13
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	110
Deviator Stress (kPa)	27
Undrained Shear Strength (kPa)	14
Failure Strain (%)	10.78
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

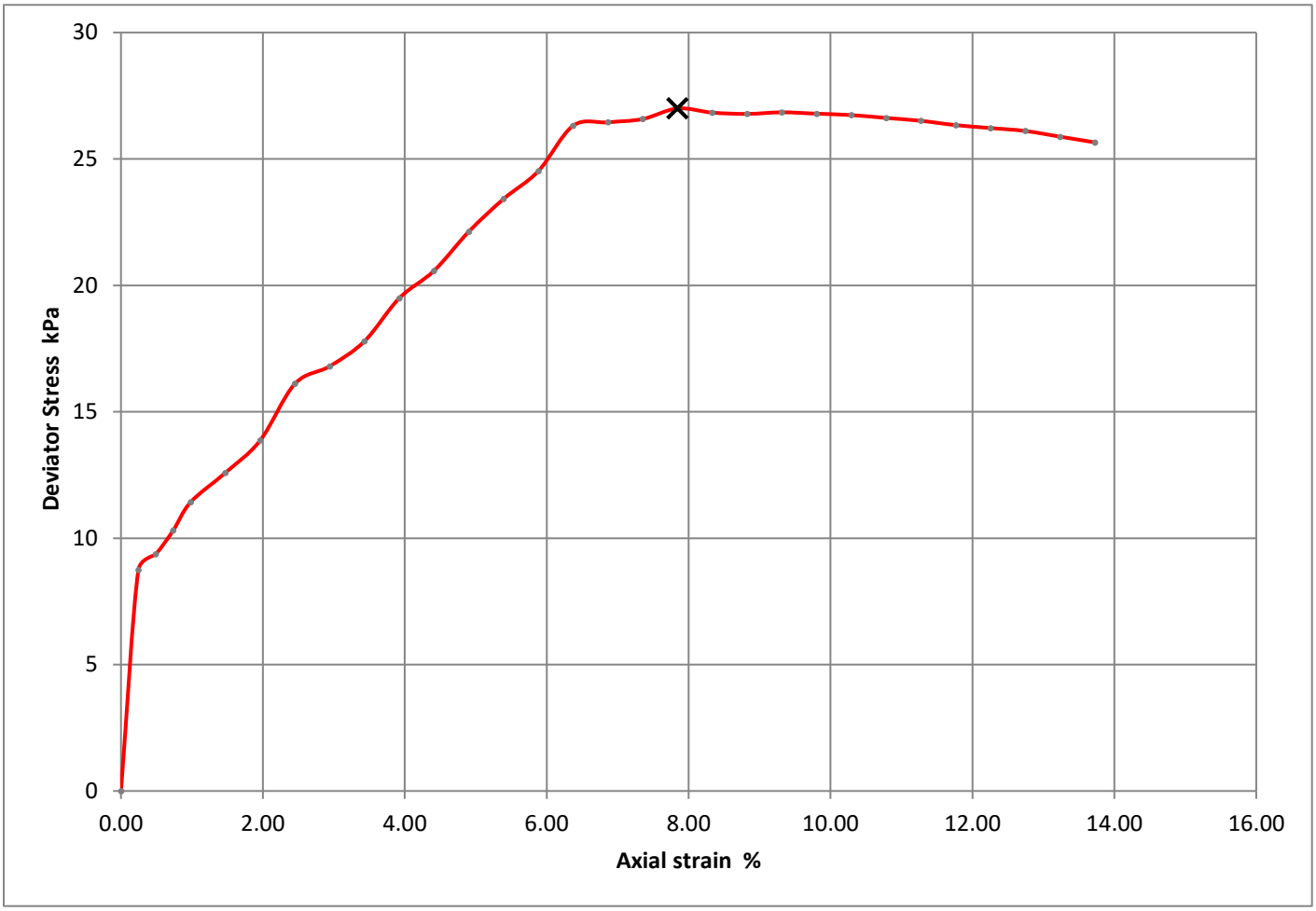
Specimen Post Test

Sample Split

Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M06
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	4.50
		Depth Base (m)	
		Sample Type	UT



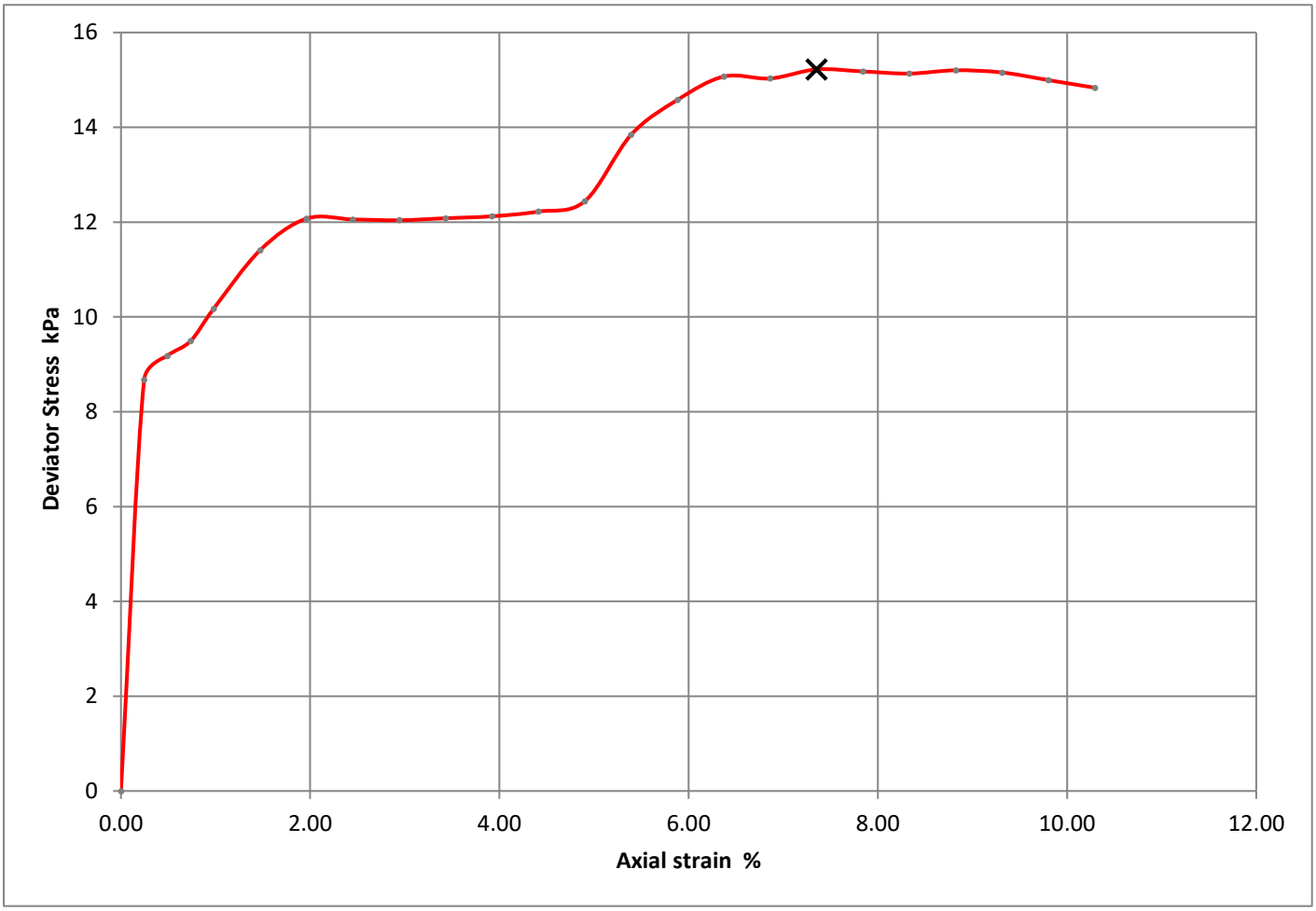
Moisture Content (%)	43
Bulk Density (Mg/m^3)	1.70
Dry Density (Mg/m^3)	1.19
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	130
Deviator Stress (kPa)	27
Undrained Shear Strength (kPa)	13
Failure Strain (%)	7.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

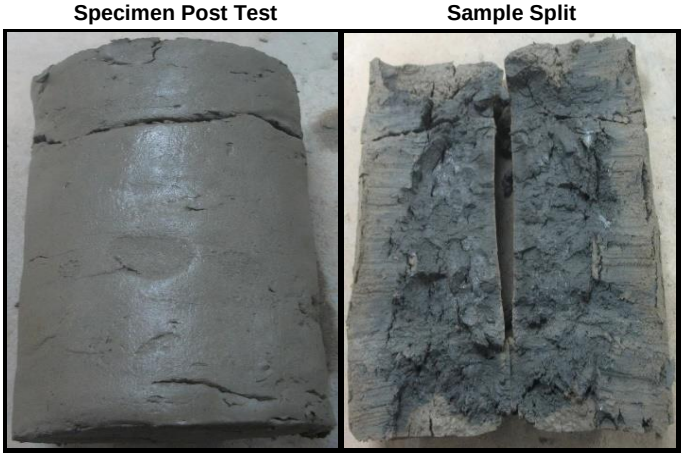
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	1.00
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	59
Bulk Density (Mg/m^3)	1.64
Dry Density (Mg/m^3)	1.03
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	70
Deviator Stress (kPa)	15
Undrained Shear Strength (kPa)	8
Failure Strain (%)	7.35
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

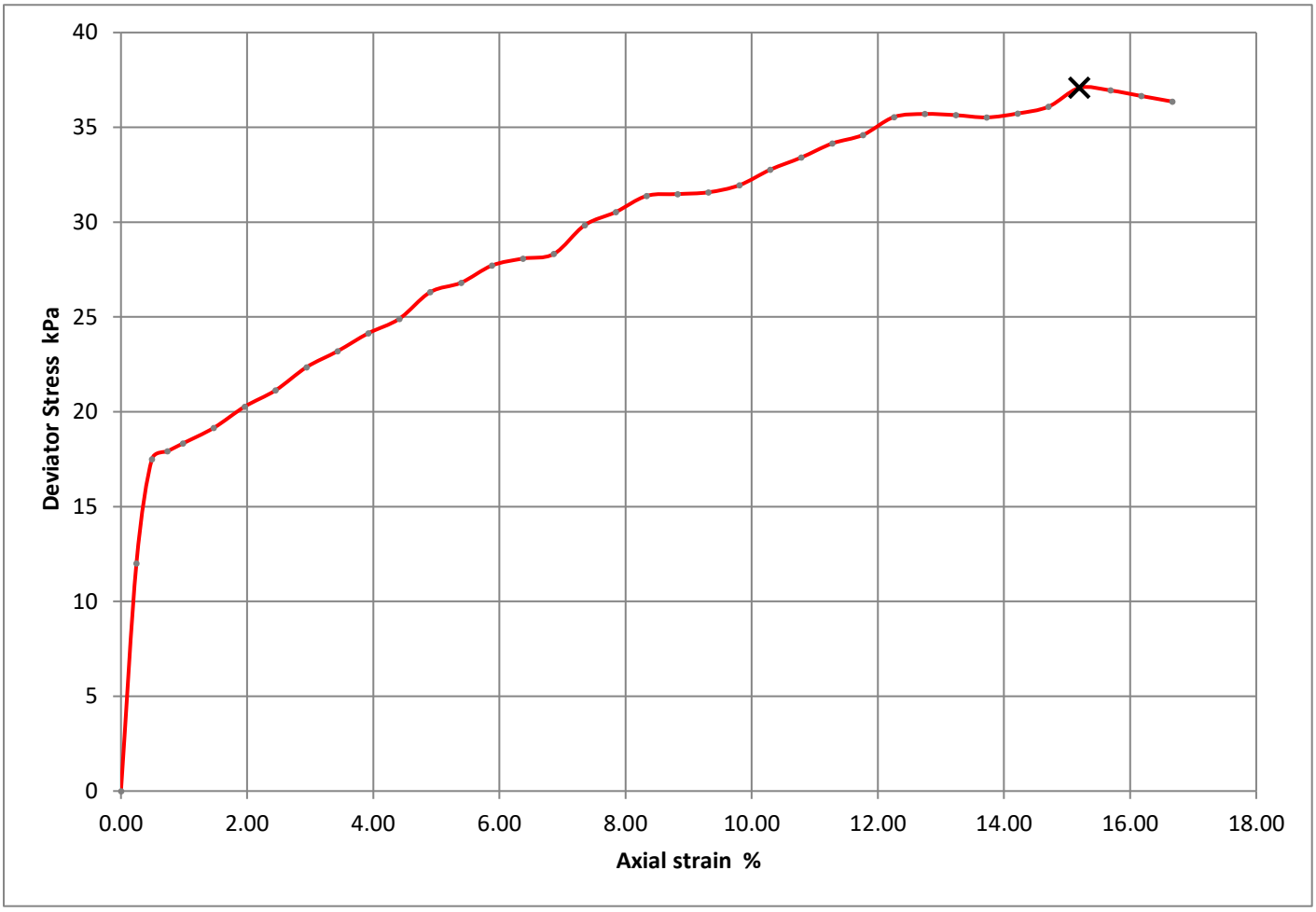
Specimen Post Test **Sample Split**



Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

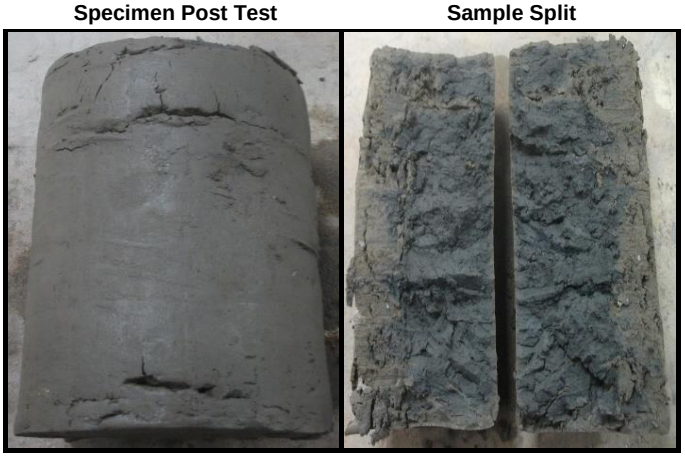
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	4.00
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	51
Bulk Density (Mg/m^3)	1.72
Dry Density (Mg/m^3)	1.14
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	130
Deviator Stress (kPa)	37
Undrained Shear Strength (kPa)	19
Failure Strain (%)	15.20
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

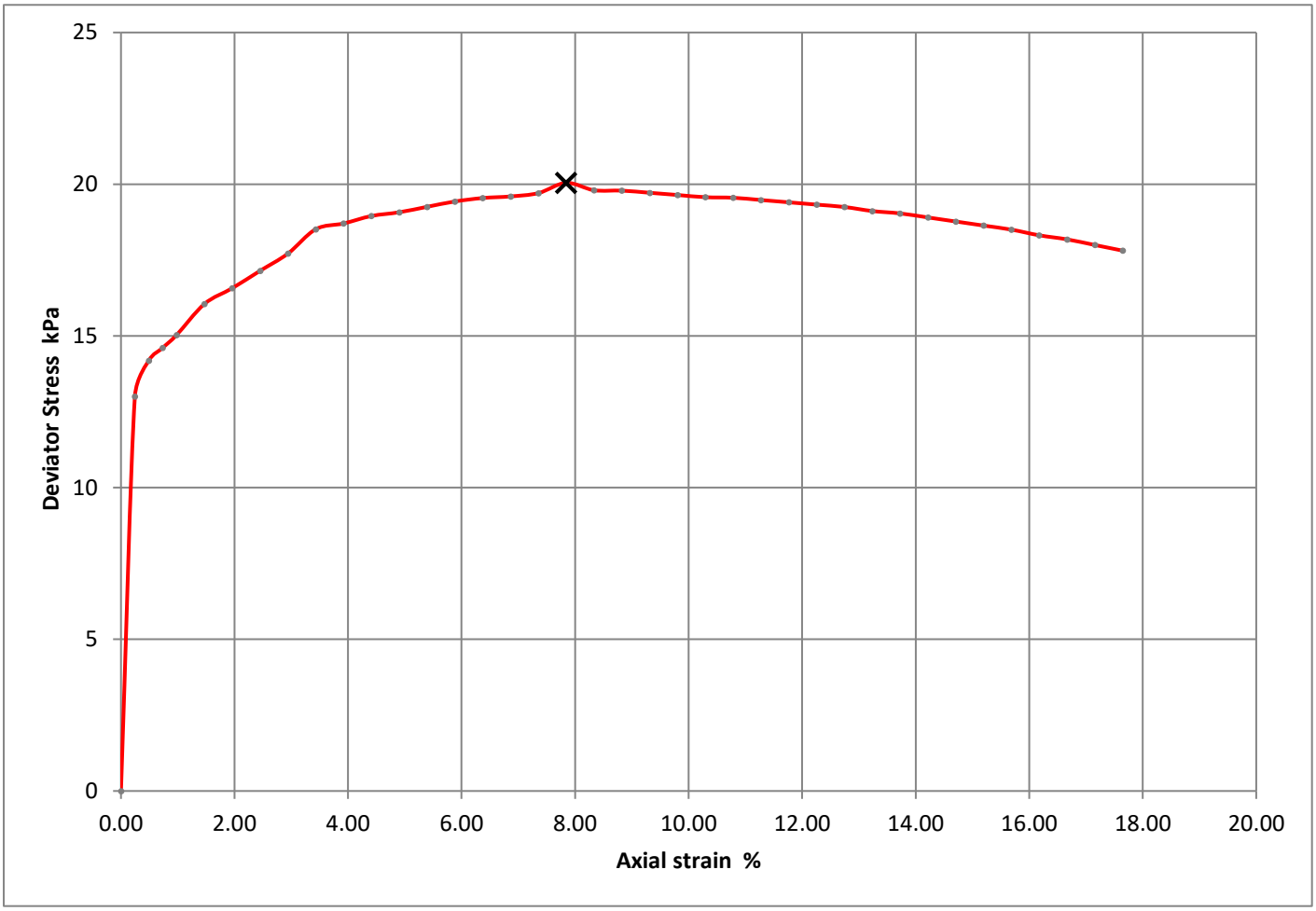
Specimen Post Test **Sample Split**



Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M08
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	5.00
		Depth Base (m)	
		Sample Type	UT



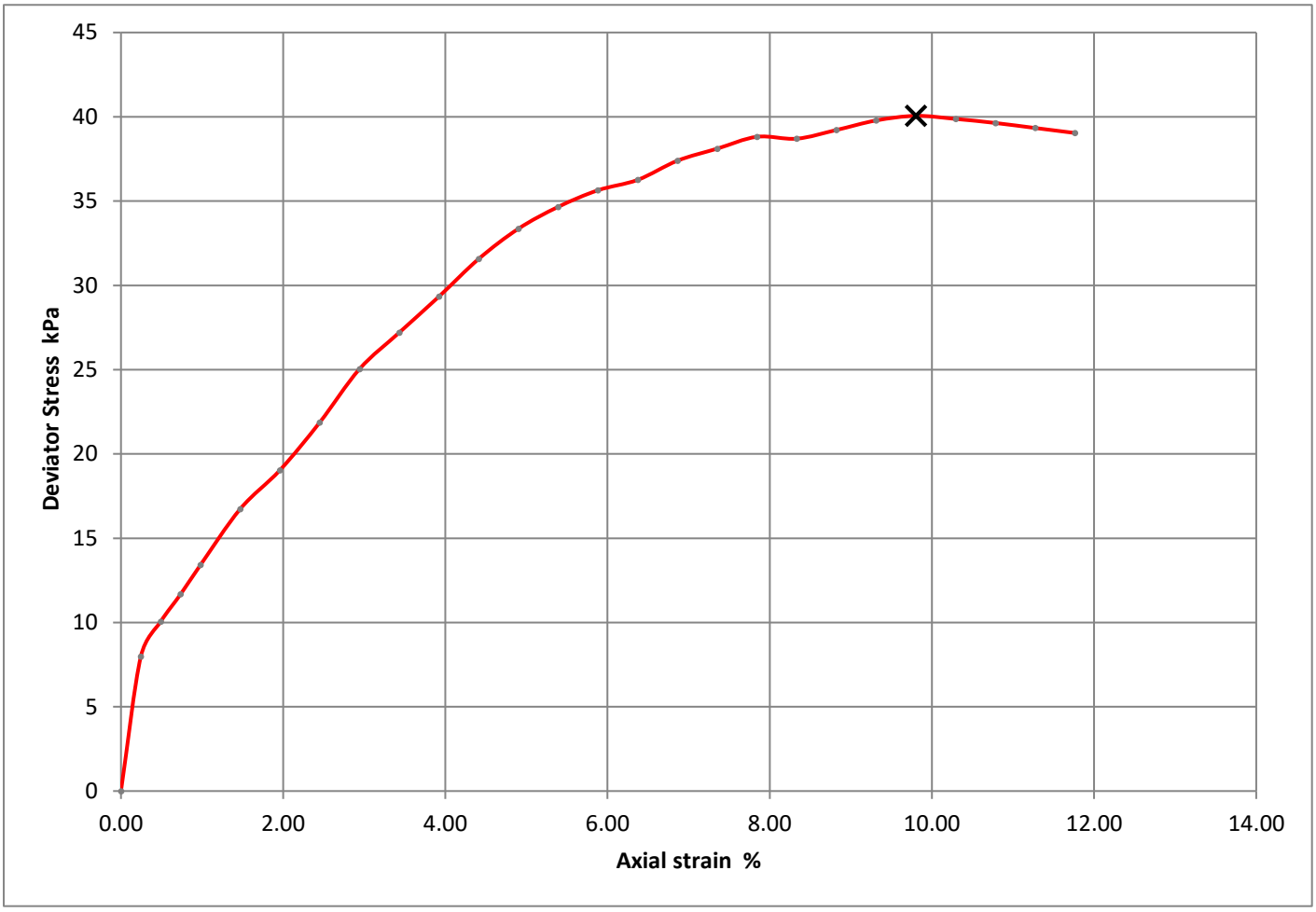
Moisture Content (%)	60
Bulk Density (Mg/m^3)	1.72
Dry Density (Mg/m^3)	1.07
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	150
Deviator Stress (kPa)	20
Undrained Shear Strength (kPa)	10
Failure Strain (%)	7.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split

Checked	02/08/2017	Wayne Honey	W. Honey
Approved	03/08/2017	Ben Sharp	

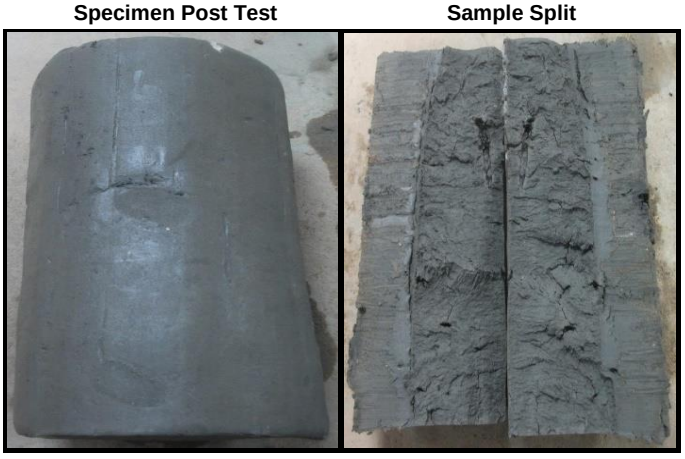
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	35579
		Borehole/Pit No.	M11
Site Name	Foynes Port	Sample No.	
Soil Description	Brownish grey sandy silty CLAY	Depth Top (m)	6.50
		Depth Base (m)	
		Sample Type	UT



Moisture Content (%)	39
Bulk Density (Mg/m^3)	1.68
Dry Density (Mg/m^3)	1.21
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	180
Deviator Stress (kPa)	40
Undrained Shear Strength (kPa)	20
Failure Strain (%)	9.80
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test **Sample Split**



Checked	01/08/2017	Wayne Honey	W. Honey
Approved	02/08/2017	Ben Sharp	

UKAS TESTING 2788

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey clayey firm SILT

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	2637.50
Dry Mass	g	1709.40
Density	Mg/m^3	1.52
Dry Density	Mg/m^3	0.99
Moisture Content	%	54
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	37
Density	Mg/m^3	1.42
Dry Density	Mg/m^3	1.03

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Contract No

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GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Test Setup

Date started	21/06/2017
Date Finished	22/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P1
Cell Number	C1

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	400.00
Final Pore Pressure	kPa	400.00
Final B Value		0.91

Consolidation

Effective Pressure	kPa	20.00	45.00	70.00
Cell Pressure	kPa	400.00	400.00	400.00
Back Pressure	kPa	380.00	355.00	330.00
Excess Pore Pressure	kPa	20.00	25.00	22.00
Pore Pressure at End	kPa	380.00	355.00	330.00
Consolidated Volume	cm^3	1703.85	1682.95	1653.05
Consolidated Height	mm	202.86	196.21	188.82
Consolidated Area	mm^2	8399.77	8577.40	8755.29
Vol. Compressibility	m^2/MN	0.04419	0.03455	0.05384
Consolidation Coef.	$m^2/yr.$	0.51026	0.17300	0.04513

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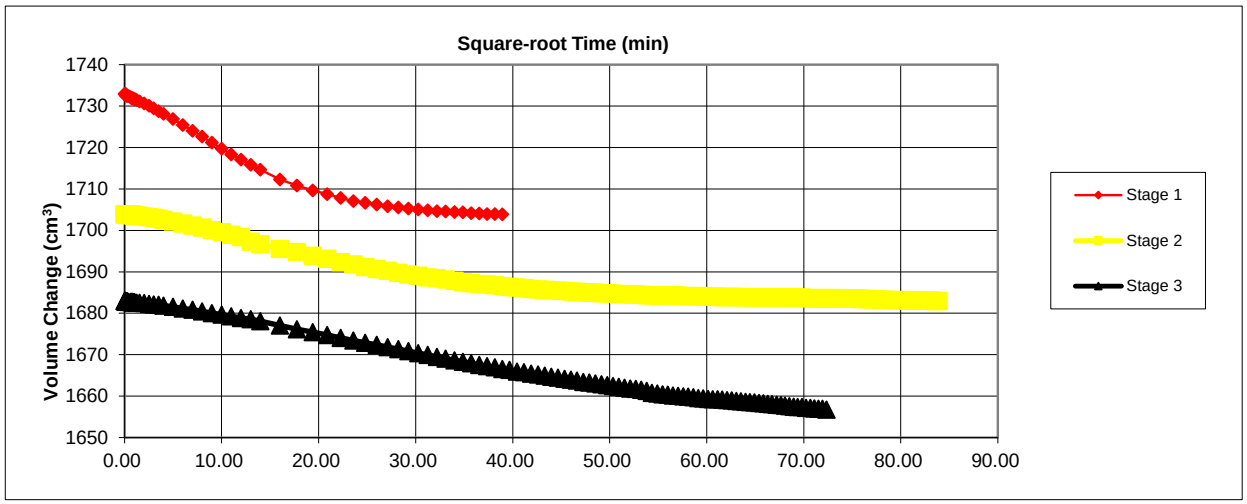
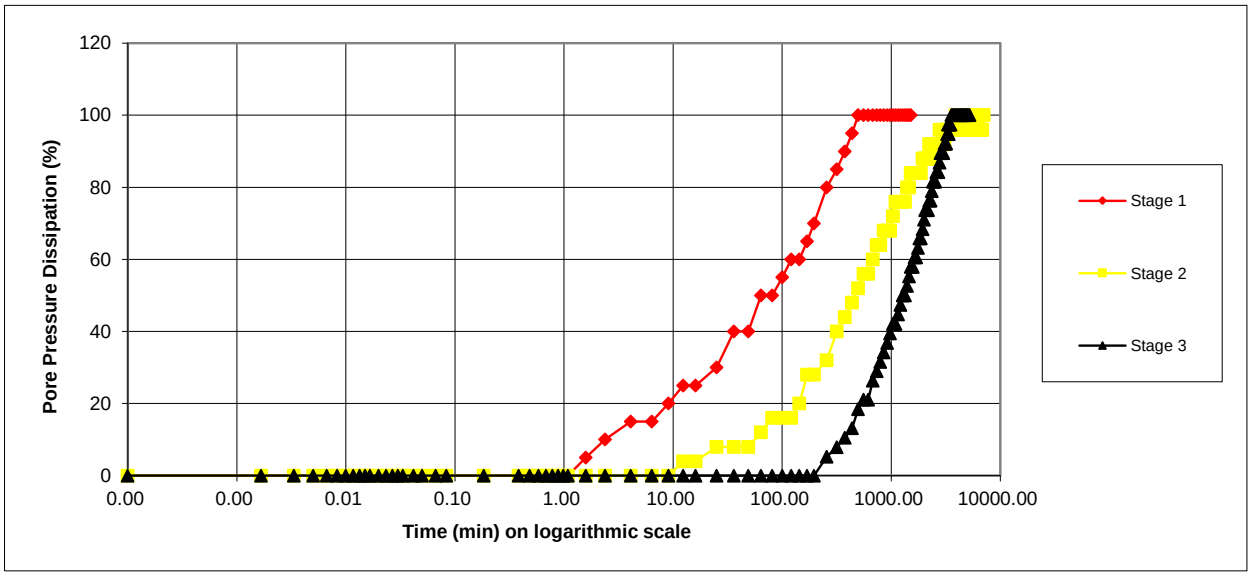
Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Consolidation Stage





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Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Shearing

Initial Cell Pressure	kPa	400	400	400
Initial Pore Pressure	kPa	380	355	330
Rate of Strain	mm/min	0.0101	0.0033	0.0008
Max Deviator Stress				
Axial Strain		4.535	7.732	12.303
Axial Stress	kPa	90.353	127.20	175.19
Cor. Deviator stress	kPa	87.367	122.90	170.65
Effective Major Stress	kPa	102.367	149.90	210.65
Effective Minor Stress	kPa	16.000	27.00	40.00
Effective Stress Ratio		6.398	5.552	5.27
s'	kPa	59.183	88.45	125.33
t'	kPa	43.183	61.45	85.33
Max Effective Priciple Stress Ratio				
Axial Strain		1.878	5.510	8.993
Axial Stress	kPa	71.140	112.917	156.469
Cor. Deviator stress	kPa	70.853	108.843	152.125
Effective Major Stress	kPa	80.853	127.843	179.125
Effective Minor Stress	kPa	10.000	19.000	27.000
Effective Stress Ratio		8.085	6.729	6.634
s'	kPa	45.426	73.422	103.063
t'	kPa	35.426	54.422	76.063
Shear Resistance Angle	degs			45.0
Cohesion c'	kPa			5

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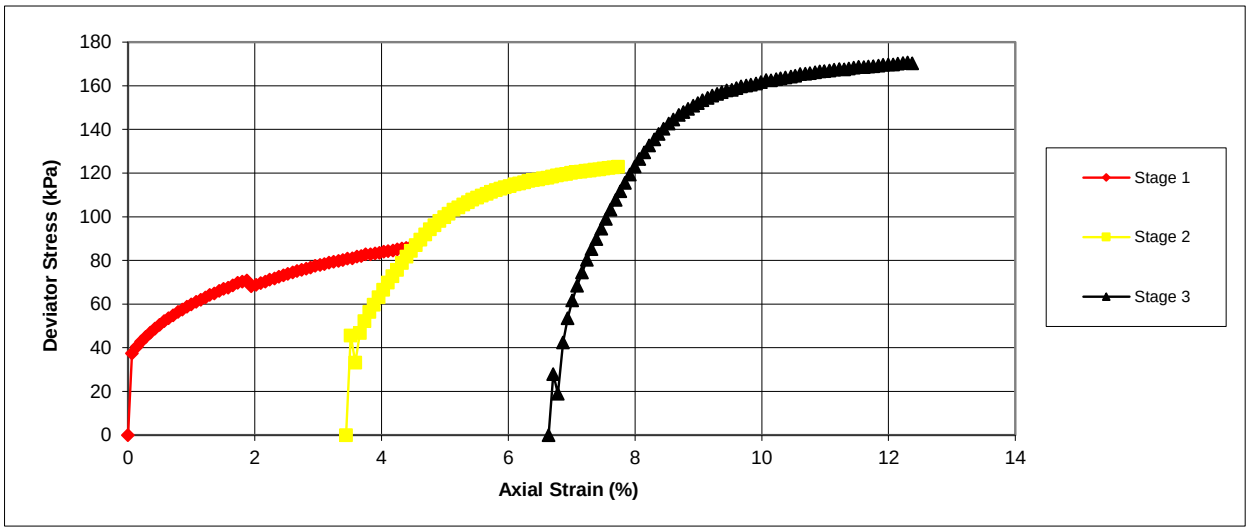
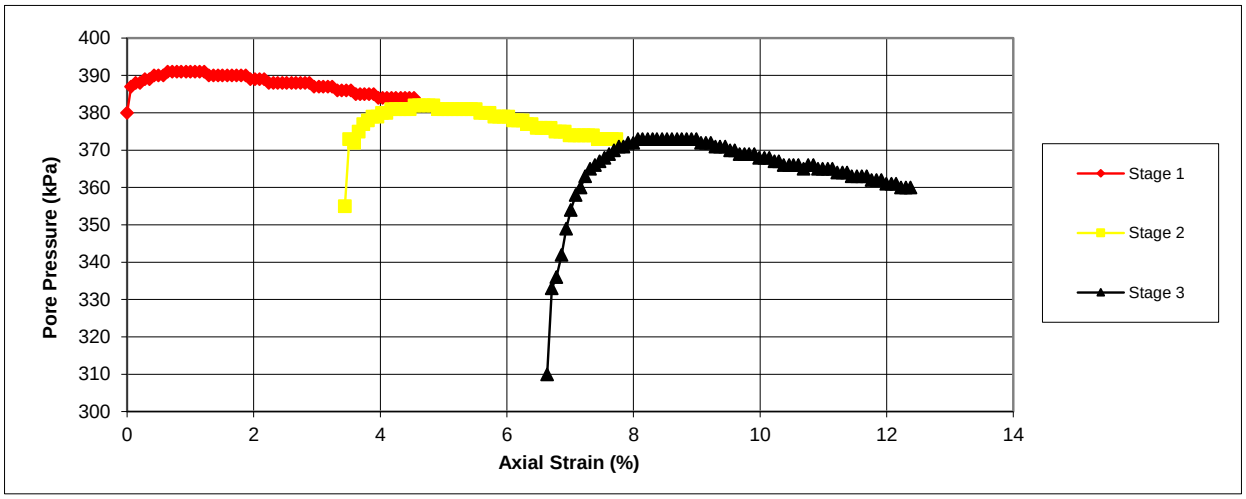
Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Shearing Stage





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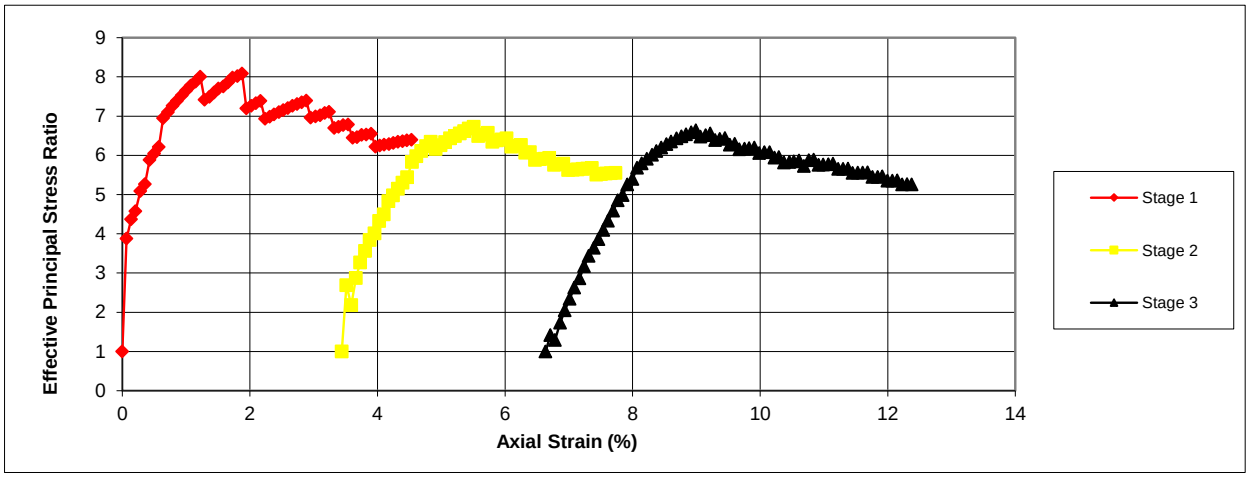
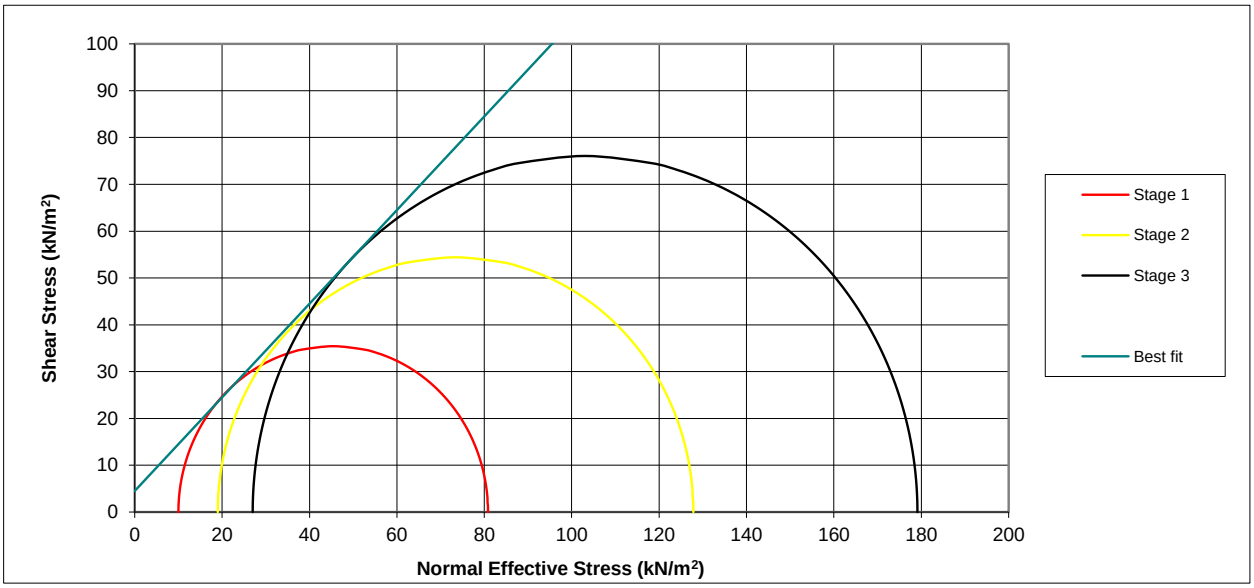
Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Shearing Stage





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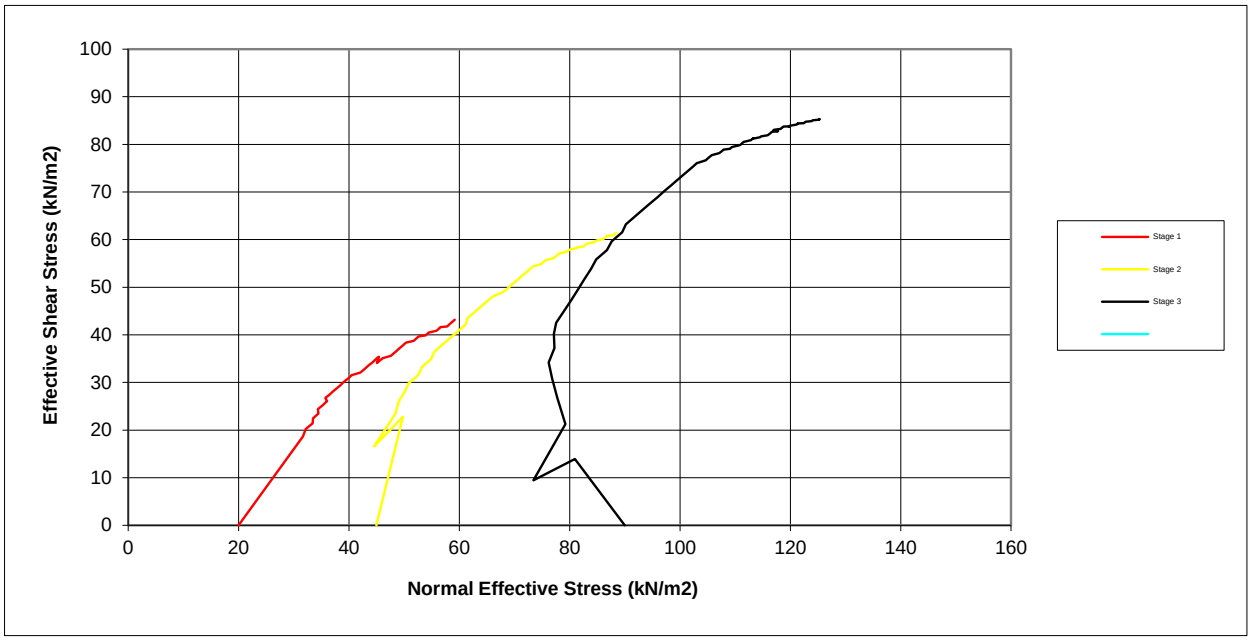
Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

Shearing Stage



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Specimen Details

Borehole		L04
Sample No.		
Depth	m	2
Date		24/07/2017

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BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey slightly brown slightly fine gravelly clayey firm SILT

Initial Specimen Conditions

Height	mm	203.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1691.45
Mass	g	2656.30
Dry Mass	g	1700.60
Density	Mg/m^3	1.57
Dry Density	Mg/m^3	1.01
Moisture Content	%	56
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	45
Density	Mg/m^3	1.54
Dry Density	Mg/m^3	1.06

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Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Test Setup

Date started	29/06/2017
Date Finished	26/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P7
Cell Number	C7

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	400.00
Final Pore Pressure	kPa	399.00
Final B Value		0.97

Consolidation

Effective Pressure	kPa	40.00	65.00	90.00
Cell Pressure	kPa	400.00	400.00	400.00
Back Pressure	kPa	360.00	335.00	310.00
Excess Pore Pressure	kPa	38.00	41.00	45.00
Pore Pressure at End	kPa	360.00	335.00	300.00
Consolidated Volume	cm^3	1665.55	1643.65	1610.55
Consolidated Height	mm	201.96	195.04	185.40
Consolidated Area	mm^2	8247.23	8427.54	8687.79
Vol. Compressibility	m^2/MN	0.04253	0.03925	0.06713
Consolidation Coef.	$m^2/yr.$	0.35438	0.14319	0.09308

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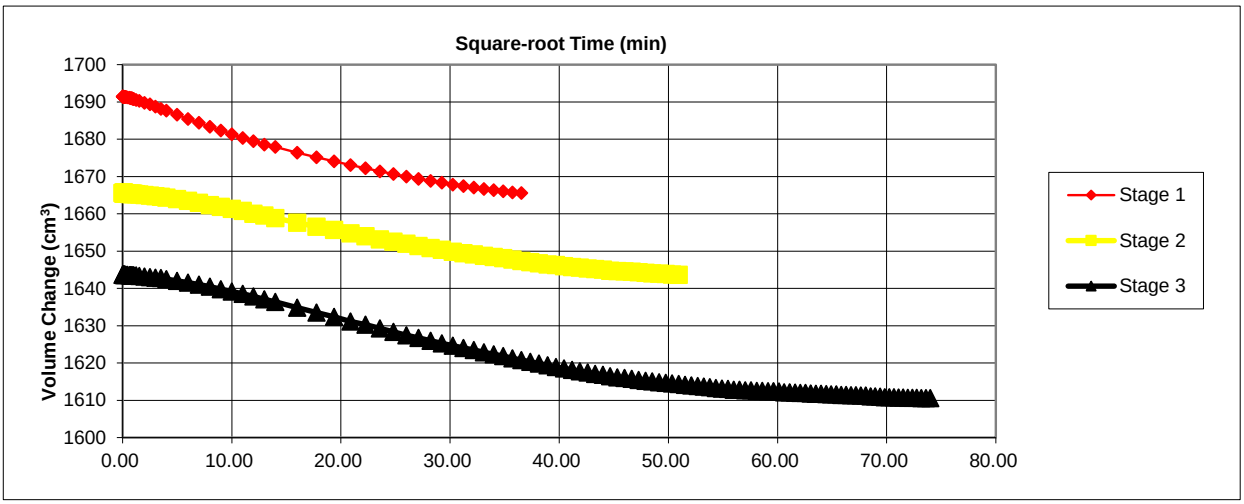
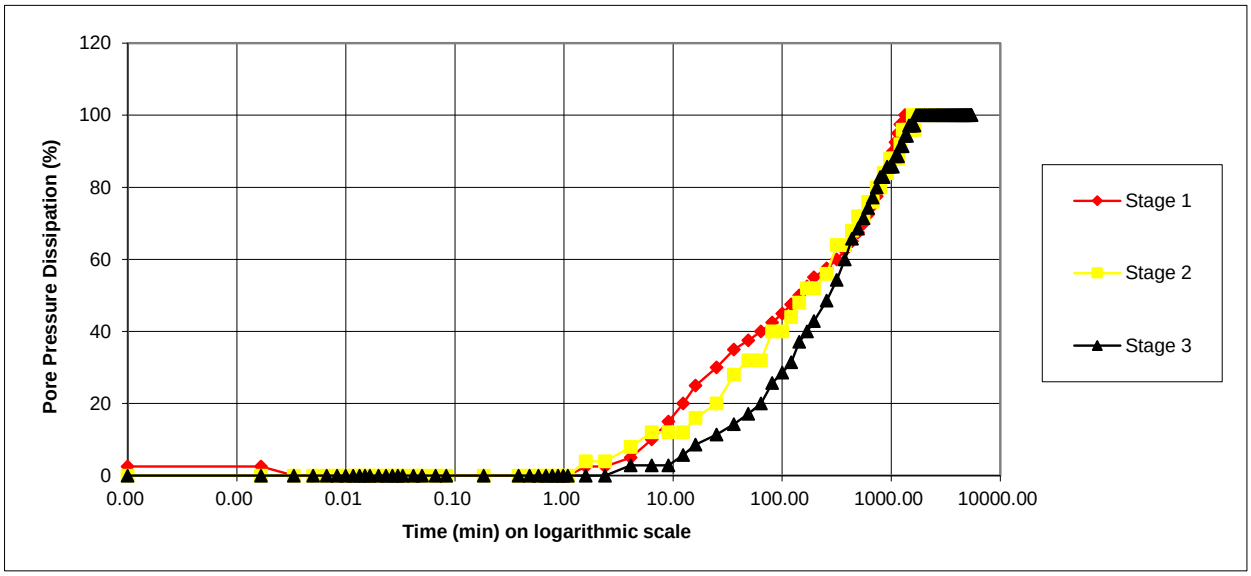
Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Consolidation Stage





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Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Shearing

Initial Cell Pressure	kPa	400	400	400
Initial Pore Pressure	kPa	360	335	300
Rate of Strain	mm/min	0.0071	0.0028	0.0017
Max Deviator Stress				
Axial Strain		4.174	8.561	13.001
Axial Stress	kPa	58.747	90.84	107.06
Cor. Deviator stress	kPa	55.783	86.44	102.47
Effective Major Stress	kPa	88.783	139.44	165.47
Effective Minor Stress	kPa	34.000	53.00	63.00
Effective Stress Ratio		2.611	2.631	2.63
s'	kPa	61.391	96.22	114.24
t'	kPa	27.391	43.22	51.24
Max Effective Priciple Stress Ratio				
Axial Strain		1.911	6.341	10.827
Axial Stress	kPa	47.803	84.174	102.374
Cor. Deviator stress	kPa	47.510	80.007	97.913
Effective Major Stress	kPa	76.510	128.007	155.913
Effective Minor Stress	kPa	29.000	48.000	58.000
Effective Stress Ratio		2.638	2.667	2.688
s'	kPa	52.755	88.003	106.957
t'	kPa	23.755	40.003	48.957
Shear Resistance Angle	degs			27.0
Cohesion c'	kPa			0

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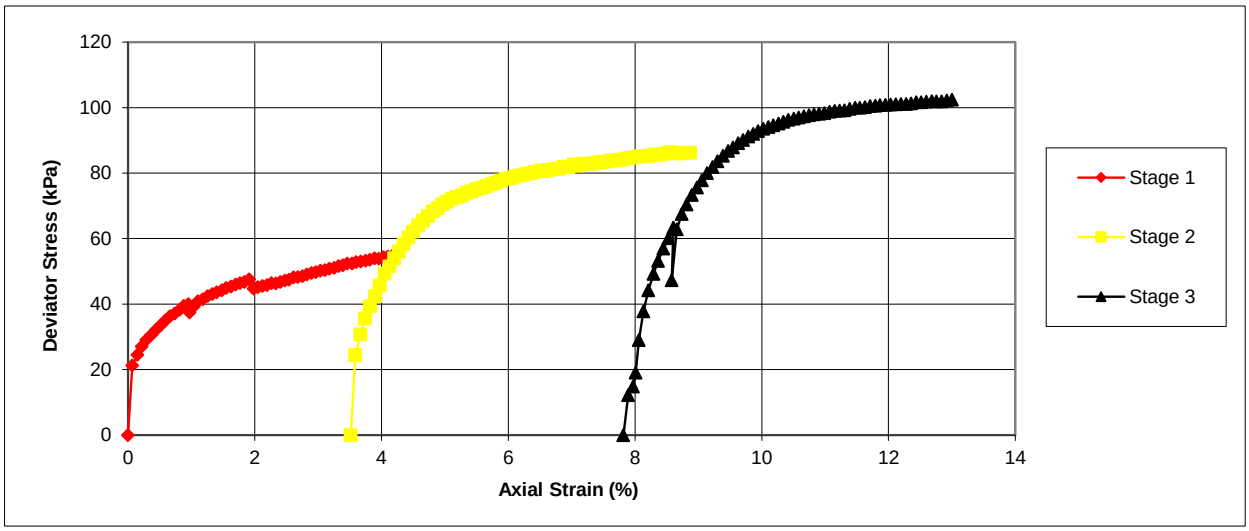
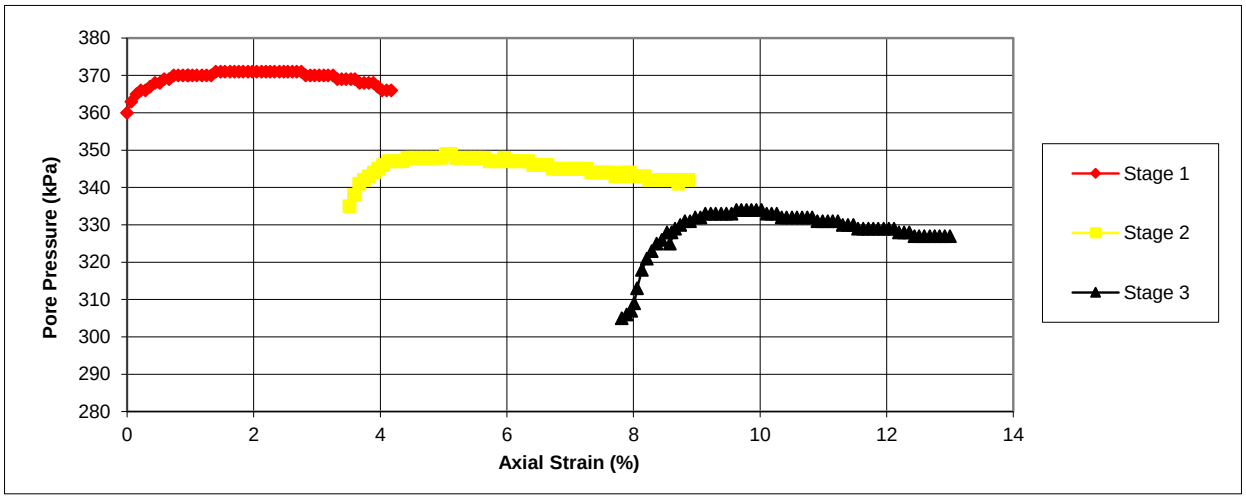
Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Shearing Stage





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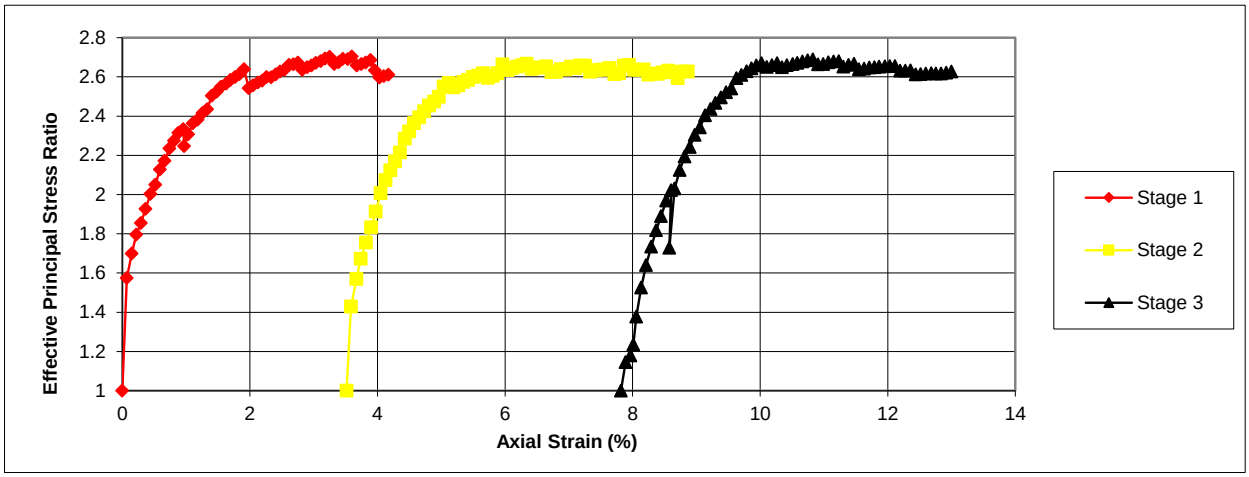
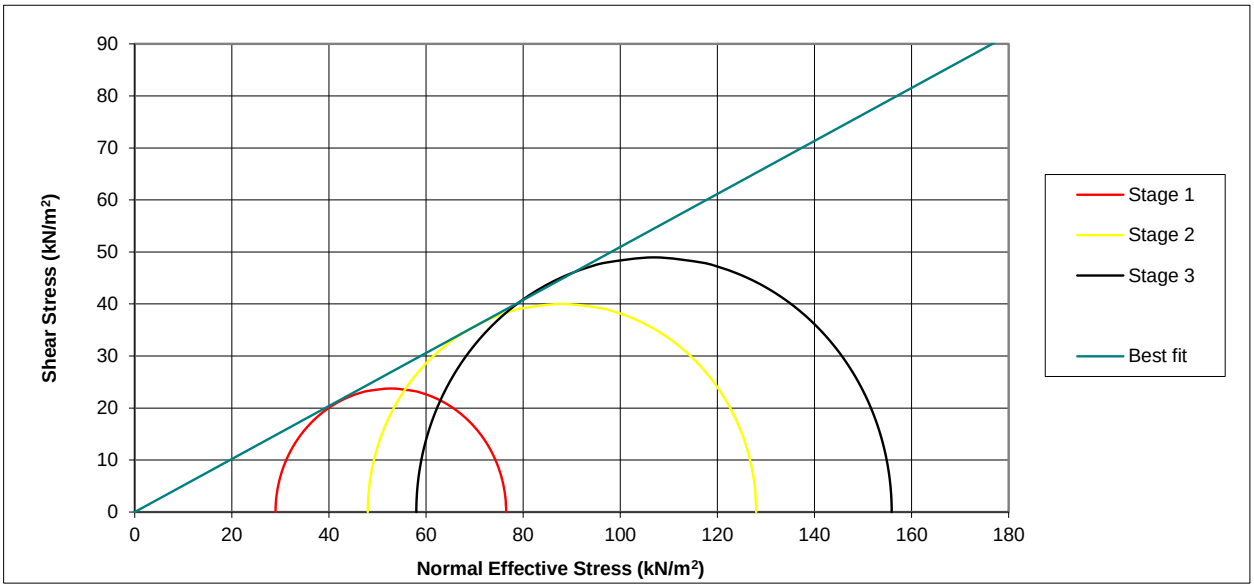
Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Shearing Stage





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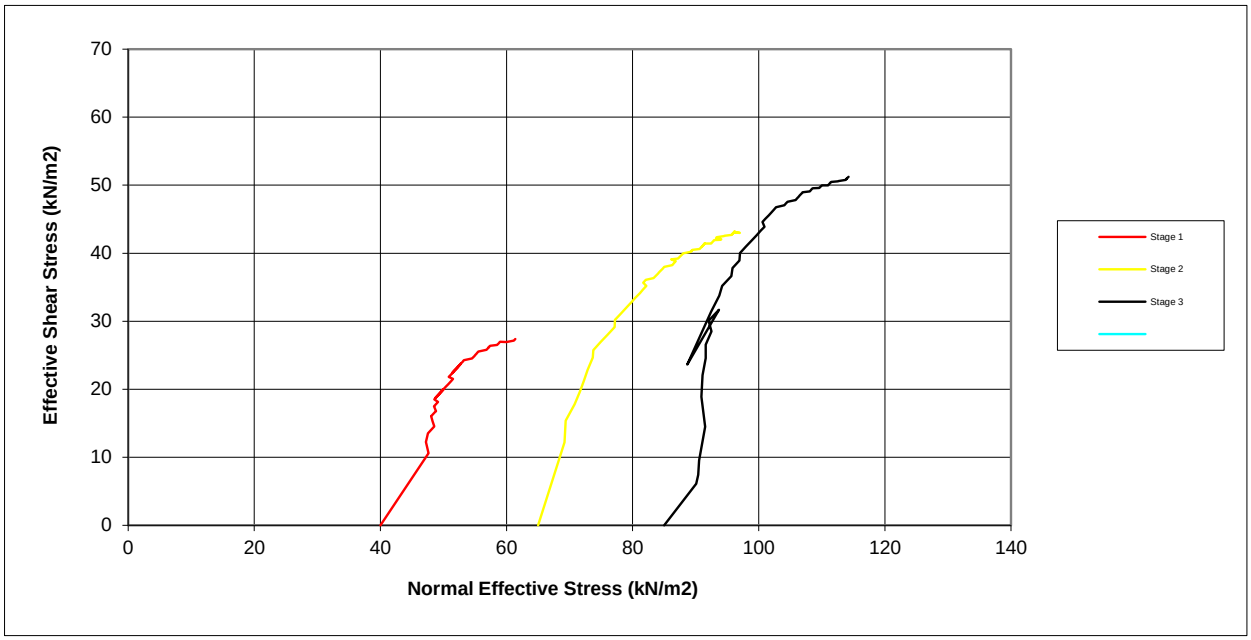
Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

Shearing Stage



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Specimen Details

Borehole		L05
Sample No.		
Depth	m	4
Date		27/07/2017

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Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	
Date		08/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey slightly brown silty firm CLAY

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	2746.40
Dry Mass	g	2053.60
Density	Mg/m^3	1.58
Dry Density	Mg/m^3	1.19
Moisture Content	%	34
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	18
Density	Mg/m^3	1.44
Dry Density	Mg/m^3	1.22

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Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Test Setup

Date started	01/07/2017
Date Finished	07/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P2
Cell Number	C2

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	298.00
Final B Value		0.98

Consolidation

Effective Pressure	kPa	80.00	105.00	130.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	220.00	195.00	170.00
Excess Pore Pressure	kPa	78.00	72.00	64.00
Pore Pressure at End	kPa	220.00	195.00	170.00
Consolidated Volume	cm^3	1703.75	1693.15	1682.15
Consolidated Height	mm	202.85	195.10	187.22
Consolidated Area	mm^2	8399.44	8678.26	8985.07
Vol. Compressibility	m^2/MN	0.07659	0.03191	0.03822
Consolidation Coef.	$m^2/yr.$	0.99367	0.93400	0.88139

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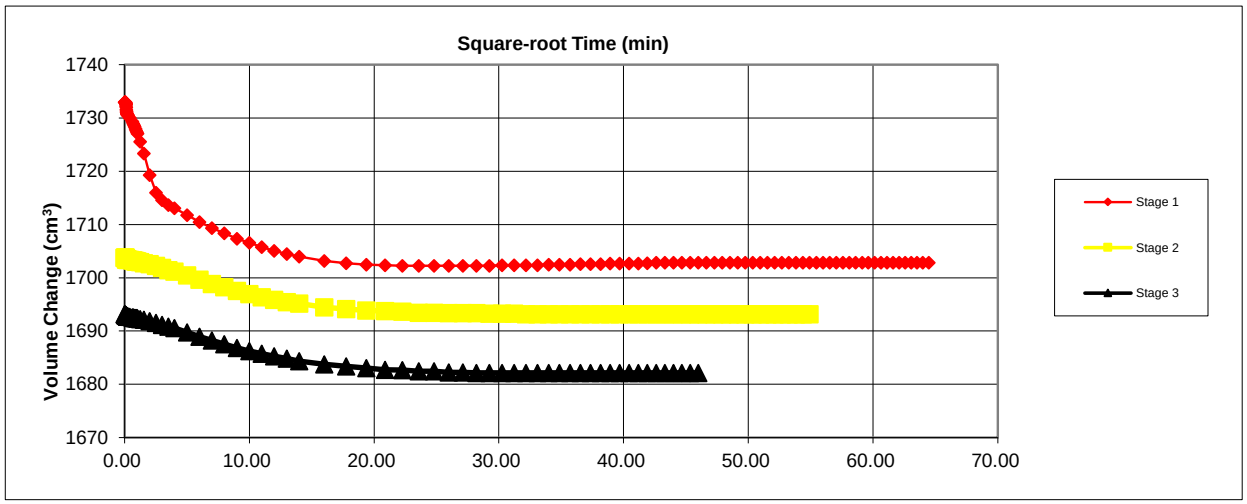
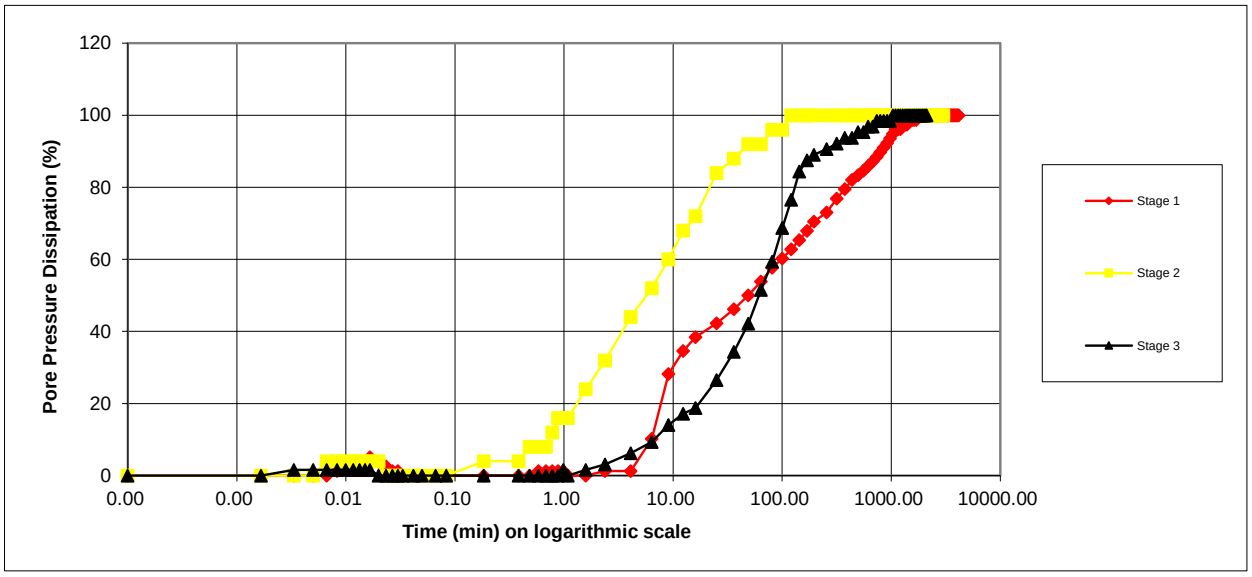
Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Consolidation Stage





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Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	220	195	170
Rate of Strain	mm/min	0.0196	0.0178	0.0161
Max Deviator Stress				
Axial Strain		5.354	7.794	13.825
Axial Stress	kPa	119.037	121.70	147.84
Cor. Deviator stress	kPa	115.990	117.39	143.21
Effective Major Stress	kPa	186.990	198.39	252.21
Effective Minor Stress	kPa	72.000	81.00	109.00
Effective Stress Ratio		2.597	2.449	2.31
s'	kPa	129.495	139.70	180.60
t'	kPa	57.495	58.70	71.60
Max Effective Priciple Stress Ratio				
Axial Strain		3.076	6.892	10.172
Axial Stress	kPa	101.511	116.191	135.003
Cor. Deviator stress	kPa	97.634	111.973	142.547
Effective Major Stress	kPa	160.634	186.973	215.590
Effective Minor Stress	kPa	63.000	75.000	85.000
Effective Stress Ratio		2.550	2.493	2.536
s'	kPa	111.817	130.986	150.295
t'	kPa	48.817	55.986	65.295
Shear Resistance Angle	degs			25.7
Cohesion c'	kPa			0

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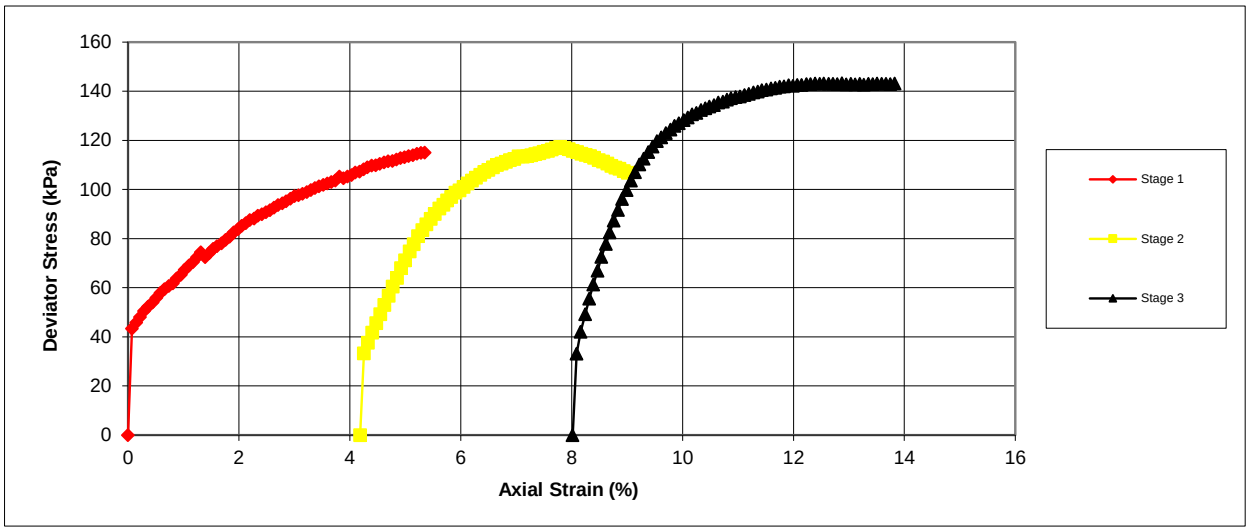
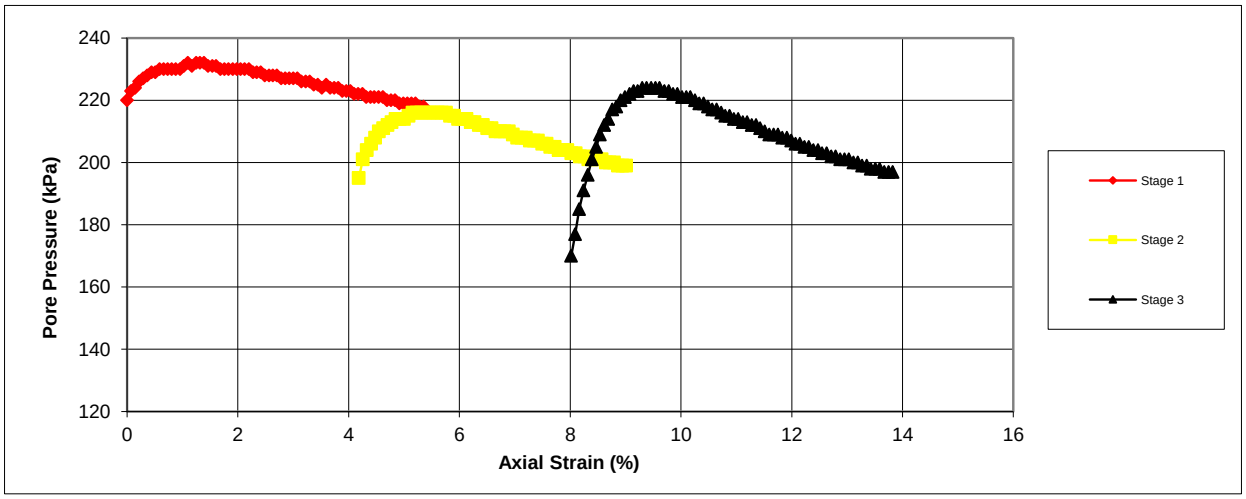
Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Shearing Stage





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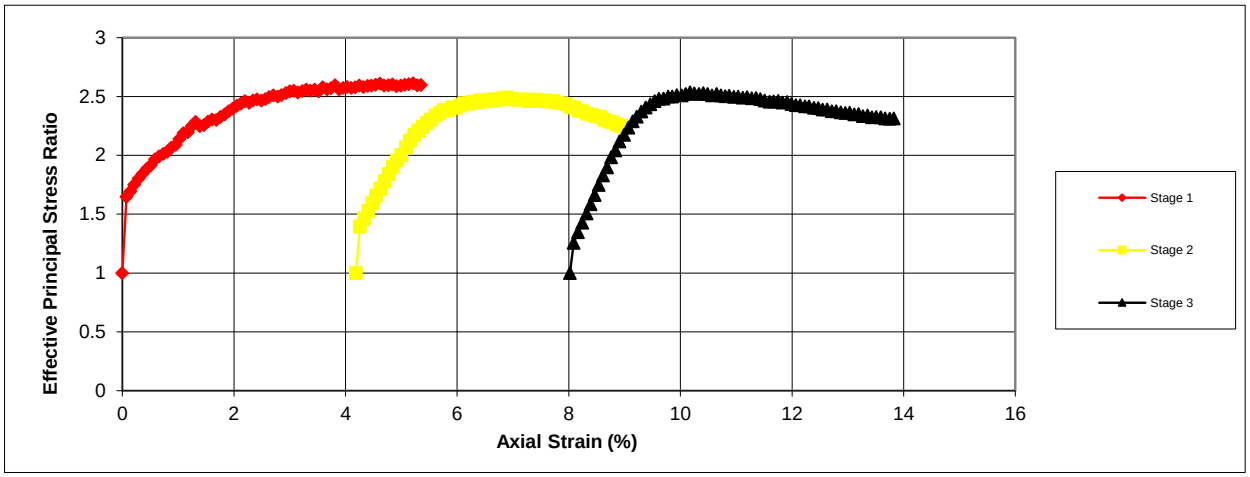
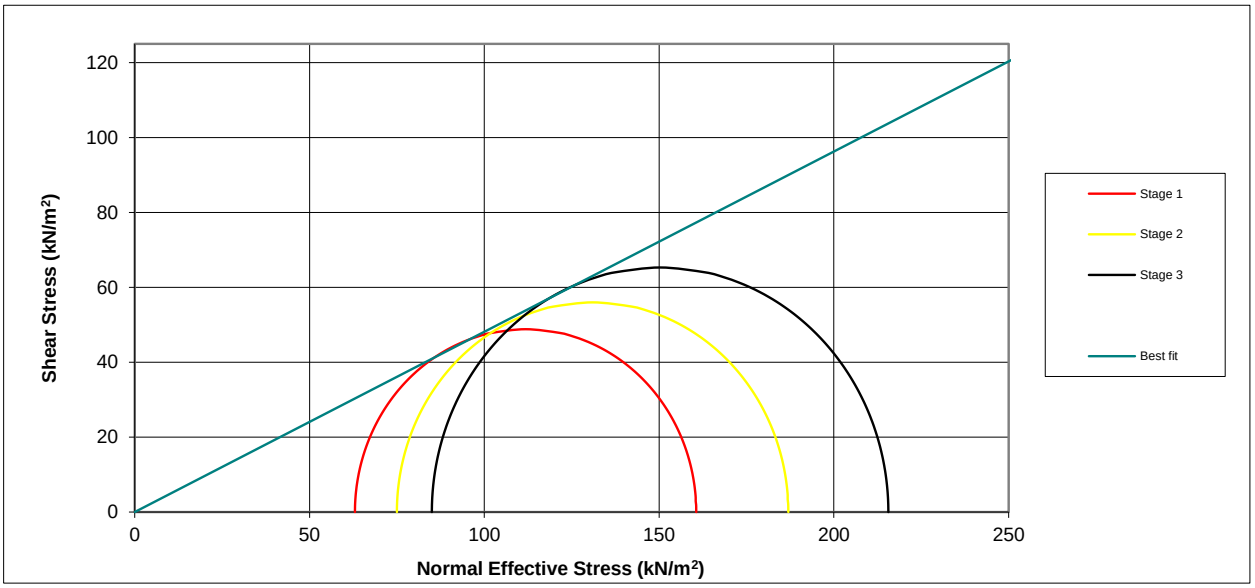
Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Shearing Stage





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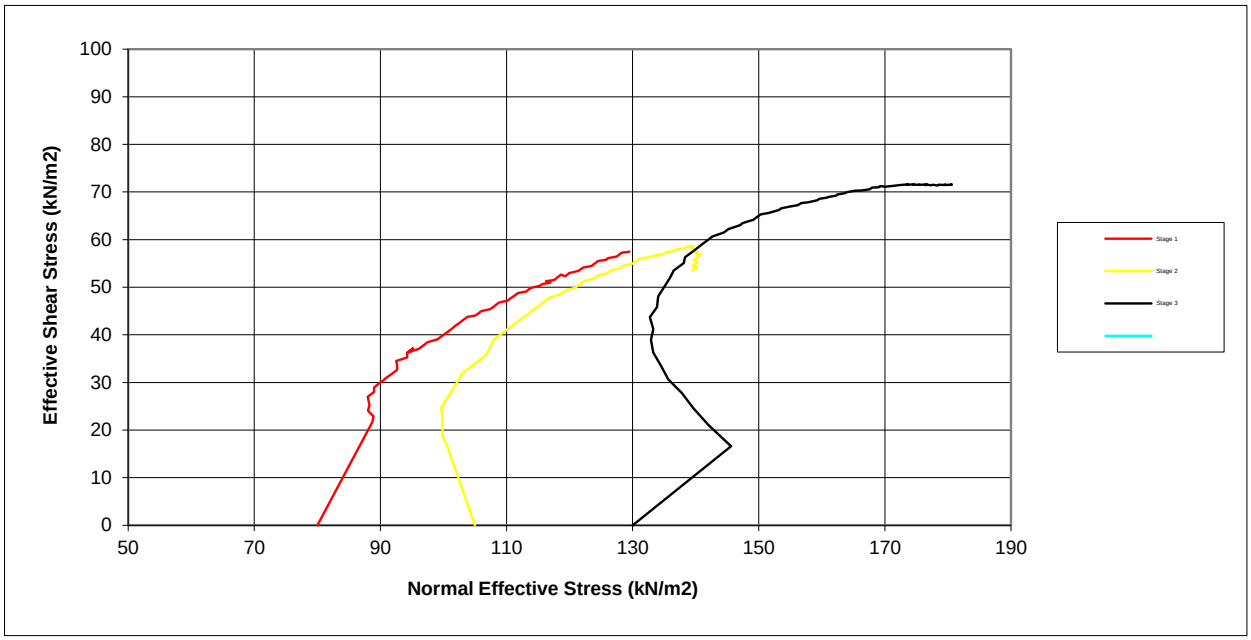
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

Shearing Stage



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Contract No

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GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		L05
Sample No.		
Depth	from(m)	8.00
Depth	to(m)	

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GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M04
Sample No.		
Depth	m	2.50
Date		08/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown silty soft CLAY

Initial Specimen Conditions

Height	mm	196.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1633.13
Mass	g	3195.90
Dry Mass	g	2585.10
Density	Mg/m^3	1.96
Dry Density	Mg/m^3	1.58
Moisture Content	%	24
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	18
Density	Mg/m^3	1.97
Dry Density	Mg/m^3	1.66

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BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M04
Sample No.		
Depth	m	2.5
Date		08/07/2017

Test Setup

Date started	01/07/2017
Date Finished	07/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P5
Cell Number	C5

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	400.00
Final Pore Pressure	kPa	392.00
Final B Value		0.97

Consolidation

Effective Pressure	kPa	25.00	50.00	75.00
Cell Pressure	kPa	400.00	400.00	400.00
Back Pressure	kPa	375.00	350.00	325.00
Excess Pore Pressure	kPa	16.00	26.00	30.00
Pore Pressure at End	kPa	375.00	350.00	325.00
Consolidated Volume	cm^3	1607.23	1585.33	1553.83
Consolidated Height	mm	194.96	188.04	178.46
Consolidated Area	mm^2	8244.19	8431.07	8707.55
Vol. Compressibility	m^2/MN	0.04229	0.03893	0.06114
Consolidation Coef.	$m^2/yr.$	0.35438	0.14319	0.09308

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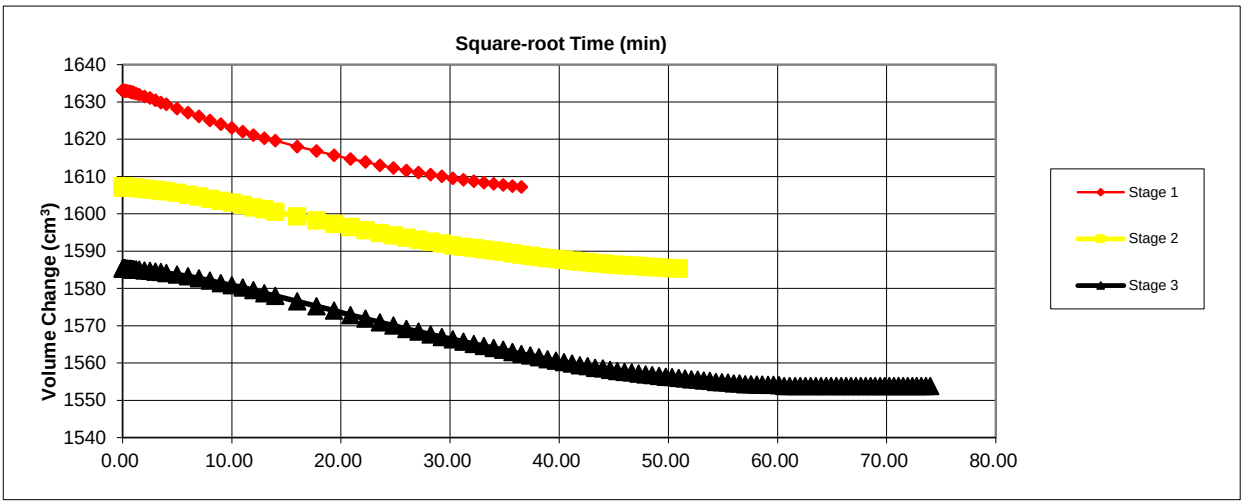
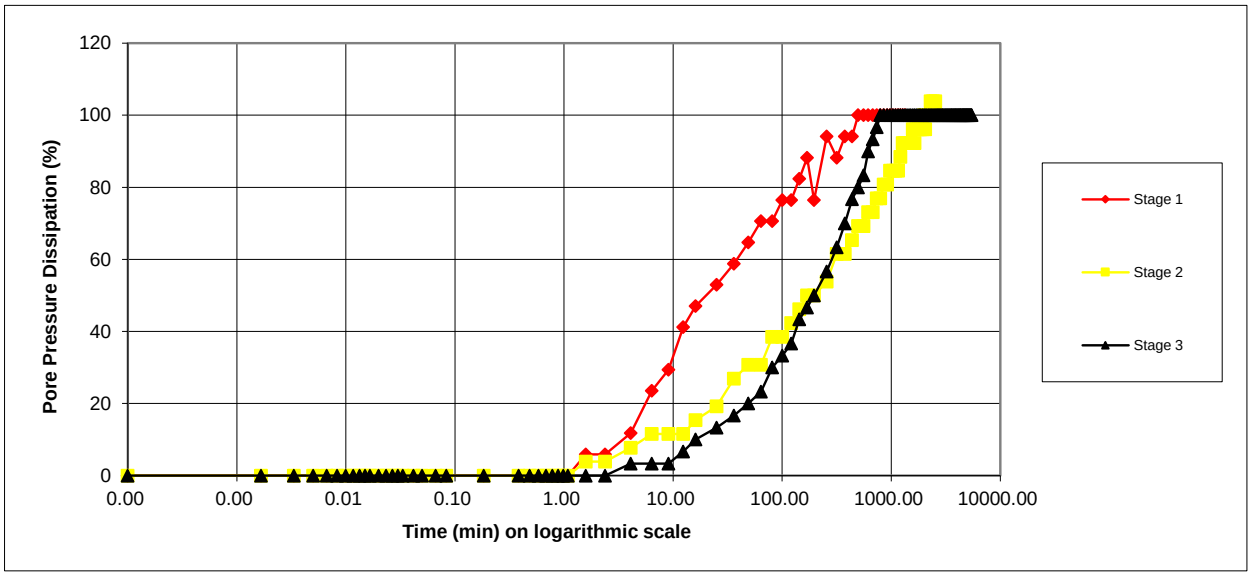
Borehole		M04
Sample No.		
Depth	m	2.5
Date		08/07/2017

Consolidation Stage





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BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M04
Sample No.		
Depth	m	2.5
Date		08/07/2017

Shearing

Initial Cell Pressure	kPa	400	400	400
Initial Pore Pressure	kPa	375	350	325
Rate of Strain	mm/min	0.0069	0.0027	0.0017
Max Deviator Stress				
Axial Strain		4.324	8.875	13.488
Axial Stress	kPa	45.841	90.62	117.25
Cor. Deviator stress	kPa	42.866	86.19	112.64
Effective Major Stress	kPa	61.866	126.19	165.64
Effective Minor Stress	kPa	20.000	40.00	53.00
Effective Stress Ratio		3.093	3.155	3.13
s'	kPa	40.933	83.10	109.32
t'	kPa	20.933	43.10	56.32
Max Effective Priciple Stress Ratio				
Axial Strain		1.980	6.572	11.230
Axial Stress	kPa	37.333	84.047	112.220
Cor. Deviator stress	kPa	37.036	79.856	107.735
Effective Major Stress	kPa	52.036	114.856	155.735
Effective Minor Stress	kPa	15.000	35.000	48.000
Effective Stress Ratio		3.469	3.282	3.244
s'	kPa	33.518	74.928	101.868
t'	kPa	18.518	39.928	53.868
Shear Resistance Angle	degs			31.0
Cohesion c'	kPa			2

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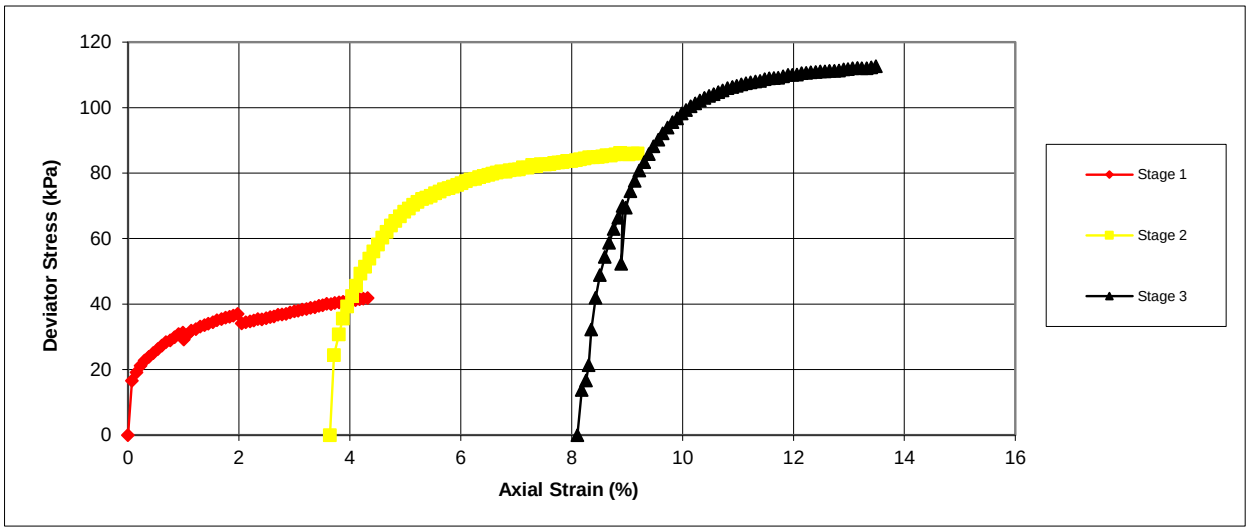
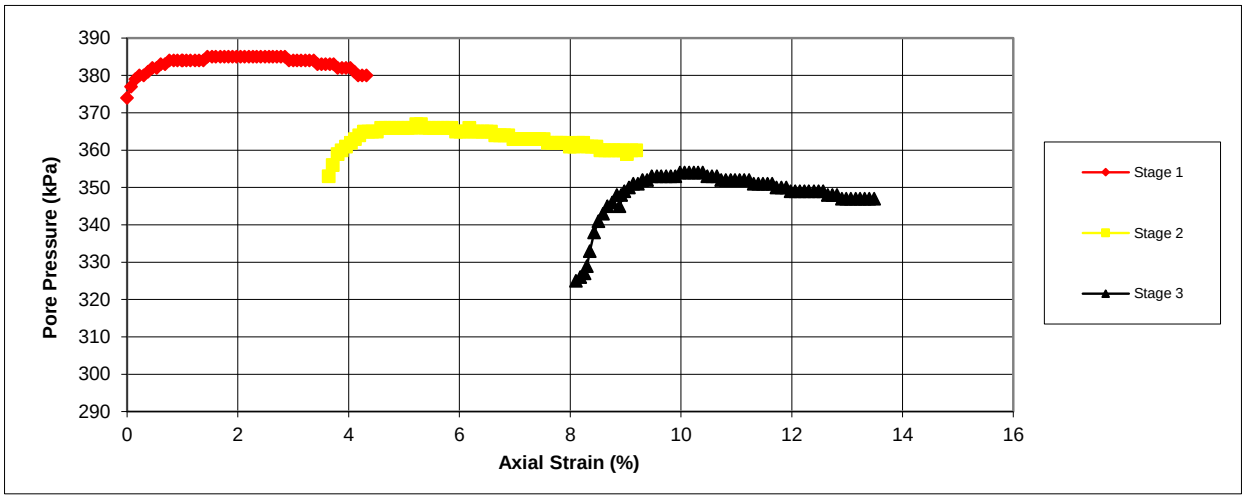
Sample No.		
Depth	m	2.5
Date		08/07/2017

Shearing Stage





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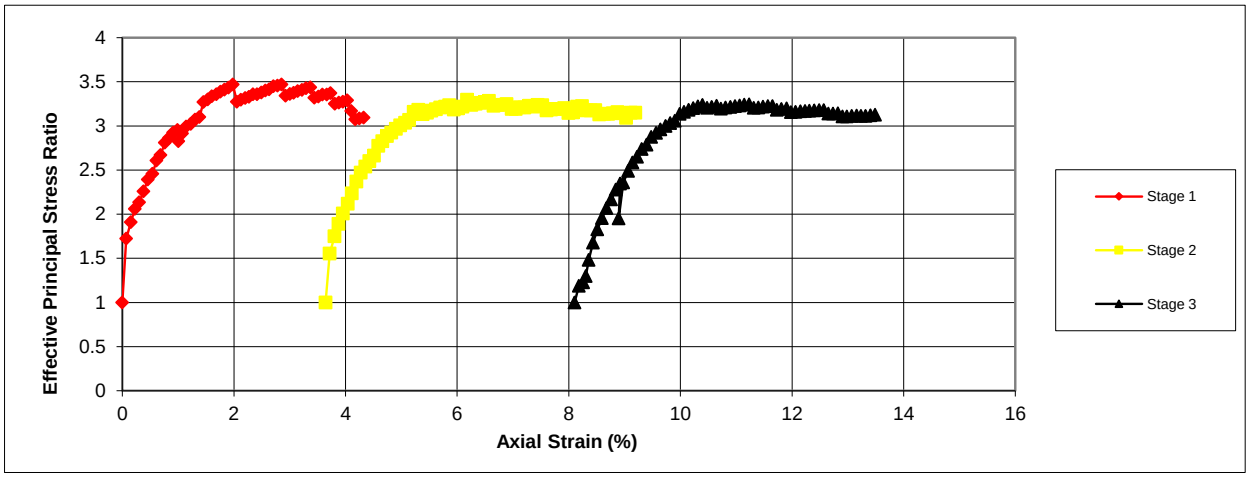
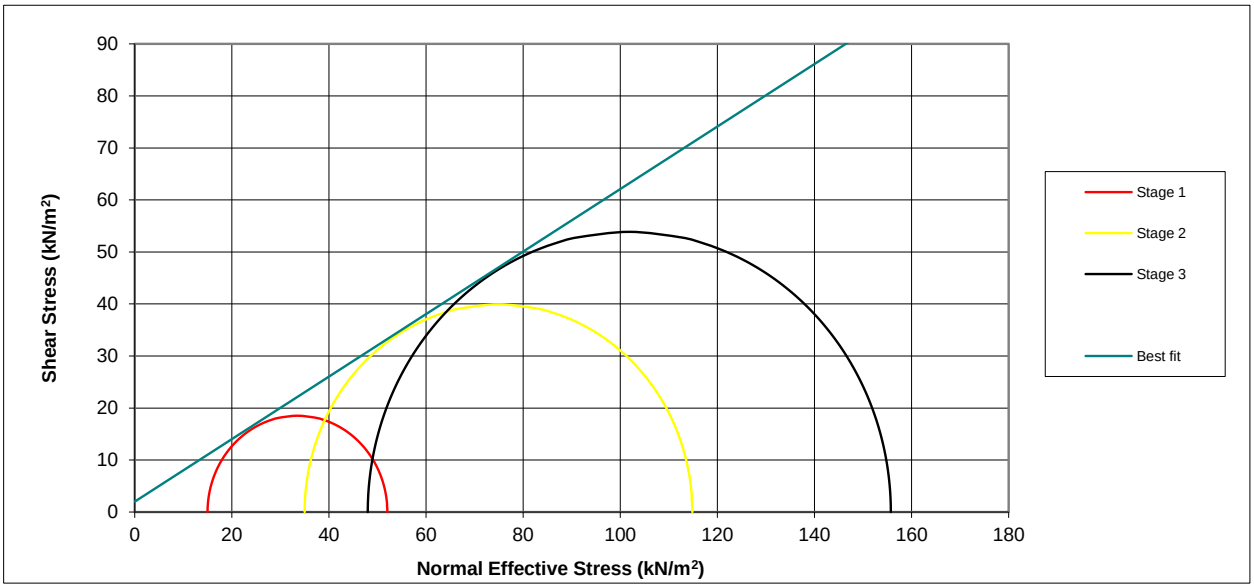
Sample No.		
Depth	m	2.5
Date		08/07/2017

Shearing Stage





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Specimen Details

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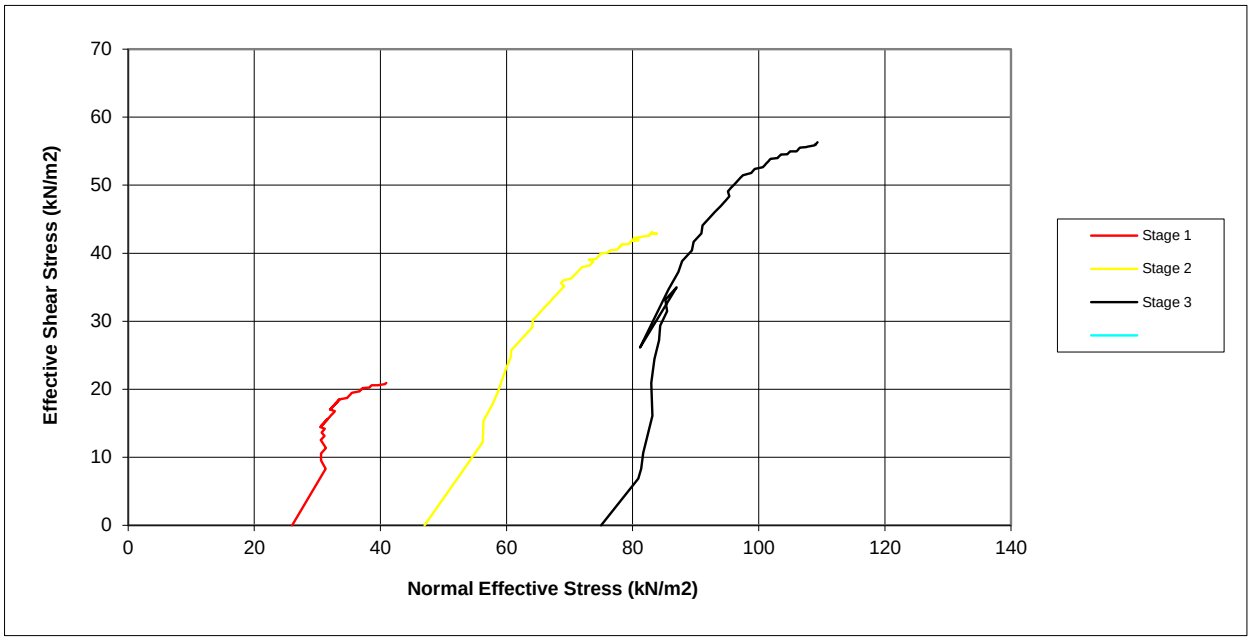
Sample No.		
Depth	m	2.5
Date		08/07/2017

Shearing Stage



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Borehole		M04
Sample No.		
Depth	m	2.5
Date		08/07/2017

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Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey clayey firm SILT

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	3370.00
Dry Mass	g	2541.80
Density	Mg/m^3	1.94
Dry Density	Mg/m^3	1.47
Moisture Content	%	33
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	27
Density	Mg/m^3	1.94
Dry Density	Mg/m^3	1.53

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Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Test Setup

Date started	29/06/2017
Date Finished	26/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P11
Cell Number	C11

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	300.00
Final Pore Pressure	kPa	297.00
Final B Value		0.97

Consolidation

Effective Pressure	kPa	40.00	65.00	90.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	260.00	235.00	210.00
Excess Pore Pressure	kPa	37.00	29.00	33.00
Pore Pressure at End	kPa	260.00	235.00	210.00
Consolidated Volume	cm^3	1695.55	1679.85	1662.45
Consolidated Height	mm	202.53	195.46	188.56
Consolidated Area	mm^2	8372.64	8594.31	8816.71
Vol. Compressibility	m^2/MN	0.08301	0.03940	0.04932
Consolidation Coef.	$m^2/yr.$	0.92191	0.41331	0.25295

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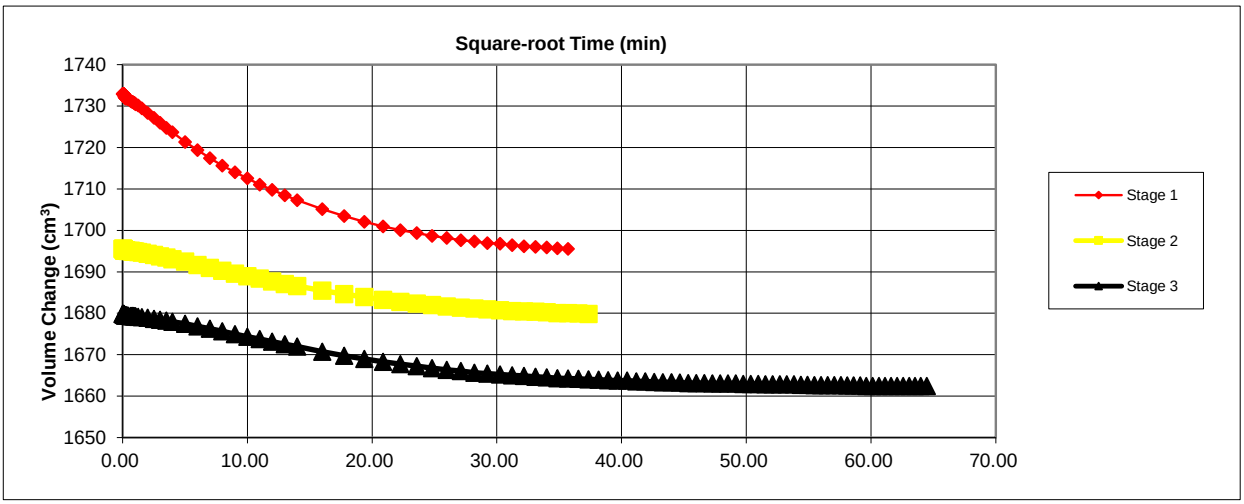
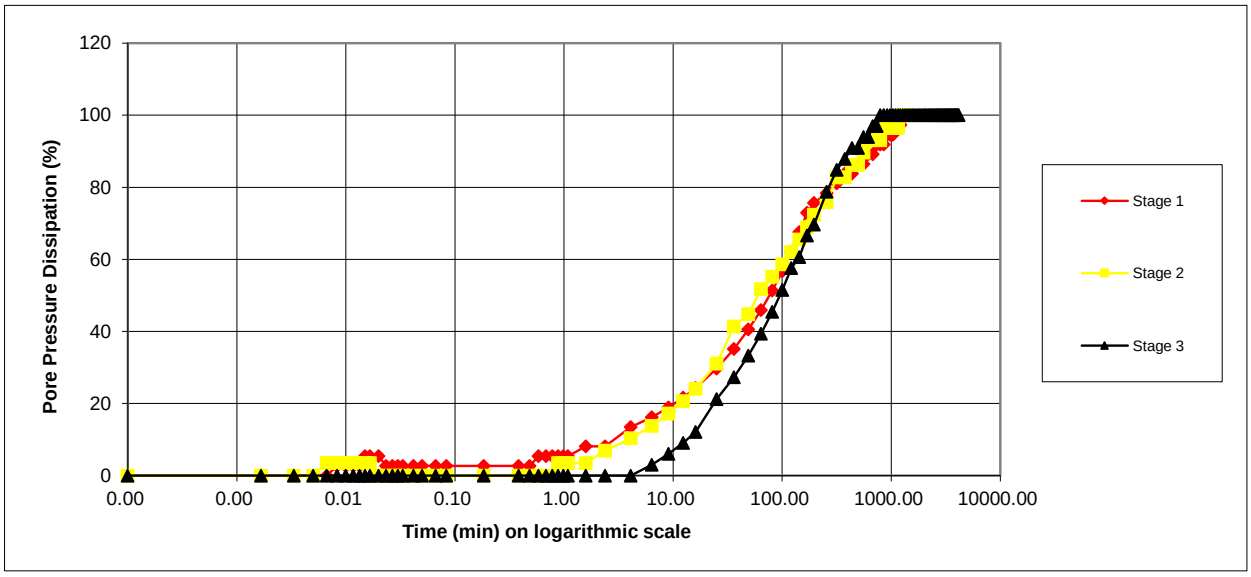
Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Consolidation Stage





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Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	260	235	210
Rate of Strain	mm/min	0.0182	0.0079	0.0046
Max Deviator Stress				
Axial Strain		4.656	7.548	11.965
Axial Stress	kPa	111.712	191.88	229.22
Cor. Deviator stress	kPa	108.717	187.59	224.70
Effective Major Stress	kPa	145.717	262.59	327.70
Effective Minor Stress	kPa	38.000	75.00	103.00
Effective Stress Ratio		3.835	3.501	3.18
s'	kPa	91.858	168.80	215.35
t'	kPa	53.858	93.80	112.35
Max Effective Priciple Stress Ratio				
Axial Strain		3.659	5.629	8.524
Axial Stress	kPa	99.303	162.623	192.556
Cor. Deviator stress	kPa	95.382	158.536	188.239
Effective Major Stress	kPa	129.382	221.536	262.239
Effective Minor Stress	kPa	34.000	63.000	74.000
Effective Stress Ratio		3.805	3.516	3.544
s'	kPa	81.691	142.268	168.120
t'	kPa	47.691	79.268	94.120
Shear Resistance Angle	degs			32.5
Cohesion c'	kPa			4

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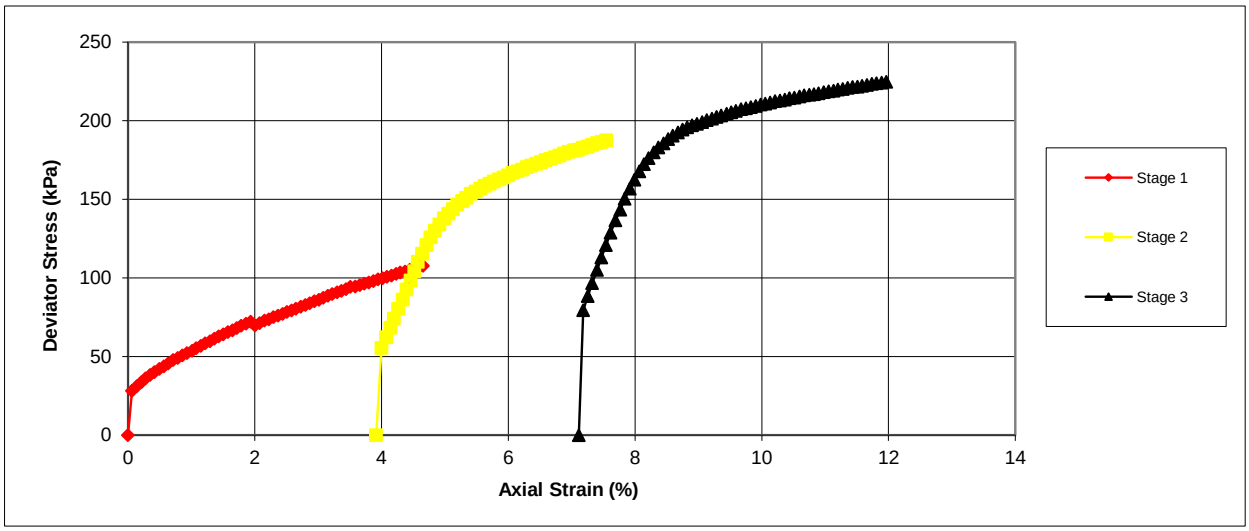
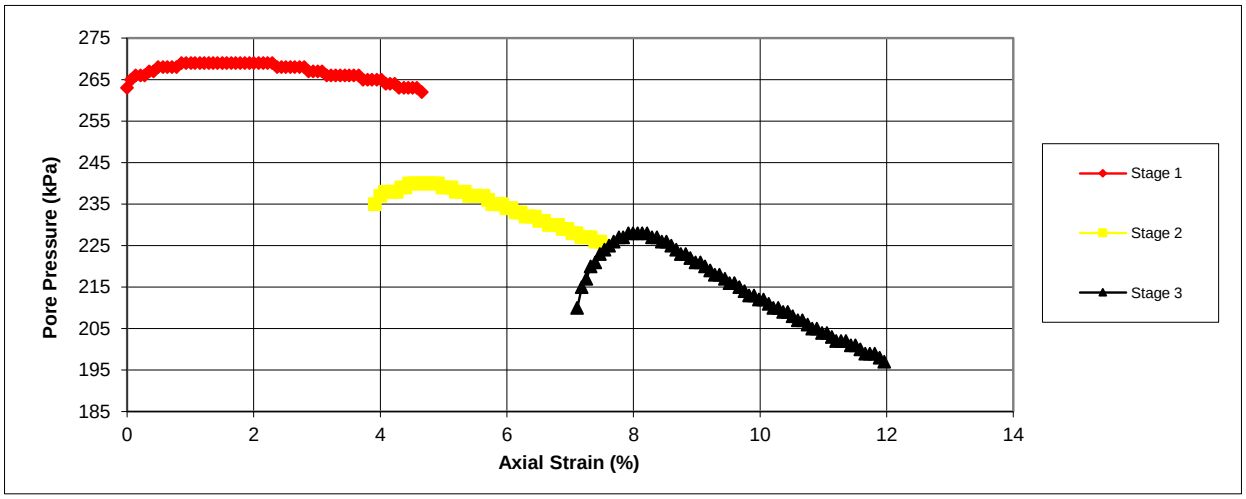
Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Shearing Stage





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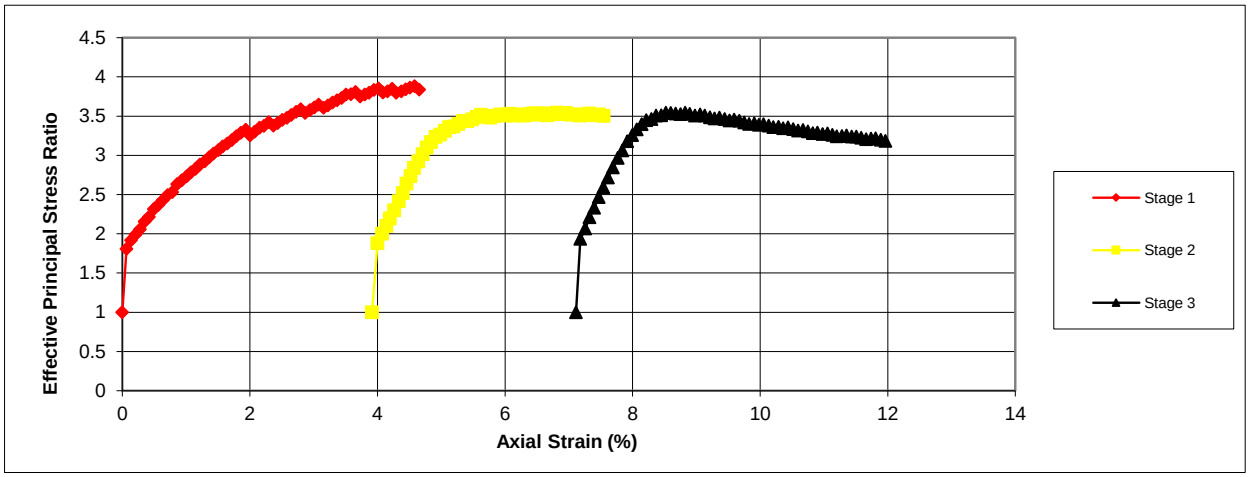
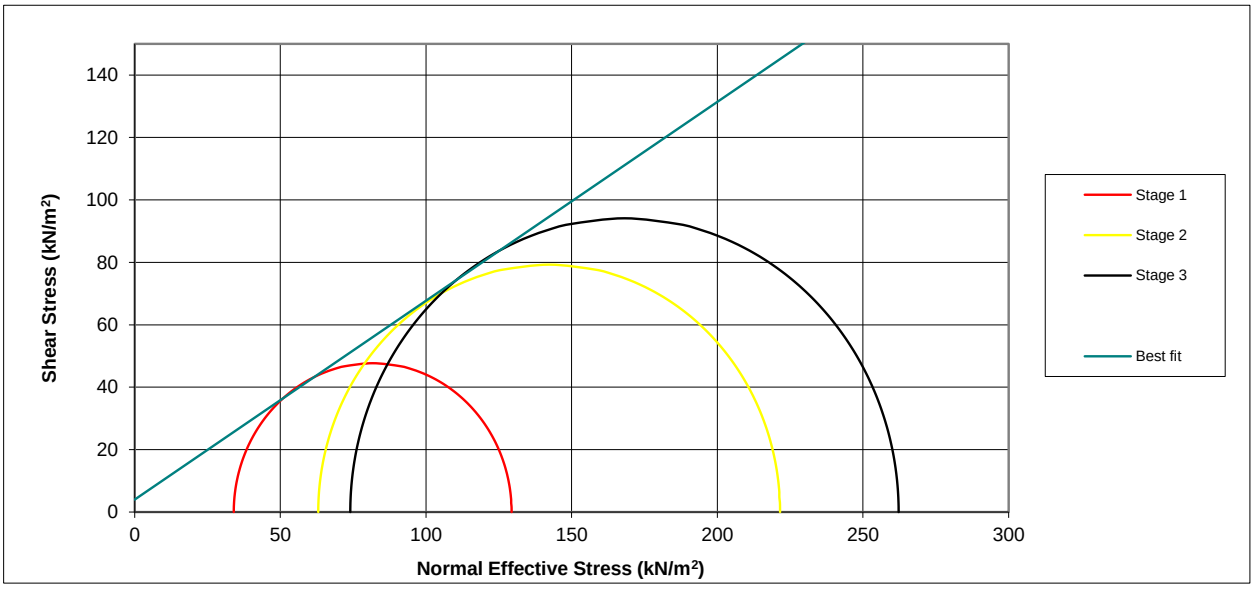
Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Shearing Stage





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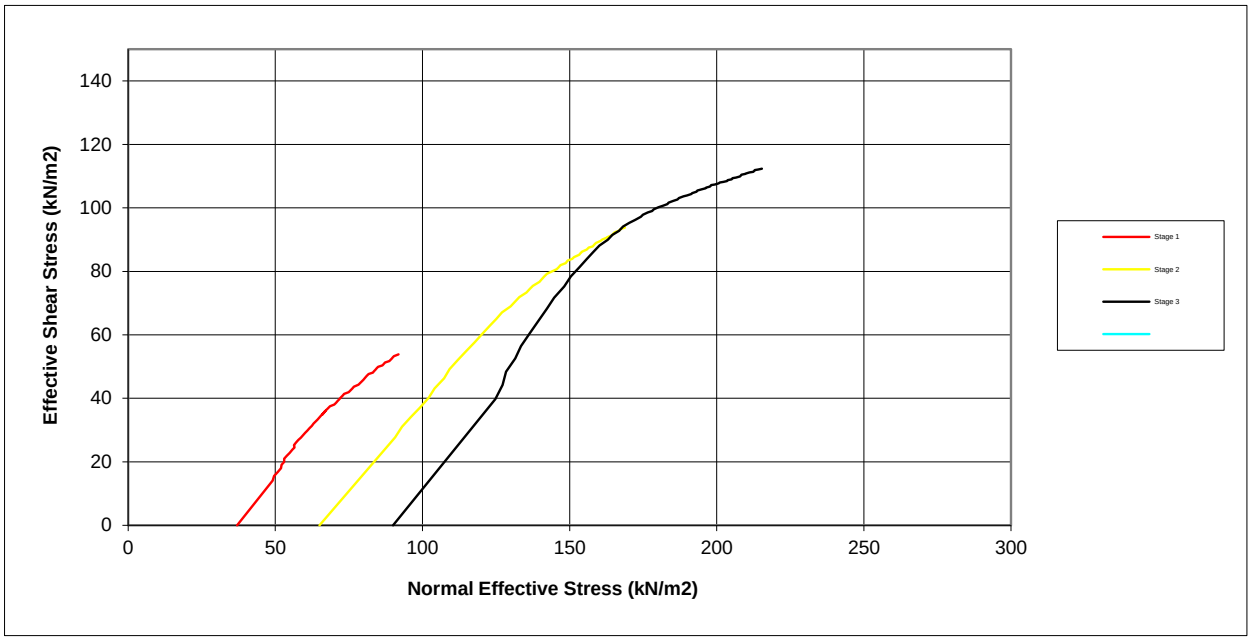
Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

Shearing Stage



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Specimen Details

Borehole		M04
Sample No.		
Depth	m	4
Date		28/07/2017

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Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	
Date		18/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey clayey soft SILT

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	3318.80
Dry Mass	g	2541.80
Density	Mg/m^3	1.92
Dry Density	Mg/m^3	1.47
Moisture Content	%	31
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	27
Density	Mg/m^3	2.17
Dry Density	Mg/m^3	1.71

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Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Test Setup

Date started	29/06/2017
Date Finished	17/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P8
Cell Number	C8

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	193.00
Final B Value		0.99

Consolidation

Effective Pressure	kPa	45.00	75.00	95.00
Cell Pressure	kPa	200.00	200.00	200.00
Back Pressure	kPa	155.00	125.00	105.00
Excess Pore Pressure	kPa	38.00	53.00	70.00
Pore Pressure at End	kPa	155.00	125.00	105.00
Consolidated Volume	cm^3	1547.75	1506.55	1482.45
Consolidated Height	mm	196.73	192.38	183.27
Consolidated Area	mm^2	7889.64	7832.49	8089.58
Vol. Compressibility	m^2/MN	0.68948	0.21295	0.15235
Consolidation Coef.	$m^2/yr.$	3.52557	0.62357	6.07335

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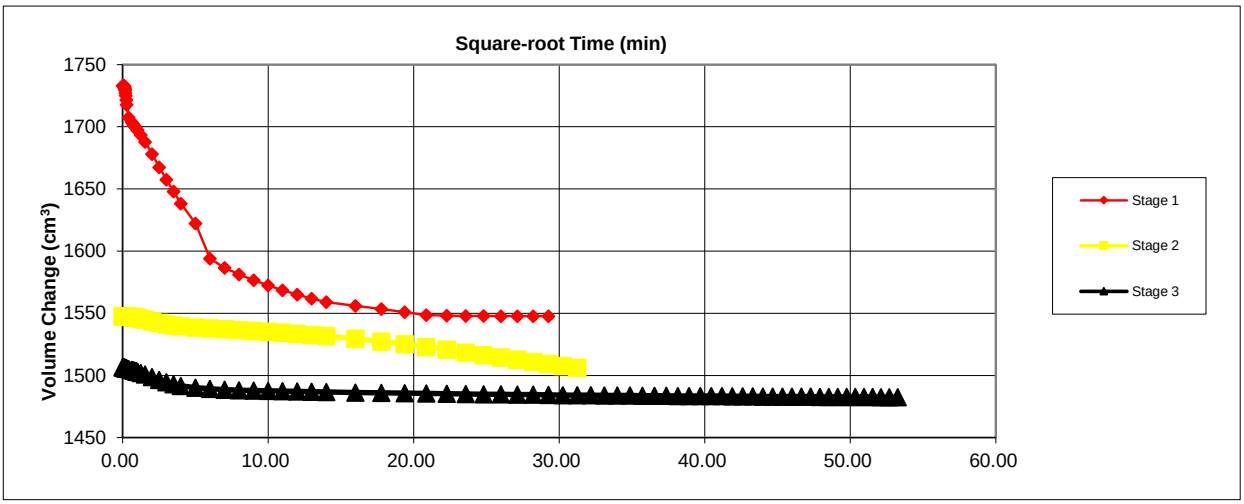
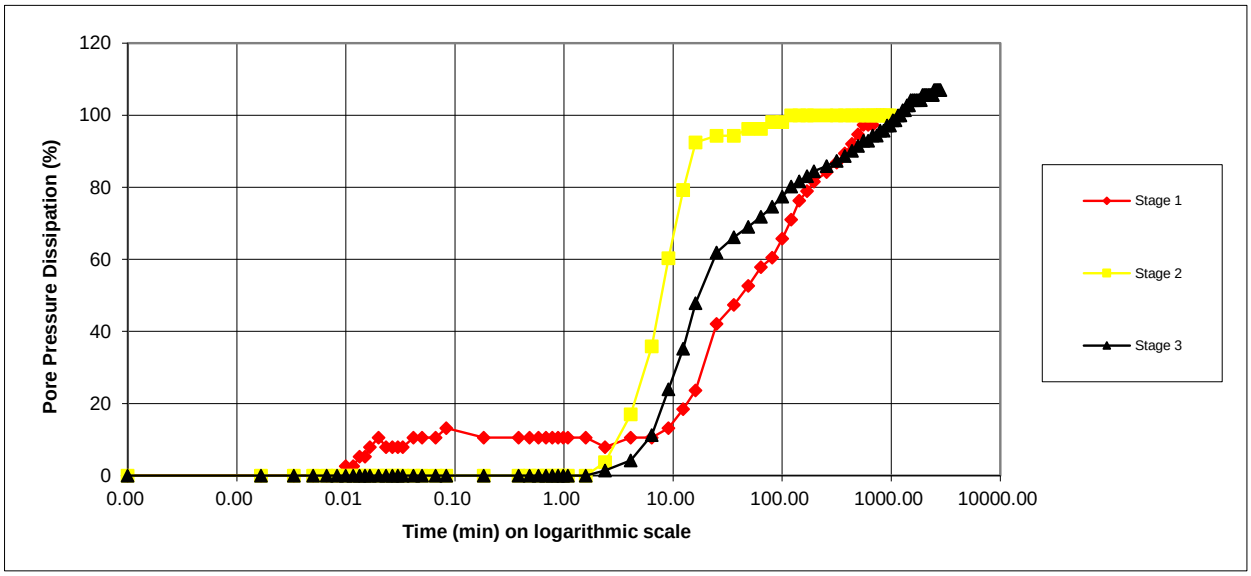
Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Consolidation Stage





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BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	200	200	200
Initial Pore Pressure	kPa	155	125	105
Rate of Strain	mm/min	0.0676	0.0117	0.1085
Max Deviator Stress				
Axial Strain		5.815	10.095	14.709
Axial Stress	kPa	259.170	439.50	498.48
Cor. Deviator stress	kPa	256.088	434.95	475.80
Effective Major Stress	kPa	334.088	579.95	640.80
Effective Minor Stress	kPa	79.000	145.00	165.00
Effective Stress Ratio		4.229	4.000	3.88
s'	kPa	206.544	362.48	402.90
t'	kPa	127.544	217.48	237.90
Max Effective Priciple Stress Ratio				
Axial Strain		5.815	9.944	13.083
Axial Stress	kPa	259.170	434.982	473.053
Cor. Deviator stress	kPa	255.088	430.447	468.470
Effective Major Stress	kPa	334.088	573.447	616.470
Effective Minor Stress	kPa	79.000	143.000	148.000
Effective Stress Ratio		4.229	4.010	4.165
s'	kPa	206.544	358.223	382.235
t'	kPa	127.544	215.223	234.235
Shear Resistance Angle	degs			38.0
Cohesion c'	kPa			0

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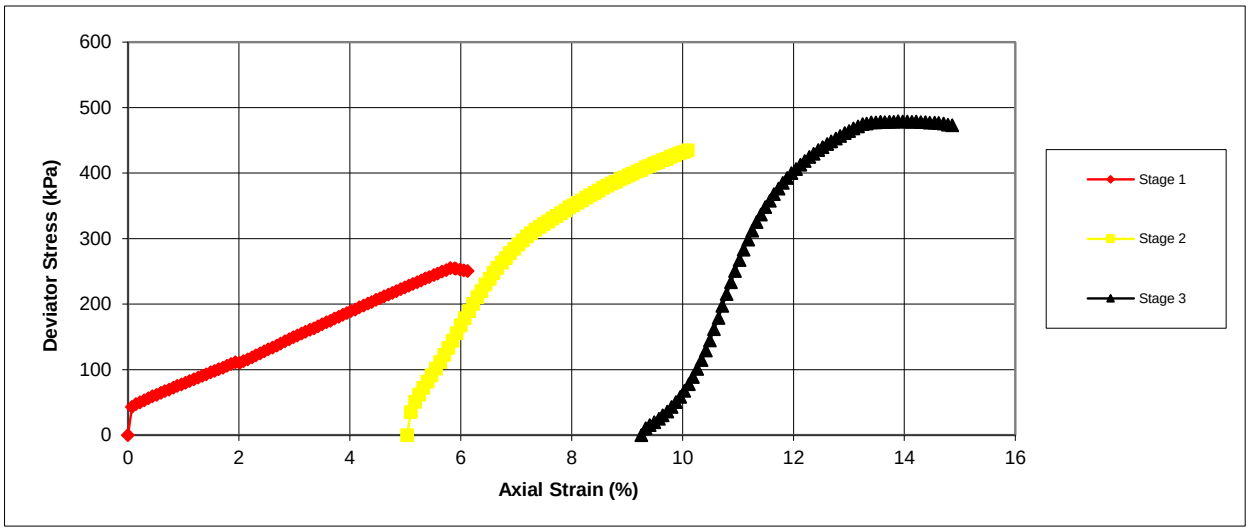
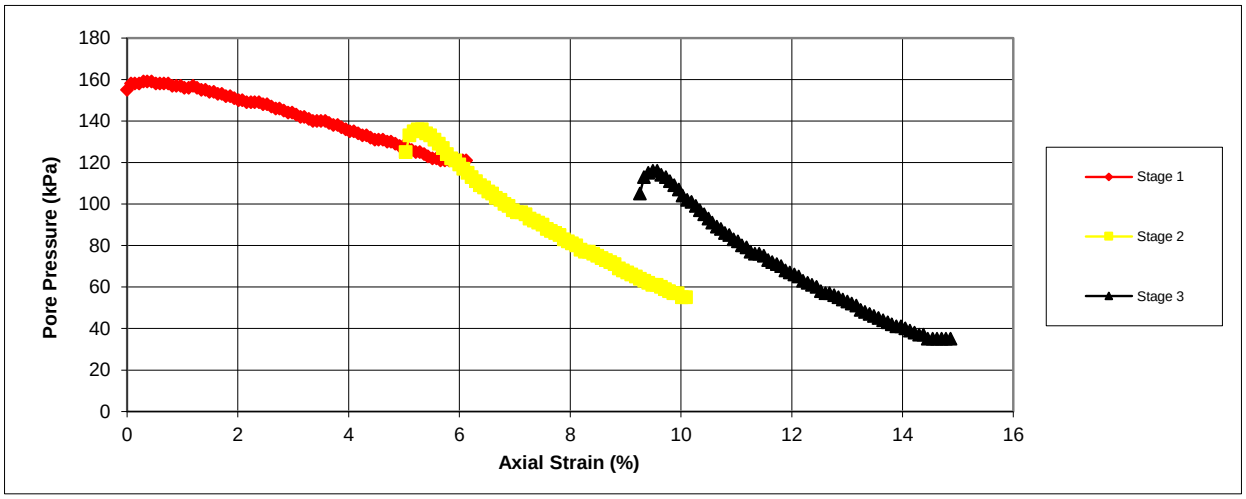
Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Shearing Stage





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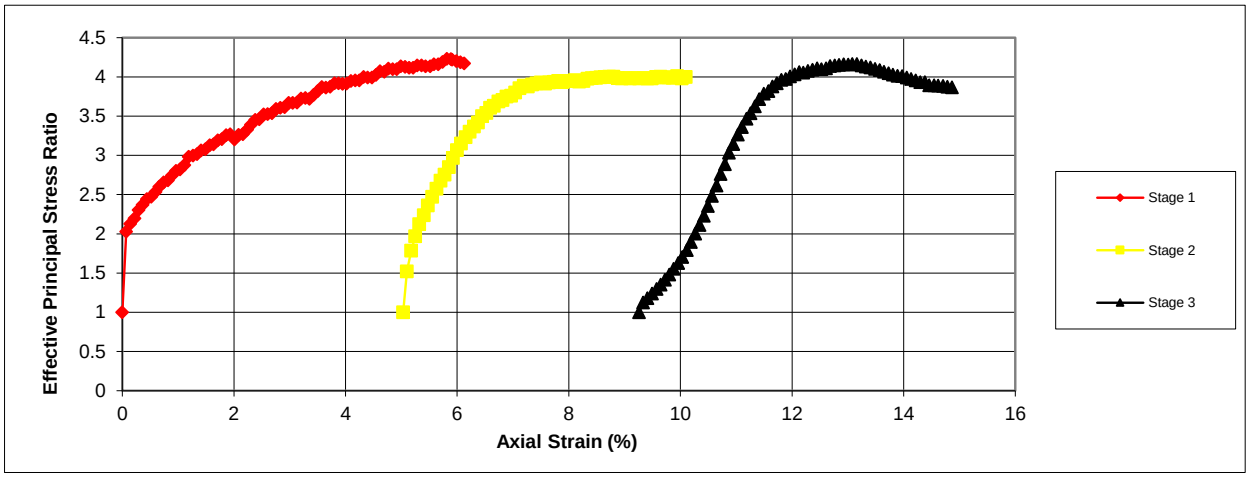
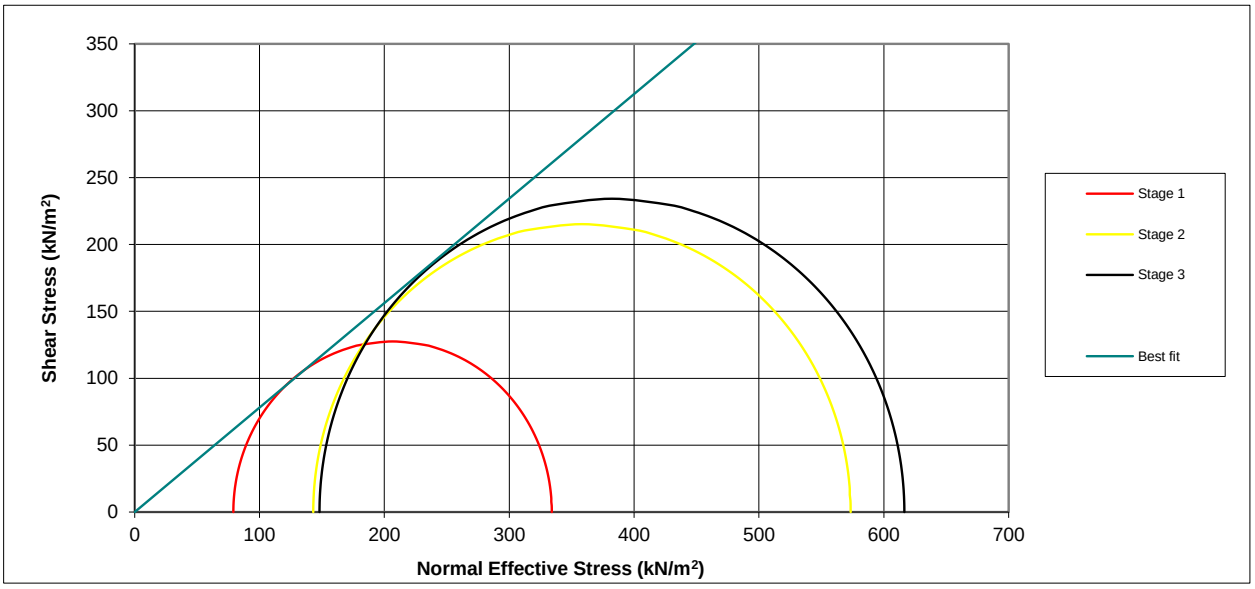
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Shearing Stage





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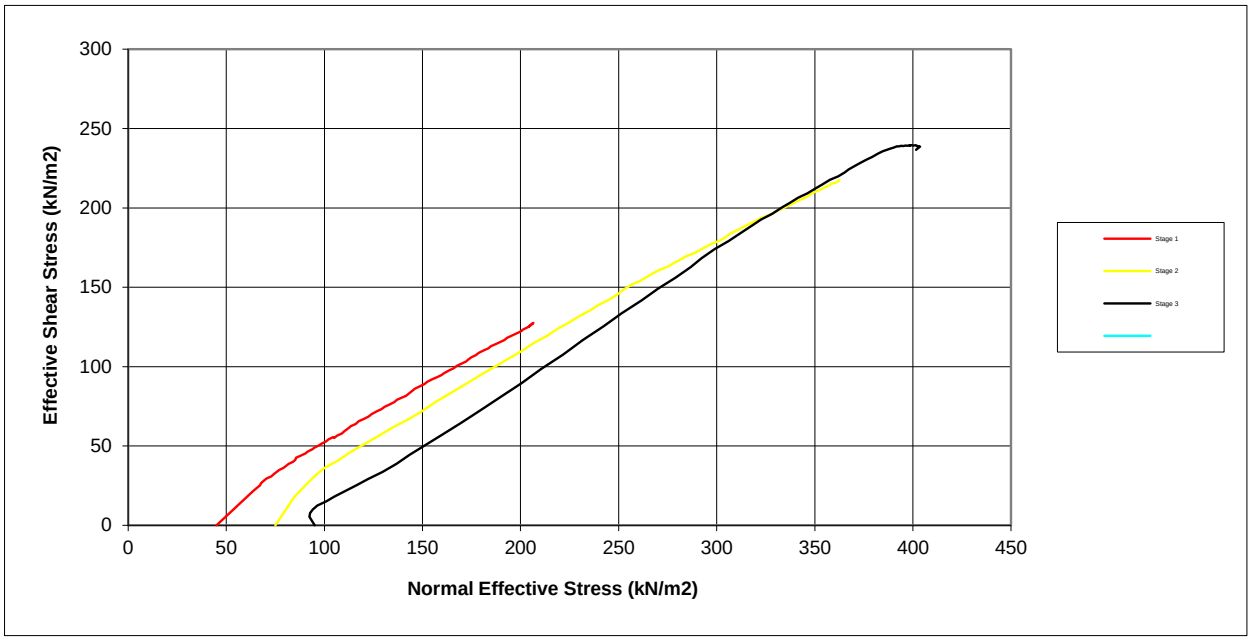
Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		M06
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	

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Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown clayey firm SILT

Initial Specimen Conditions

Height	mm	203.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1691.45
Mass	g	2798.40
Dry Mass	g	1887.00
Density	Mg/m^3	1.65
Dry Density	Mg/m^3	1.12
Moisture Content	%	48
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	36
Density	Mg/m^3	1.56
Dry Density	Mg/m^3	1.15

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Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

Test Setup

Date started	29/06/2017
Date Finished	27/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P4
Cell Number	C4

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	300.00
Final Pore Pressure	kPa	300.00
Final B Value		0.95

Consolidation

Effective Pressure	kPa	50.00	75.00	100.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	250.00	225.00	200.00
Excess Pore Pressure	kPa	50.00	50.00	48.00
Pore Pressure at End	kPa	250.00	225.00	200.00
Consolidated Volume	cm^3	1678.05	1661.45	1645.55
Consolidated Height	mm	202.46	195.65	188.26
Consolidated Area	mm^2	8288.28	8492.04	8741.03
Vol. Compressibility	m^2/MN	0.03169	0.04397	0.04785
Consolidation Coef.	$m^2/yr.$	7.35447	0.47716	0.15250

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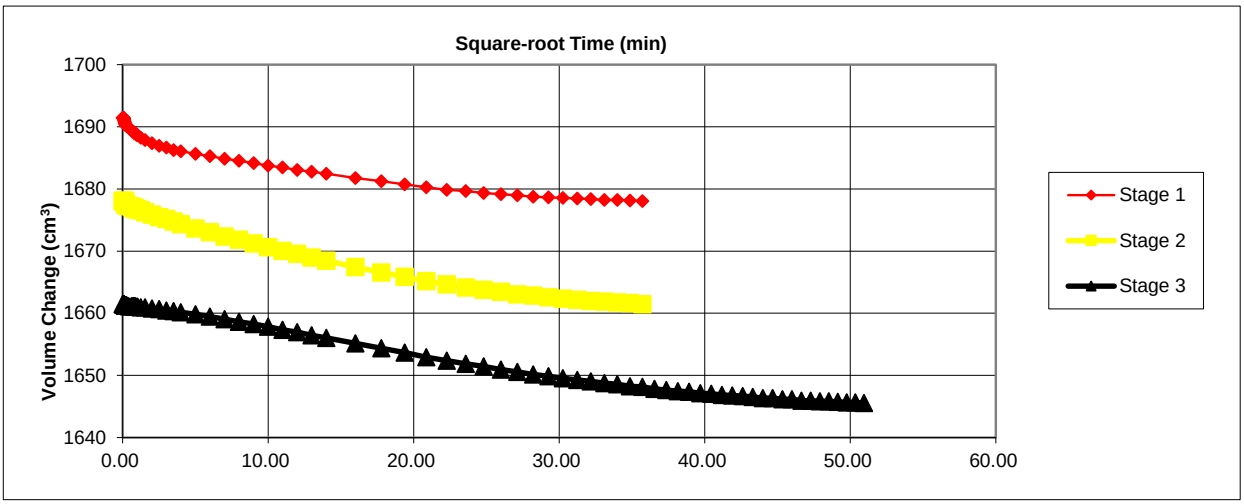
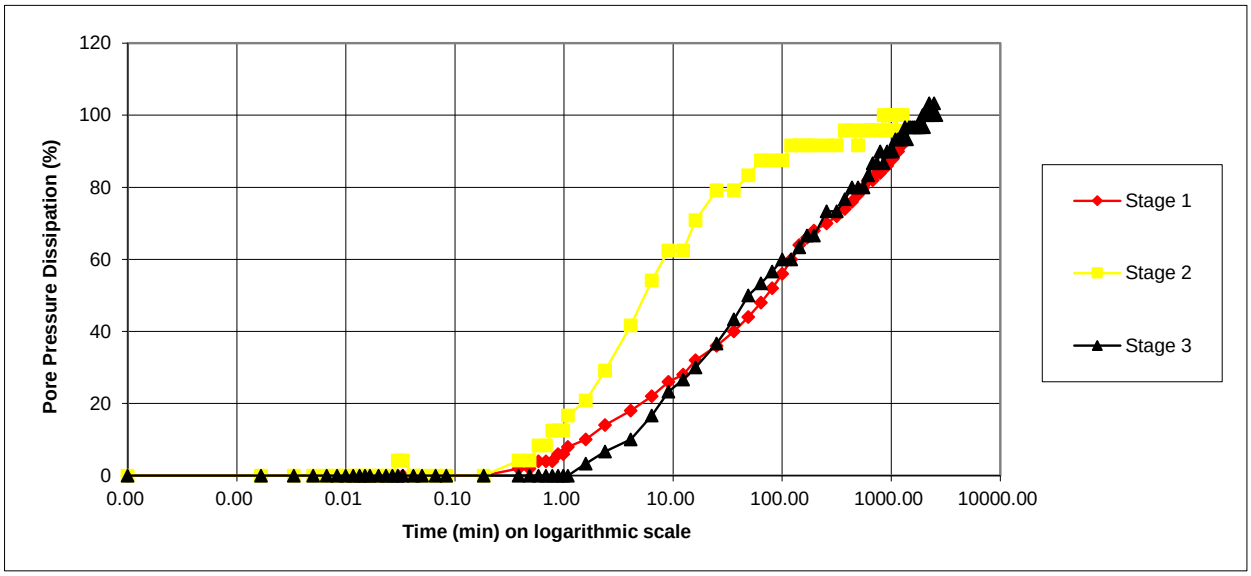
Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

Consolidation Stage





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Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	250	225	200
Rate of Strain	mm/min	0.1479	0.0093	0.0029
Max Deviator Stress				
Axial Strain		3.843	7.470	11.003
Axial Stress	kPa	52.787	83.07	101.79
Cor. Deviator stress	kPa	49.849	78.78	97.32
Effective Major Stress	kPa	86.849	134.78	169.32
Effective Minor Stress	kPa	38.000	56.00	72.00
Effective Stress Ratio		2.285	2.407	2.35
s'	kPa	62.424	95.39	120.66
t'	kPa	24.424	39.39	48.66
Max Effective Priciple Stress Ratio				
Axial Strain		1.408	6.580	10.153
Axial Stress	kPa	45.202	80.132	99.821
Cor. Deviator stress	kPa	45.054	75.940	95.401
Effective Major Stress	kPa	78.054	129.940	165.401
Effective Minor Stress	kPa	33.000	54.000	70.000
Effective Stress Ratio		2.365	2.406	2.363
s'	kPa	55.527	91.970	117.700
t'	kPa	22.527	37.970	47.700
Shear Resistance Angle	degs			24.0
Cohesion c'	kPa			0

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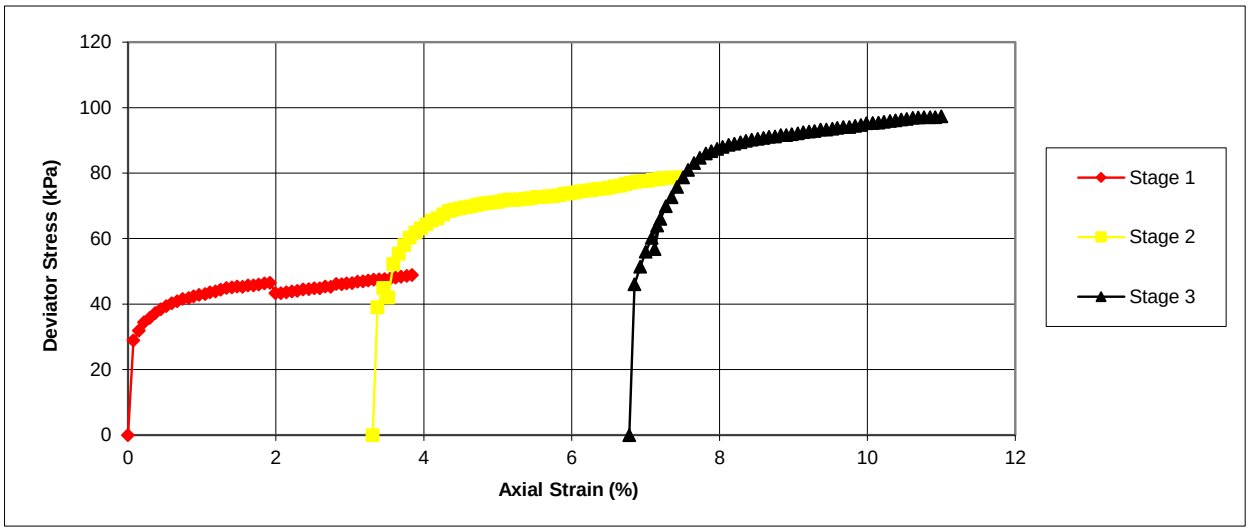
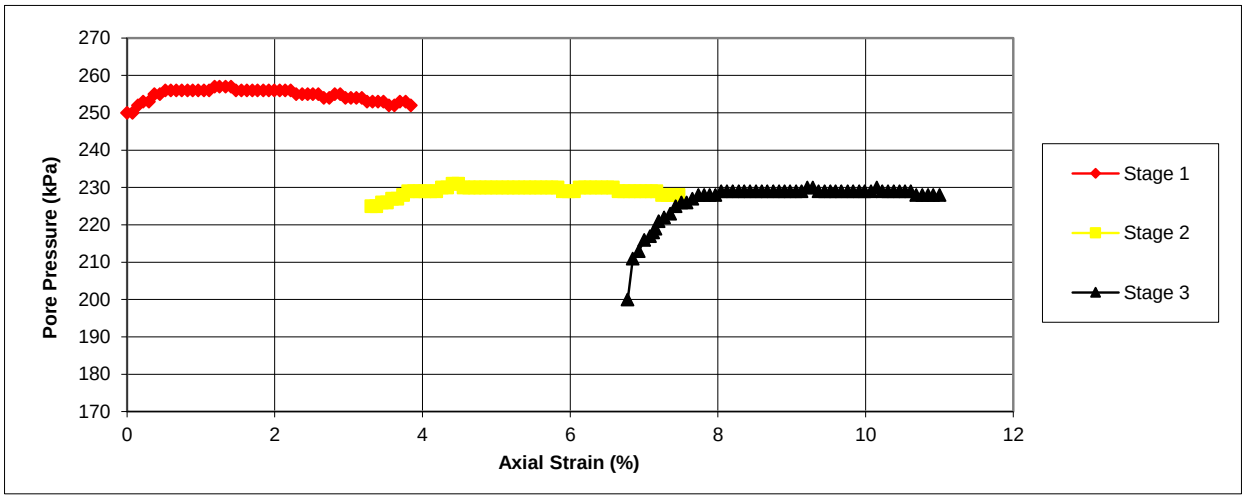
Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

Shearing Stage





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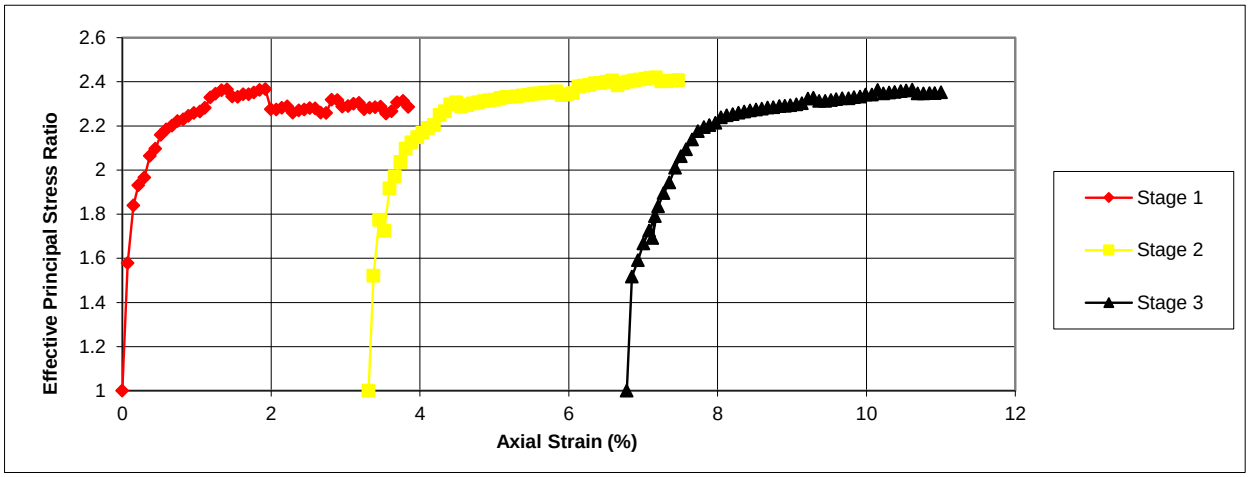
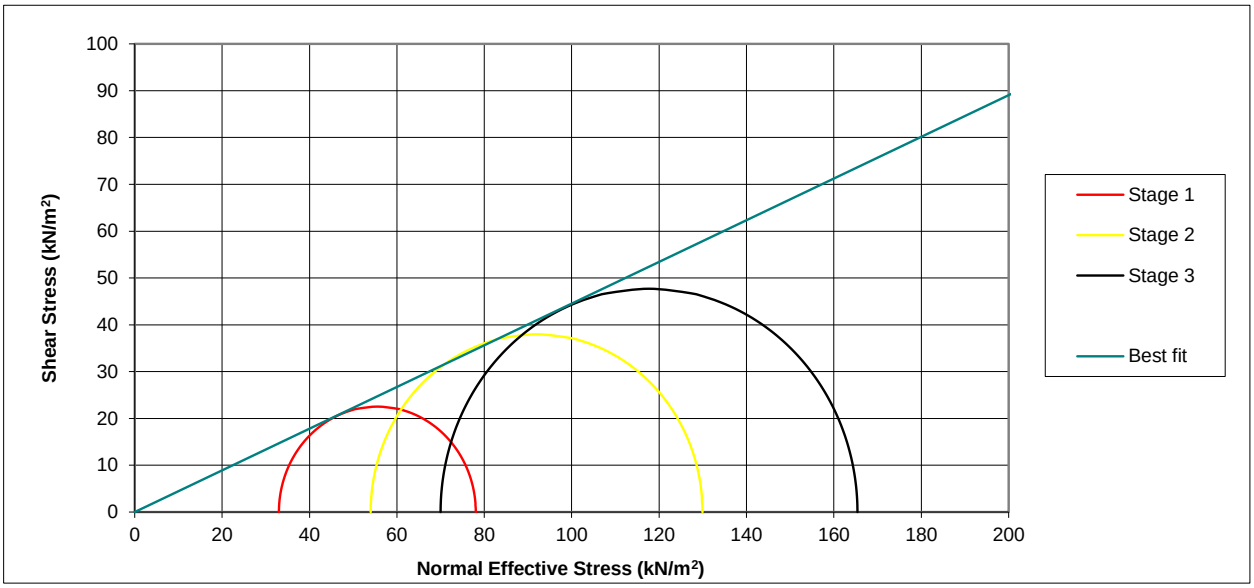
Sample No.		
Depth	m	5
Date		28/07/2017

Shearing Stage





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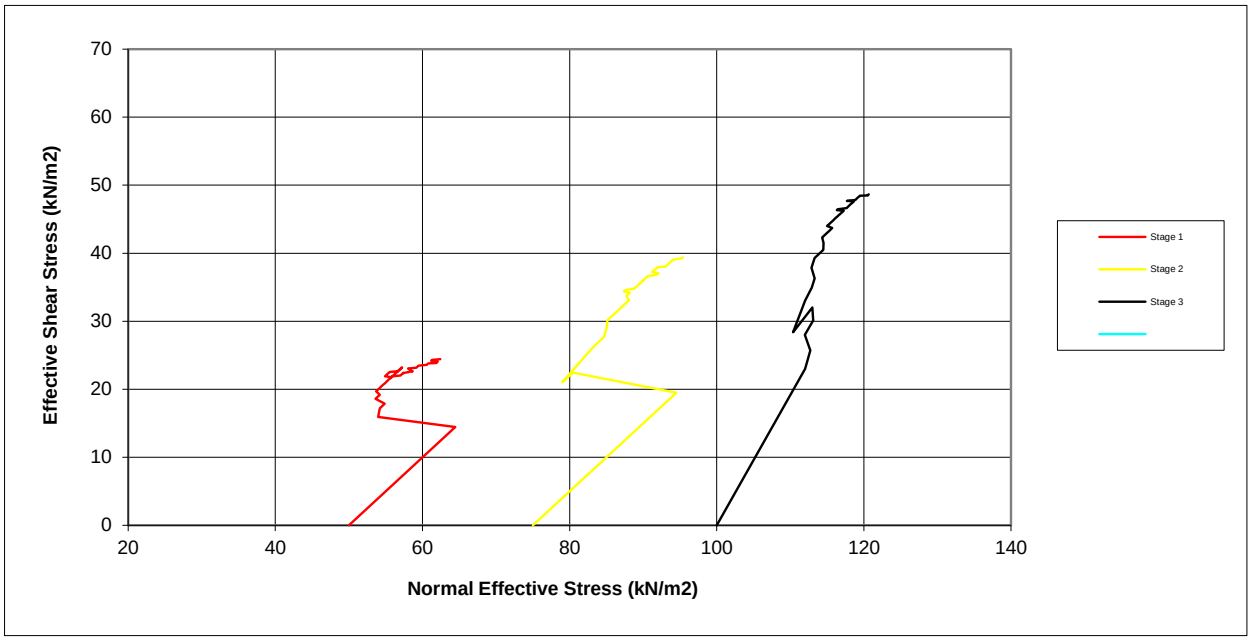
Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

Shearing Stage



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Specimen Details

Borehole		M08
Sample No.		
Depth	m	5
Date		28/07/2017

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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	
Date		27/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown clayey firm SILT

Initial Specimen Conditions

Height	mm	195.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1656.50
Mass	g	2833.10
Dry Mass	g	1946.20
Density	Mg/m^3	1.71
Dry Density	Mg/m^3	1.17
Moisture Content	%	46
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	35
Density	Mg/m^3	1.77
Dry Density	Mg/m^3	1.31

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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Test Setup

Date started	11/07/2017
Date Finished	26/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P6
Cell Number	C6

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	199.00
Final B Value		1.01

Consolidation

Effective Pressure	kPa	30.00	55.00	80.00
Cell Pressure	kPa	200.00	200.00	200.00
Back Pressure	kPa	170.00	145.00	120.00
Excess Pore Pressure	kPa	28.00	33.00	61.00
Pore Pressure at End	kPa	120.00	145.00	120.00
Consolidated Volume	cm^3	1575.89	1522.79	1481.87
Consolidated Height	mm	191.84	185.51	175.30
Consolidated Area	mm^2	8219.28	8210.69	8454.81
Vol. Compressibility	m^2/MN	0.40552	0.23238	0.22393
Consolidation Coef.	$m^2/yr.$	0.59488	0.61861	0.67482

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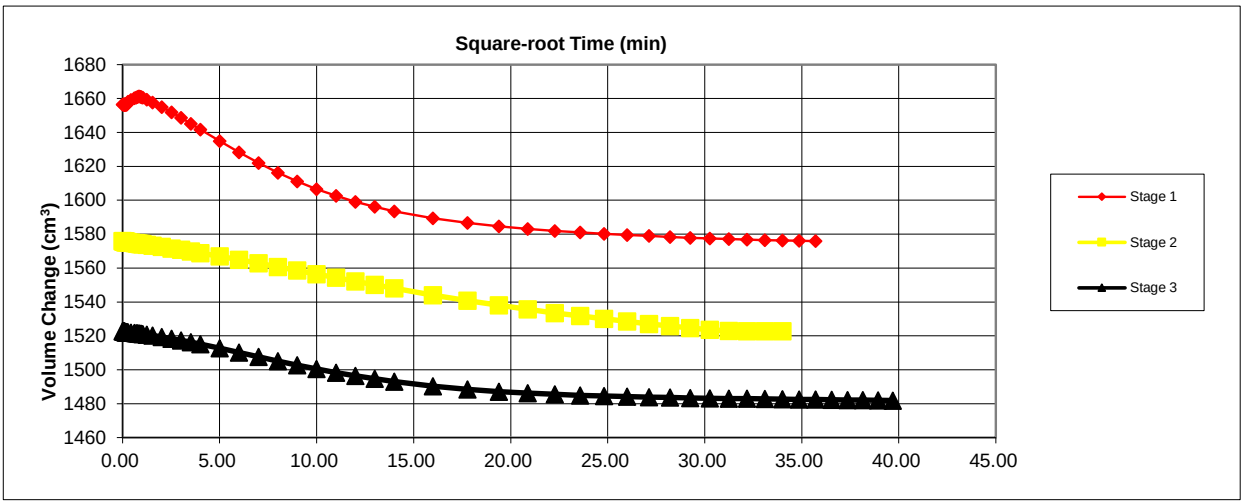
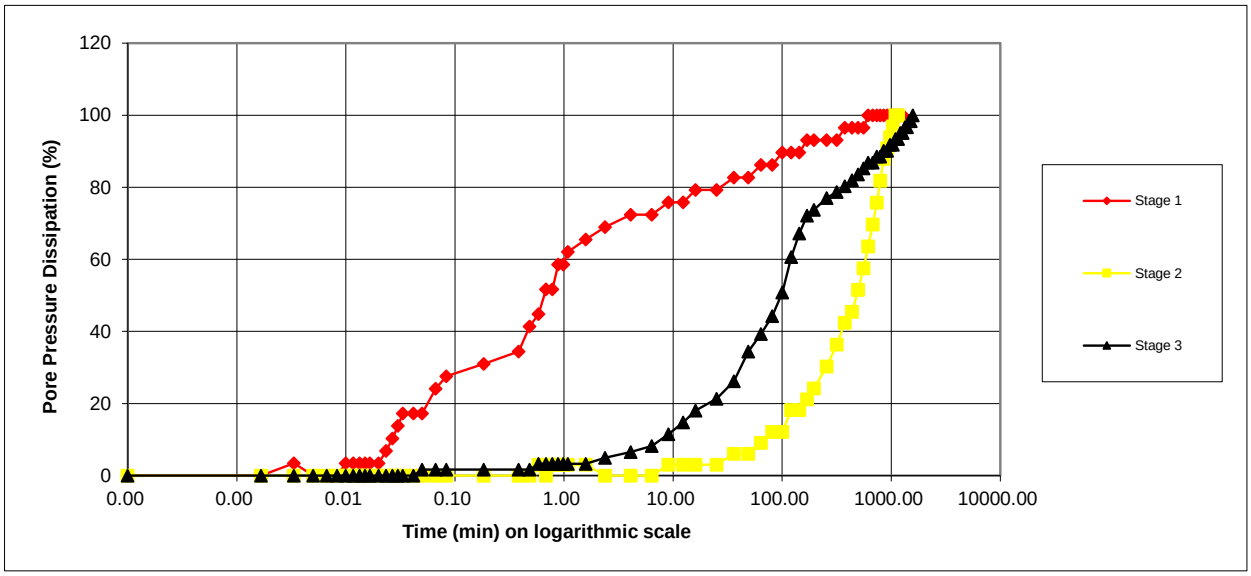
Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Consolidation Stage





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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	200	200	200
Initial Pore Pressure	kPa	170	145	120
Rate of Strain	mm/min	0.0111	0.0112	0.0115
Max Deviator Stress				
Axial Strain		4.389	10.725	15.789
Axial Stress	kPa	55.603	121.79	167.00
Cor. Deviator stress	kPa	52.628	117.17	162.26
Effective Major Stress	kPa	66.628	163.17	228.26
Effective Minor Stress	kPa	15.000	46.00	66.00
Effective Stress Ratio		4.442	3.547	3.46
s'	kPa	40.814	104.59	147.13
t'	kPa	25.814	58.59	81.13
Max Effective Priciple Stress Ratio				
Axial Strain		4.009	9.529	14.763
Axial Stress	kPa	53.839	115.663	161.978
Cor. Deviator stress	kPa	49.893	111.171	157.295
Effective Major Stress	kPa	62.893	155.171	219.295
Effective Minor Stress	kPa	13.000	44.000	62.000
Effective Stress Ratio		4.838	3.527	3.537
s'	kPa	37.946	99.585	140.648
t'	kPa	24.946	55.585	78.648
Shear Resistance Angle	degs			30.8
Cohesion c'	kPa			7

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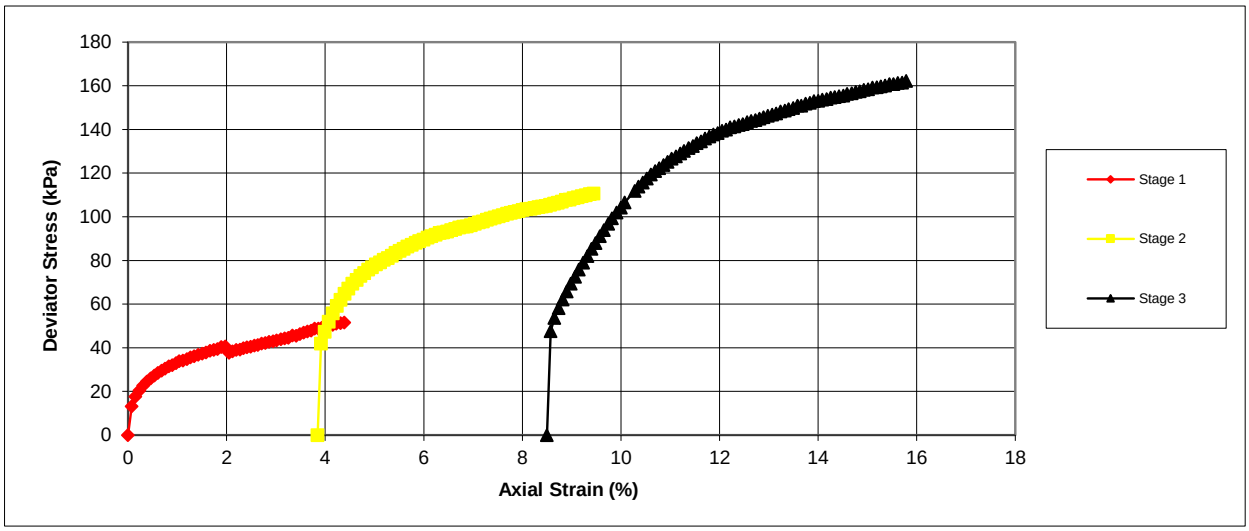
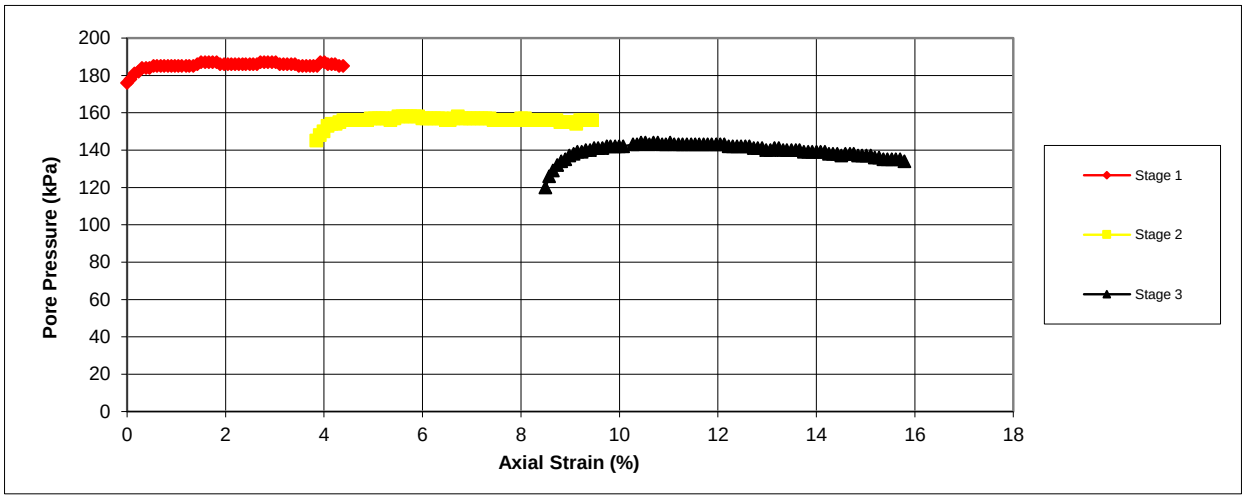
Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Shearing Stage





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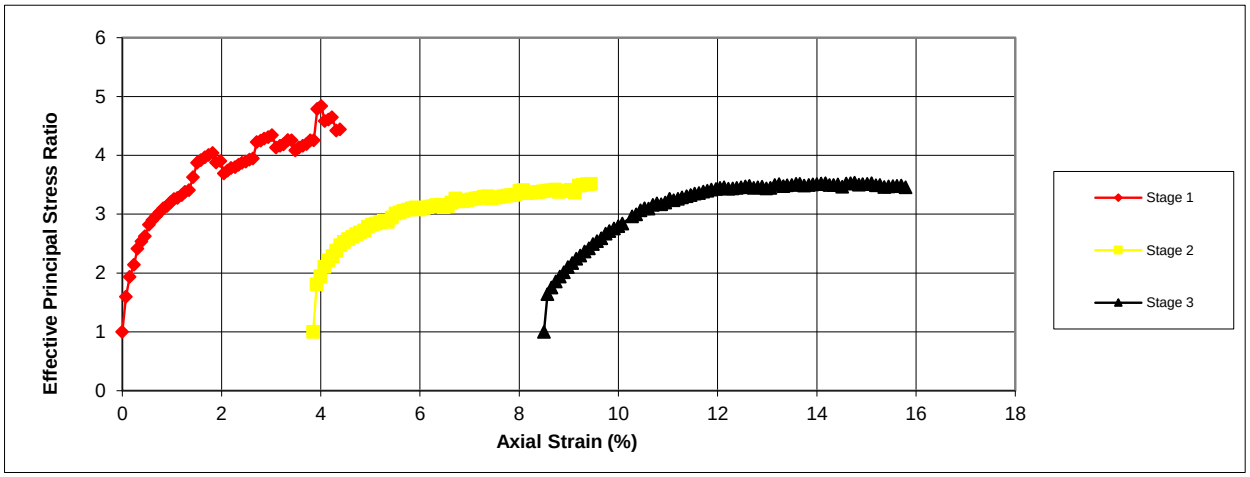
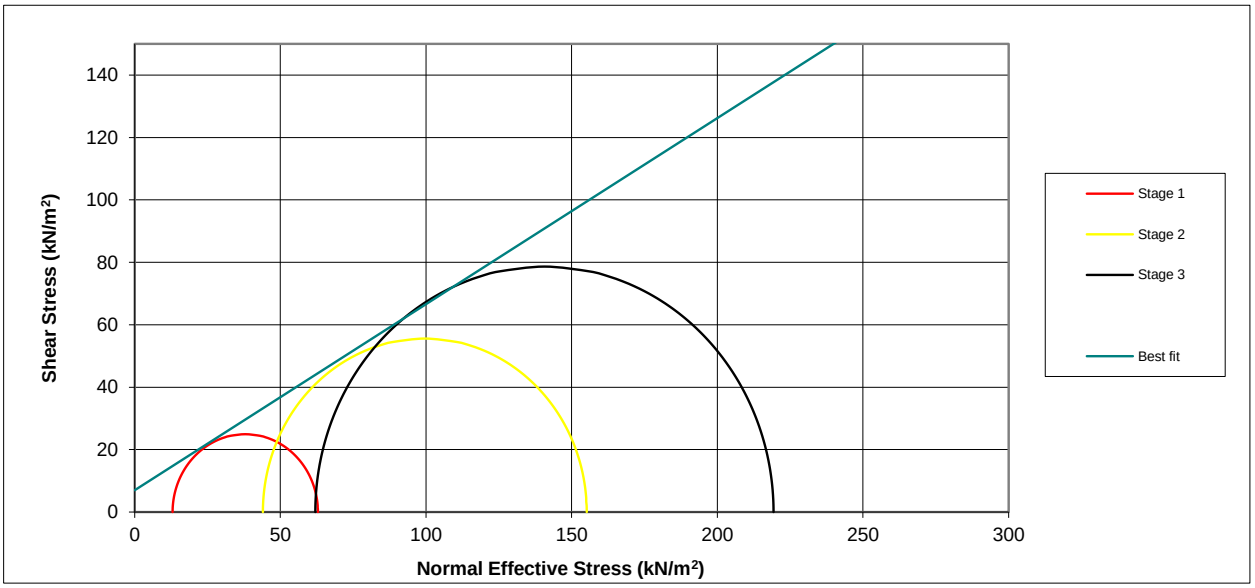
Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Shearing Stage





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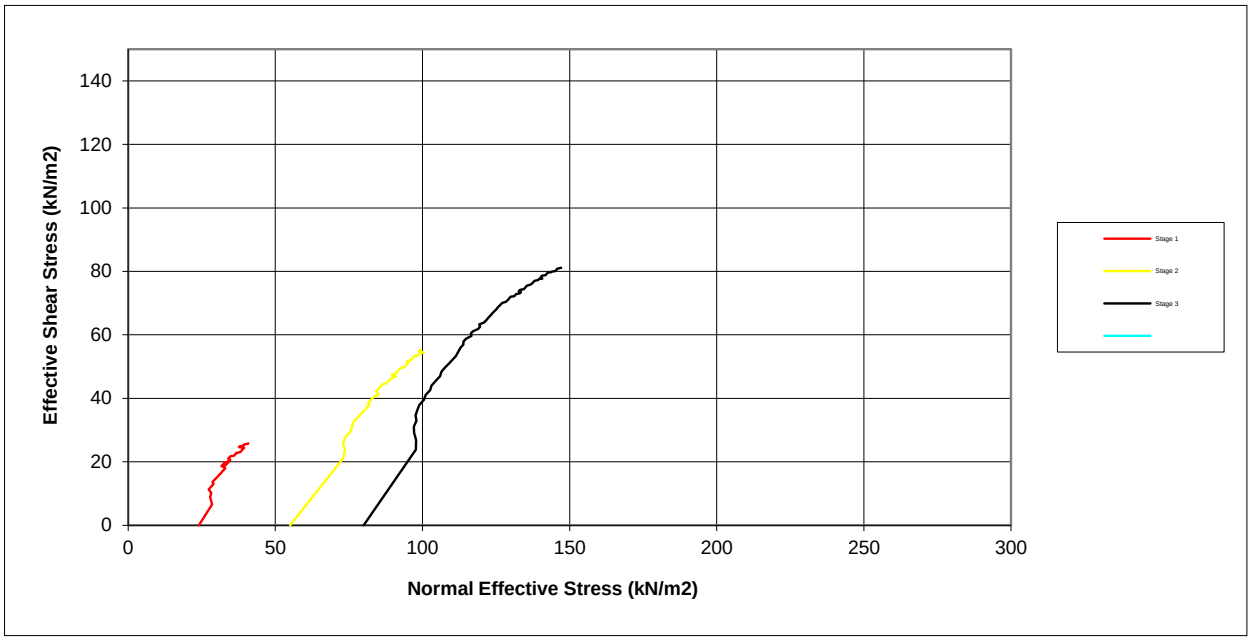
Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	3.00
Depth	to(m)	

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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	
Date		14/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey silt firm CLAY

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	2774.50
Dry Mass	g	1978.10
Density	Mg/m^3	1.60
Dry Density	Mg/m^3	1.14
Moisture Content	%	40
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	32
Density	Mg/m^3	1.68
Dry Density	Mg/m^3	1.27

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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Test Setup

Date started	29/06/2017
Date Finished	13/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P3
Cell Number	C3

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	200.00
Final B Value		1.06

Consolidation

Effective Pressure	kPa	60.00	95.00	115.00
Cell Pressure	kPa	200.00	200.00	200.00
Back Pressure	kPa	140.00	105.00	85.00
Excess Pore Pressure	kPa	60.00	58.00	60.00
Pore Pressure at End	kPa	140.00	105.00	85.00
Consolidated Volume	cm^3	1612.95	1572.35	1555.35
Consolidated Height	mm	199.29	192.44	183.49
Consolidated Area	mm^2	8102.71	8171.72	8476.81
Vol. Compressibility	m^2/MN	0.49461	0.23973	0.12720
Consolidation Coef.	$m^2/yr.$	3.86116	0.42244	71.39288

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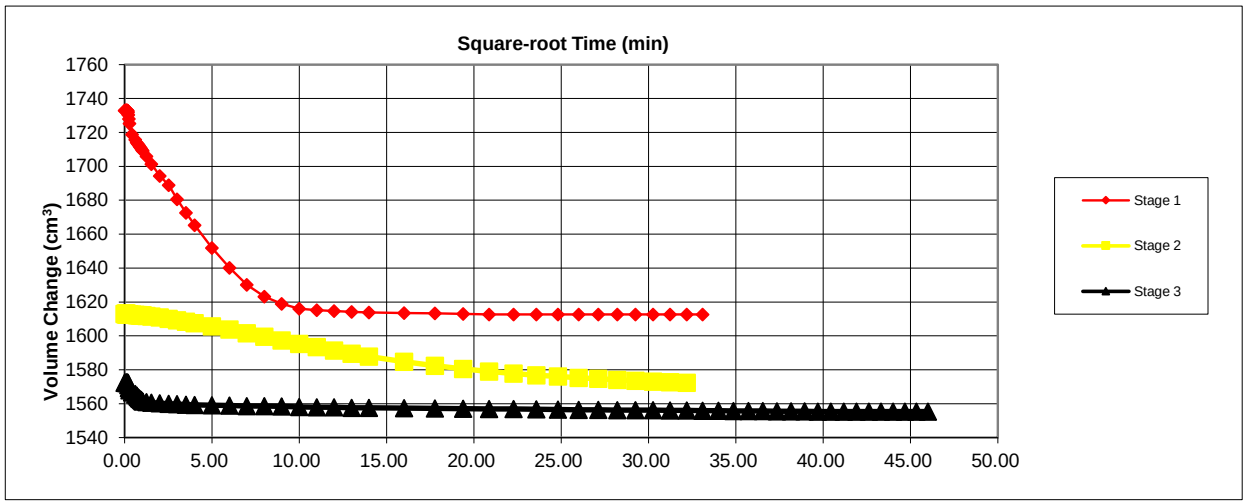
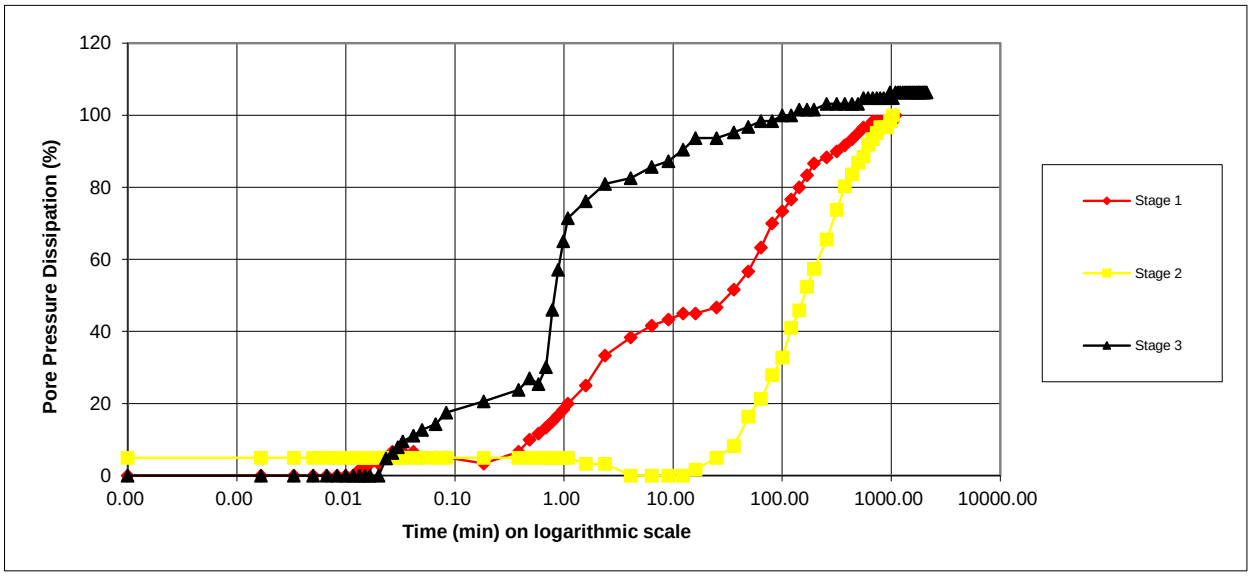
Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Consolidation Stage





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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	200	200	200
Initial Pore Pressure	kPa	140	105	85
Rate of Strain	mm/min	0.0750	0.0079	1.2766
Max Deviator Stress				
Axial Strain		5.846	9.592	14.571
Axial Stress	kPa	69.023	118.80	142.58
Cor. Deviator stress	kPa	65.939	114.31	122.91
Effective Major Stress	kPa	81.939	152.31	171.91
Effective Minor Stress	kPa	17.000	38.00	49.00
Effective Stress Ratio		4.820	4.008	3.51
s'	kPa	49.470	95.15	110.45
t'	kPa	32.470	57.15	61.45
Max Effective Priciple Stress Ratio				
Axial Strain		5.625	9.514	13.274
Axial Stress	kPa	68.486	118.633	142.153
Cor. Deviator stress	kPa	64.419	114.142	137.558
Effective Major Stress	kPa	80.419	151.142	185.558
Effective Minor Stress	kPa	16.000	37.000	48.000
Effective Stress Ratio		5.026	4.085	3.866
s'	kPa	48.209	94.071	116.779
t'	kPa	32.209	57.071	68.779
Shear Resistance Angle	degs			32.7
Cohesion c'	kPa			7

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GEO SITE & TESTING SERVICES LTD

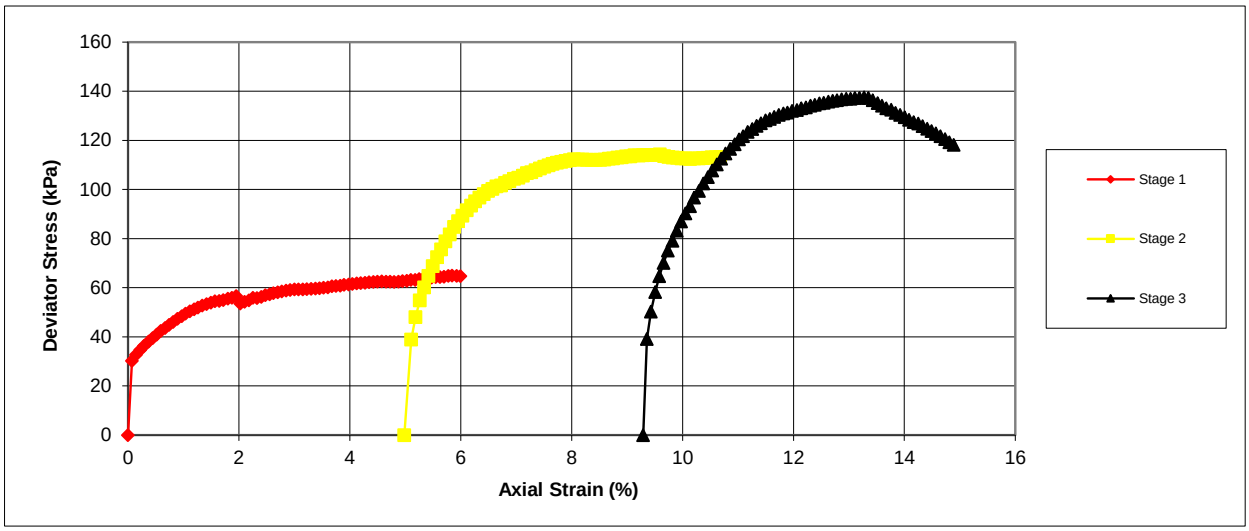
Consolidated Undrained Triaxial Compression Test

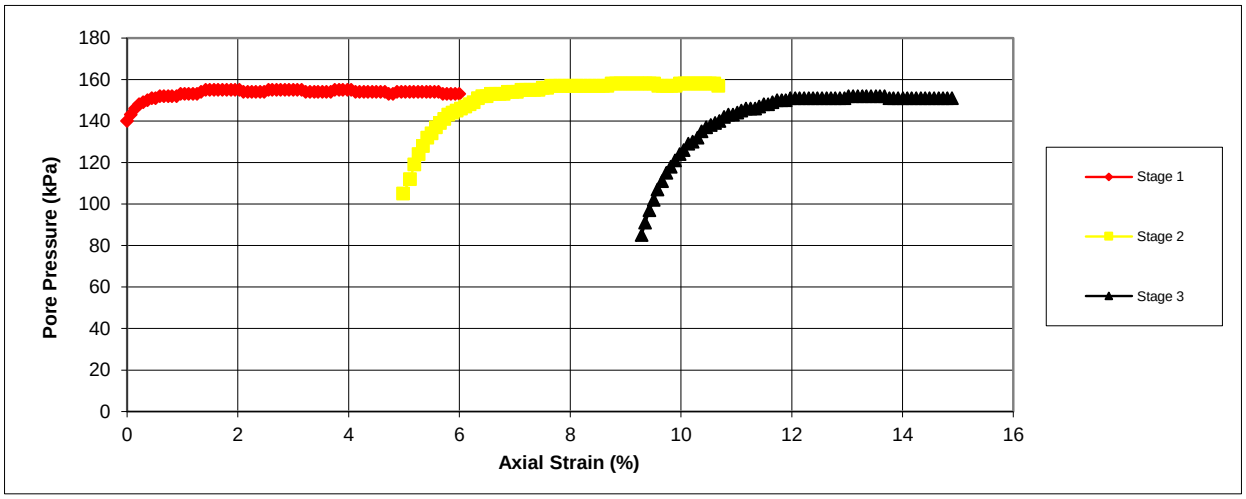
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Shearing Stage





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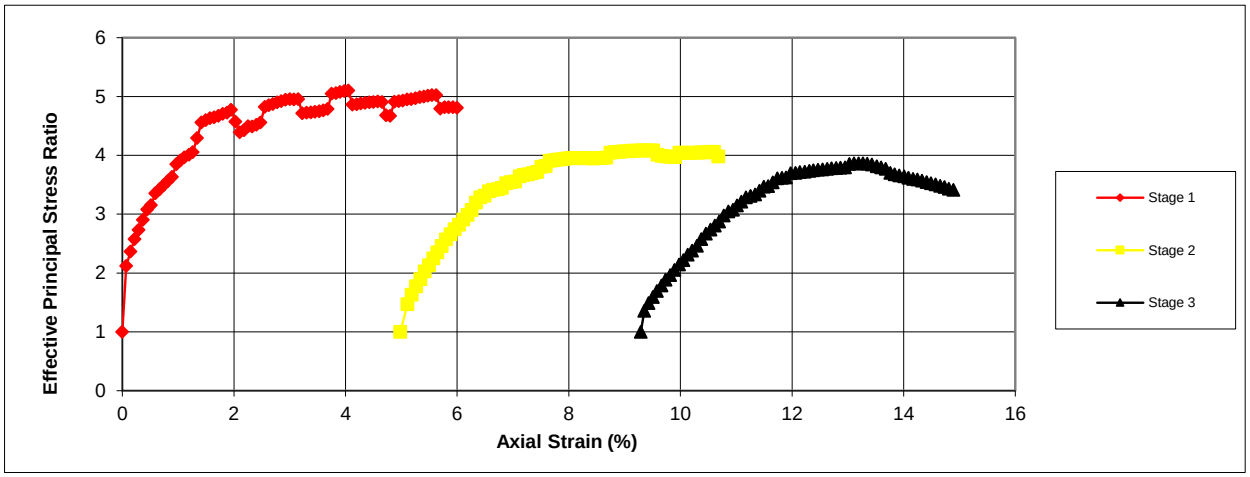
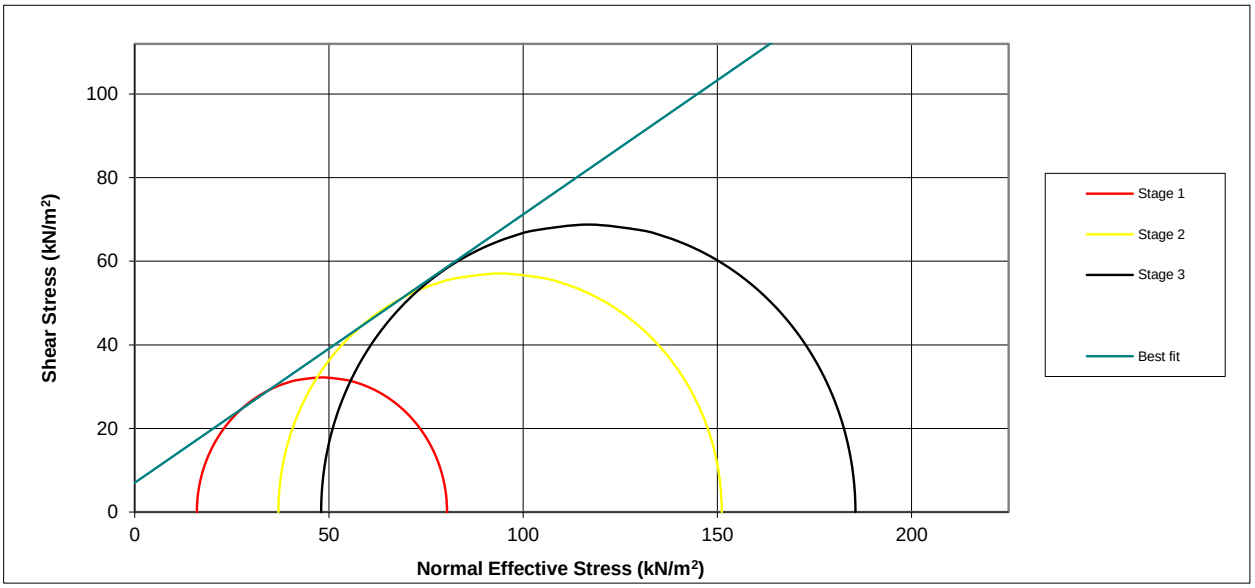
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Shearing Stage





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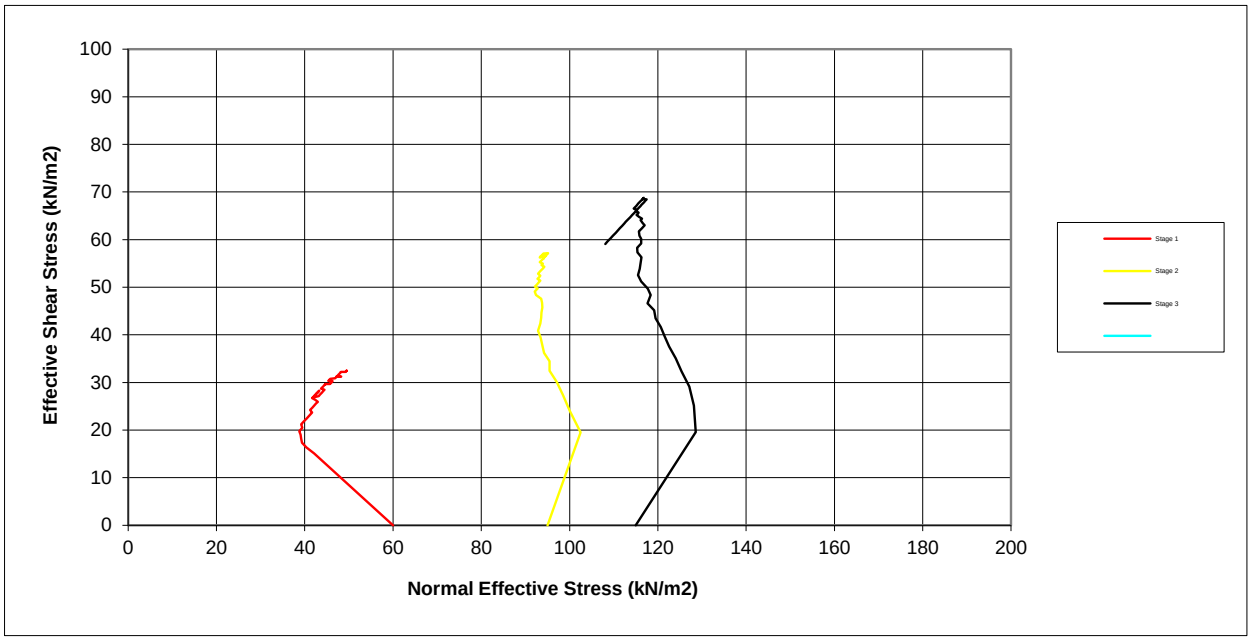
Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		M11
Sample No.		UT
Depth	from(m)	6.50
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey clayey firm SILT

Initial Specimen Conditions

Height	mm	203.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1691.45
Mass	g	3022.60
Dry Mass	g	2117.00
Density	Mg/m^3	1.79
Dry Density	Mg/m^3	1.25
Moisture Content	%	43
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	32
Density	Mg/m^3	1.75
Dry Density	Mg/m^3	1.33

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Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

Test Setup

Date started	11/07/2017
Date Finished	26/07/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P2
Cell Number	C2

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	300.00
Final Pore Pressure	kPa	292.00
Final B Value		0.97

Consolidation

Effective Pressure	kPa	80.00	105.00	130.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	220.00	195.00	170.00
Excess Pore Pressure	kPa	73.00	25.00	25.00
Pore Pressure at End	kPa	220.00	195.00	170.00
Consolidated Volume	cm^3	1662.95	1634.75	1596.25
Consolidated Height	mm	201.86	193.52	185.69
Consolidated Area	mm^2	8238.69	8448.03	8597.40
Vol. Compressibility	m^2/MN	0.07659	0.08696	0.13853
Consolidation Coef.	$m^2/yr.$	0.37232	0.13676	0.16275

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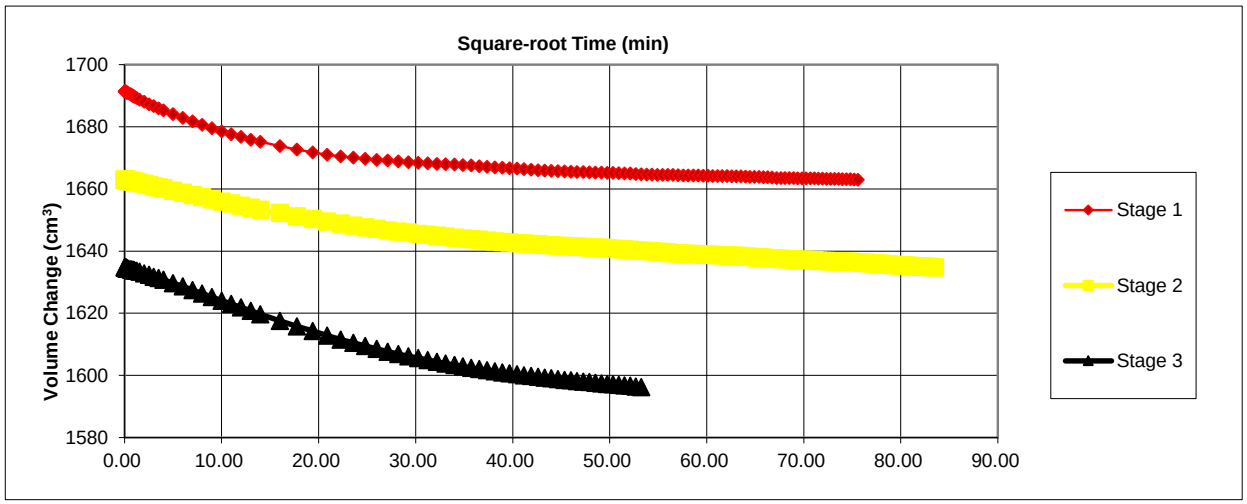
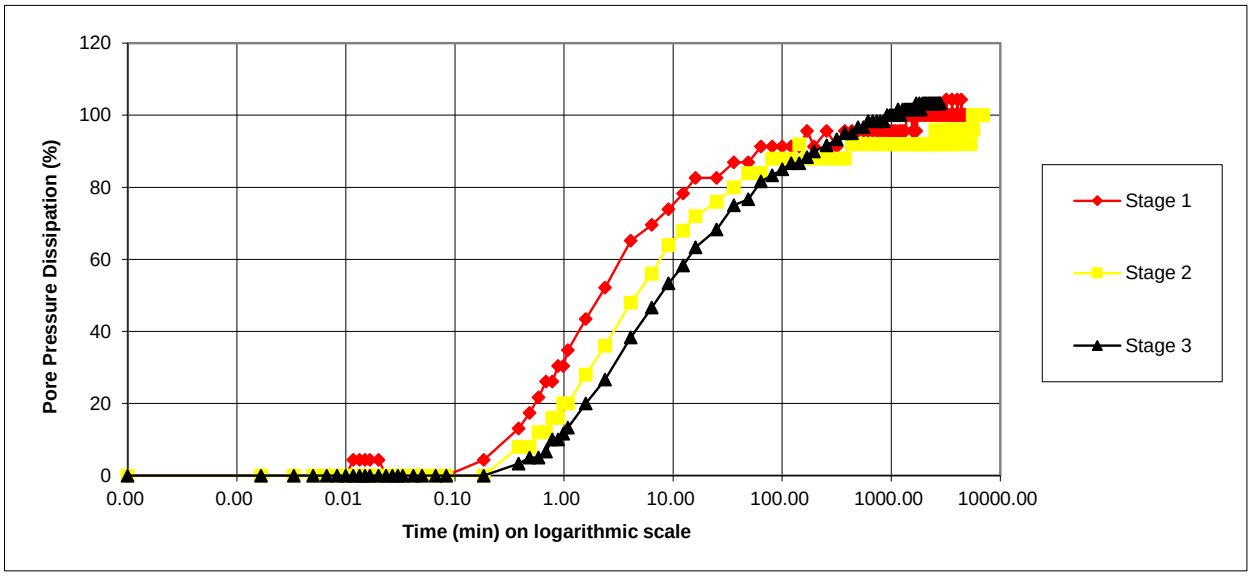
Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

Consolidation Stage





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Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	220	195	170
Rate of Strain	mm/min	0.0075	0.0026	0.0030
Max Deviator Stress				
Axial Strain		4.731	7.588	13.663
Axial Stress	kPa	54.118	94.60	126.52
Cor. Deviator stress	kPa	51.112	90.30	121.90
Effective Major Stress	kPa	122.112	179.30	222.90
Effective Minor Stress	kPa	72.000	89.00	101.00
Effective Stress Ratio		1.696	2.015	2.21
s'	kPa	97.056	134.15	161.95
t'	kPa	25.056	45.15	60.95
Max Effective Priciple Stress Ratio				
Axial Strain		1.927	7.138	12.726
Axial Stress	kPa	44.164	93.097	125.035
Cor. Deviator stress	kPa	43.870	88.846	120.462
Effective Major Stress	kPa	112.870	176.846	219.462
Effective Minor Stress	kPa	69.000	88.000	99.000
Effective Stress Ratio		1.636	2.010	2.217
s'	kPa	90.935	132.423	159.231
t'	kPa	21.935	44.423	60.231
Shear Resistance Angle	degs			34.0
Cohesion c'	kPa			0

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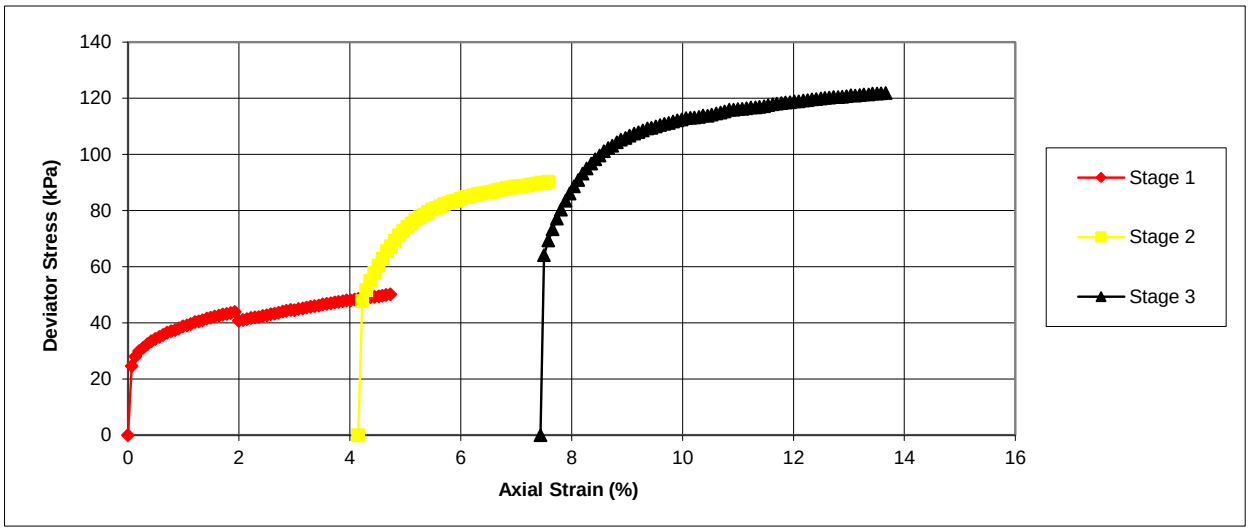
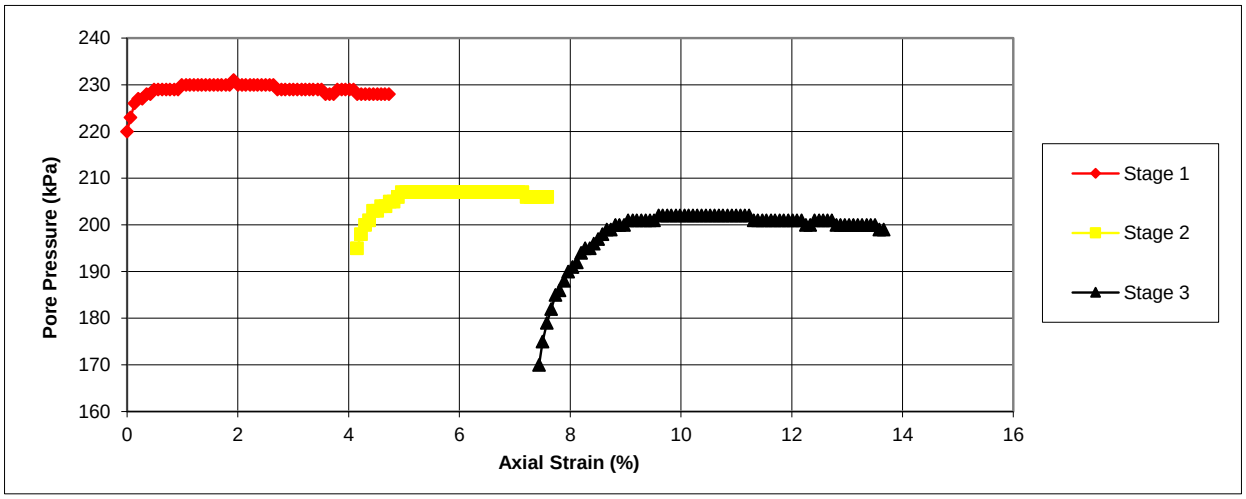
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

Shearing Stage





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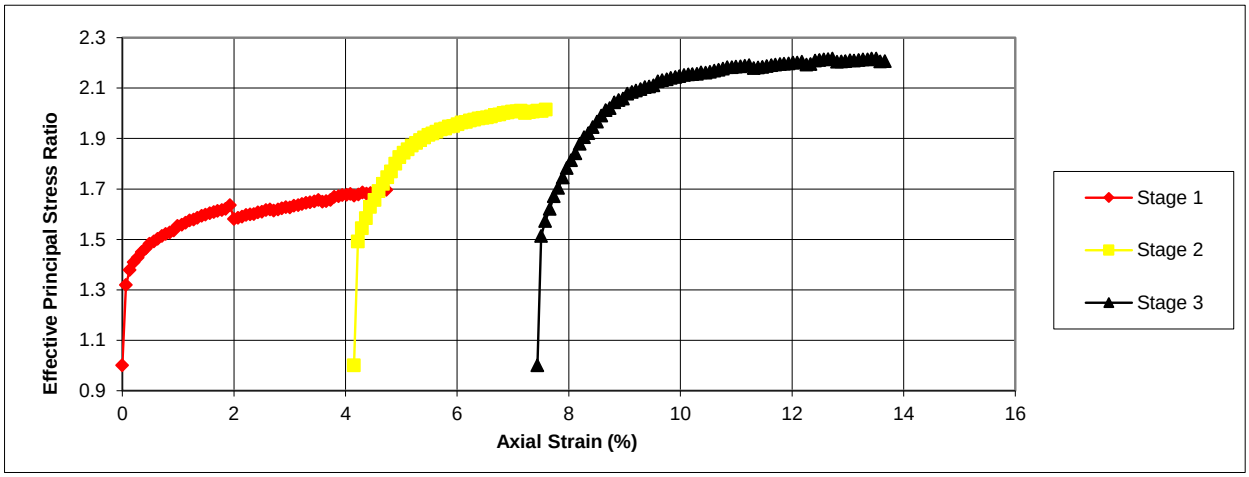
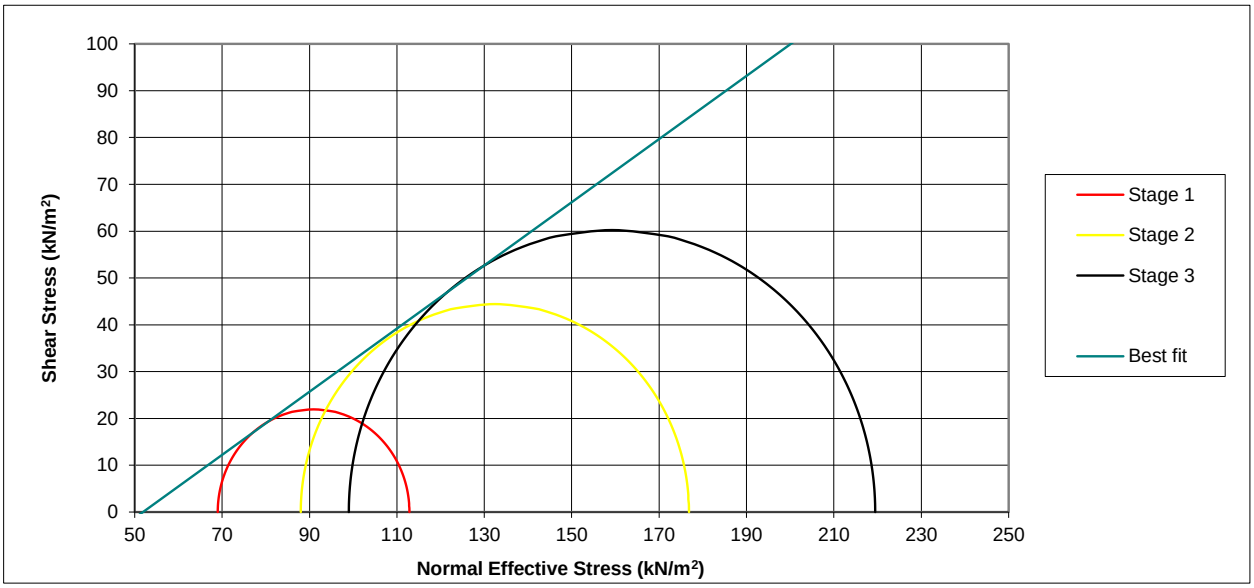
Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

Shearing Stage





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Specimen Details

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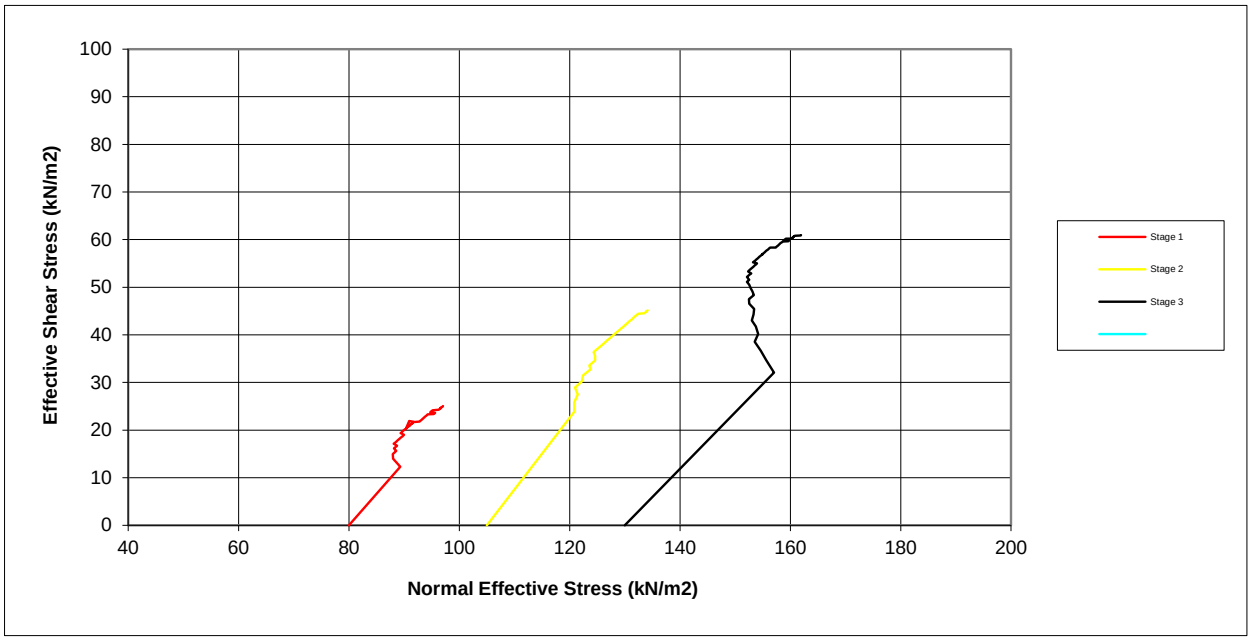
Sample No.		
Depth	m	8
Date		27/07/2017

Shearing Stage



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BS 1377 : Part 8 : 1990

Specimen Details

Borehole		M11
Sample No.		
Depth	m	8
Date		27/07/2017

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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	1.00
Sample Number :		Depth to (m):	

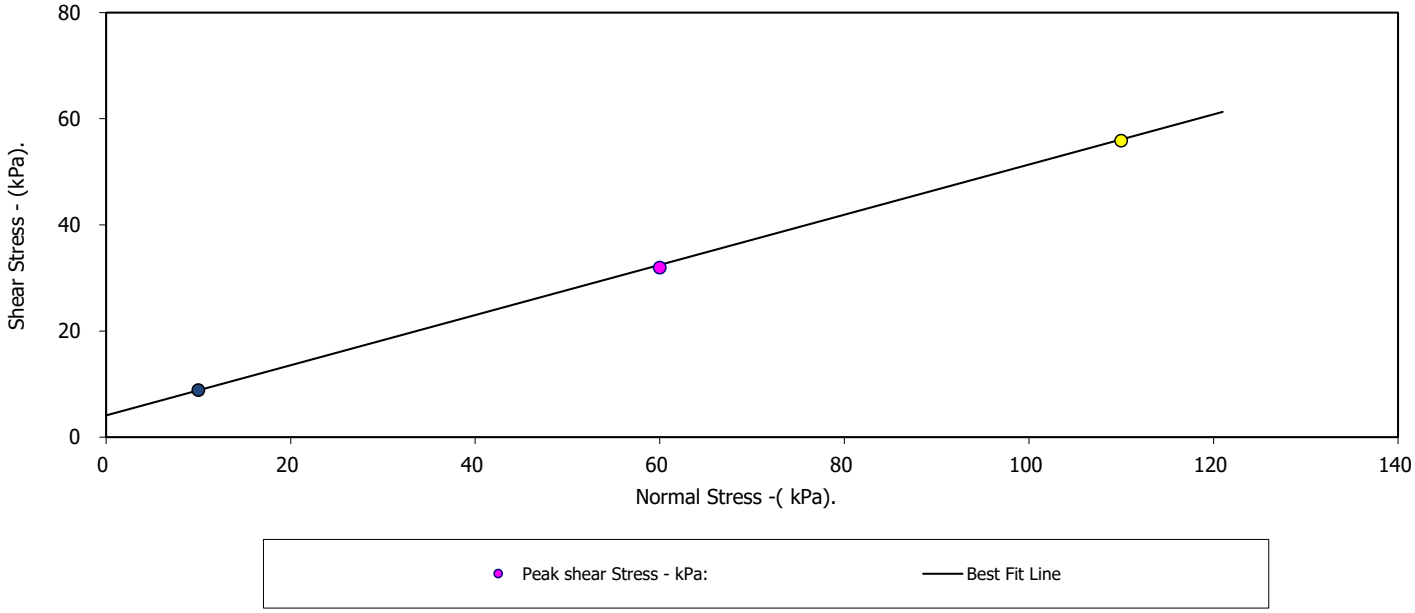
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Grey brown soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	55	55	55
Bulk Density - Mg/m3:	1.65	1.65	1.64
Dry Density - Mg/m3:	1.06	1.06	1.06
Voids Ratio:	1.4944	1.5019	1.5047
Normal Pressure- kPa	10	60	110
Consolidation			
Consolidated Height - mm:	23.71	22.20	20.69
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.99	4.45	4.30
Peak shear Stress - kPa:	9	32	56

PEAK	
Angle of Shearing Resistance:(θ)	**25.3**
Effective Cohesion - kPa:	**4**

FAILURE CONDITIONS



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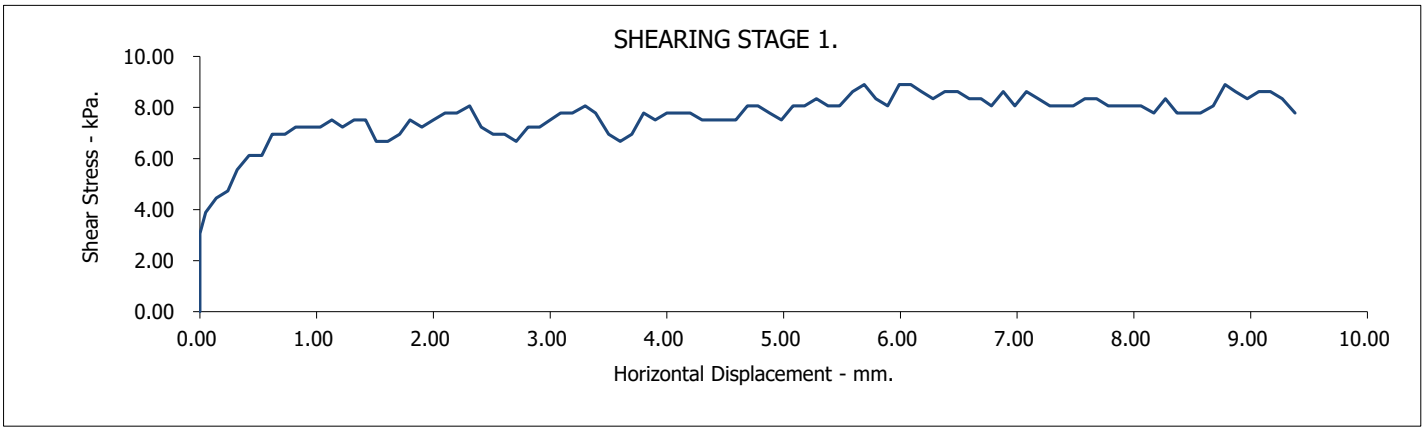
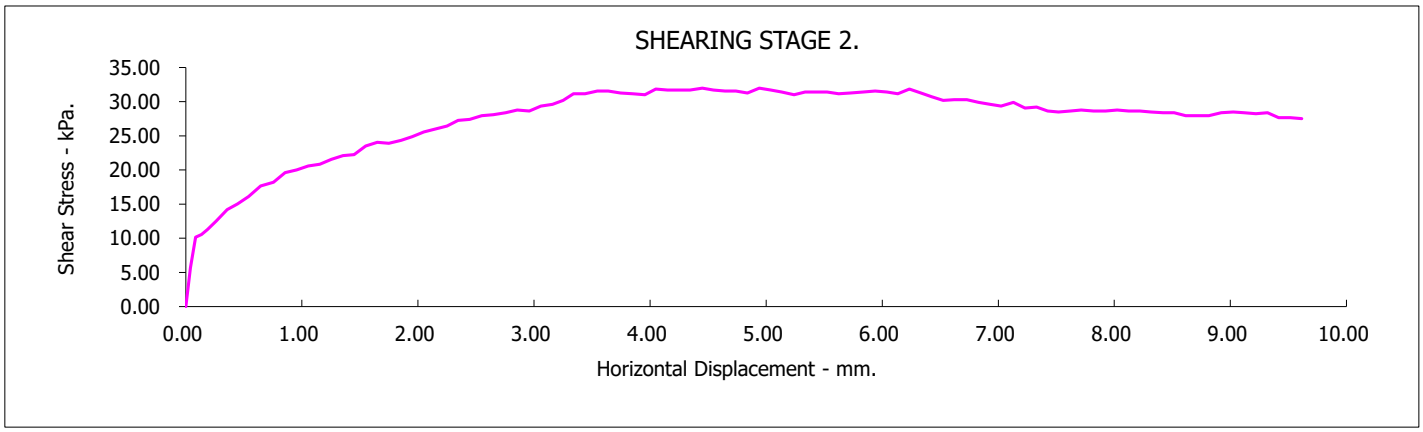
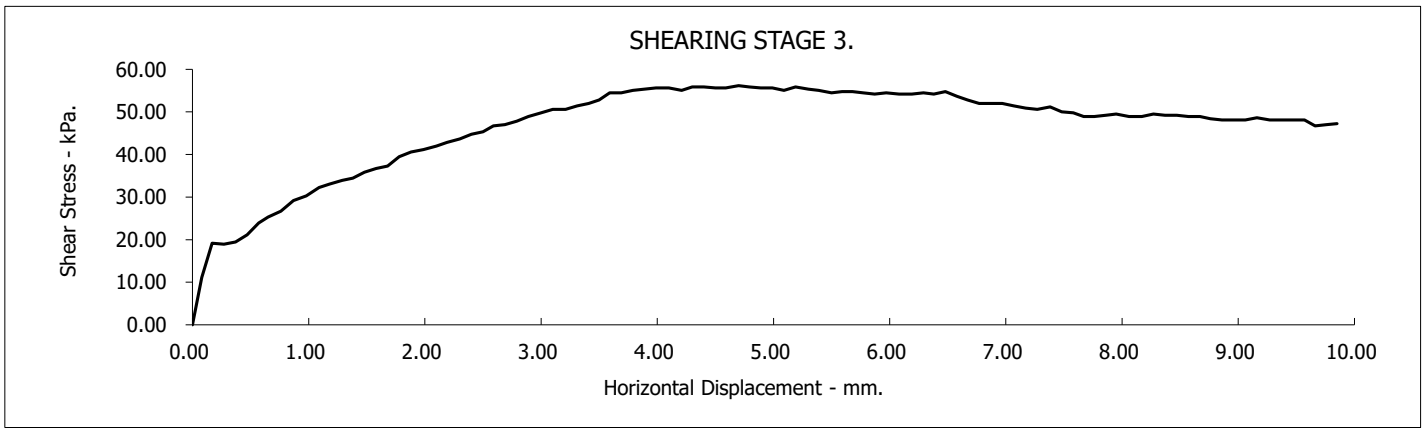
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	1.00
Sample Number :		Depth to (m):	







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Contract No.: **35579**

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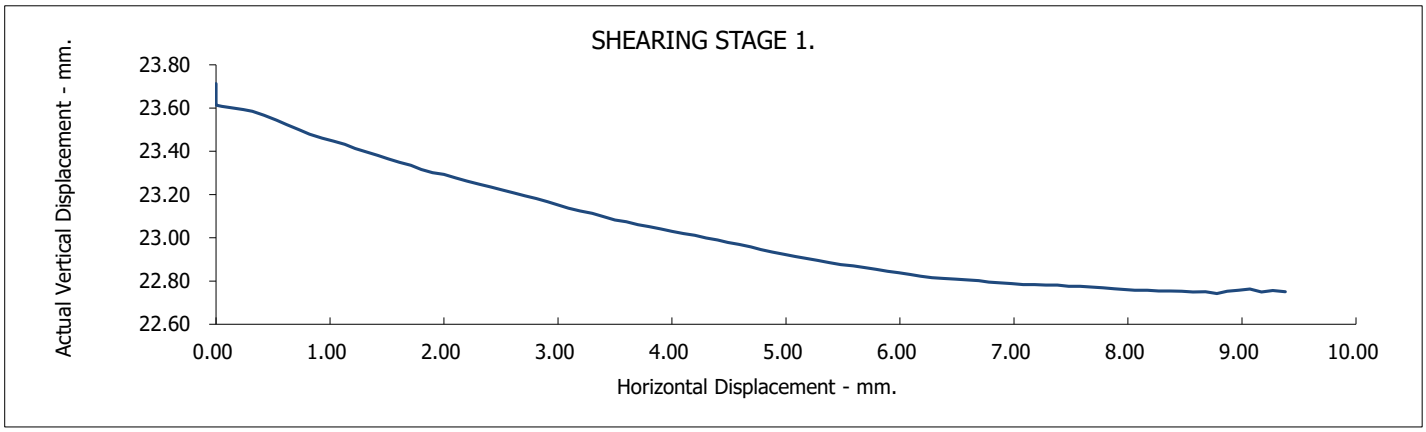
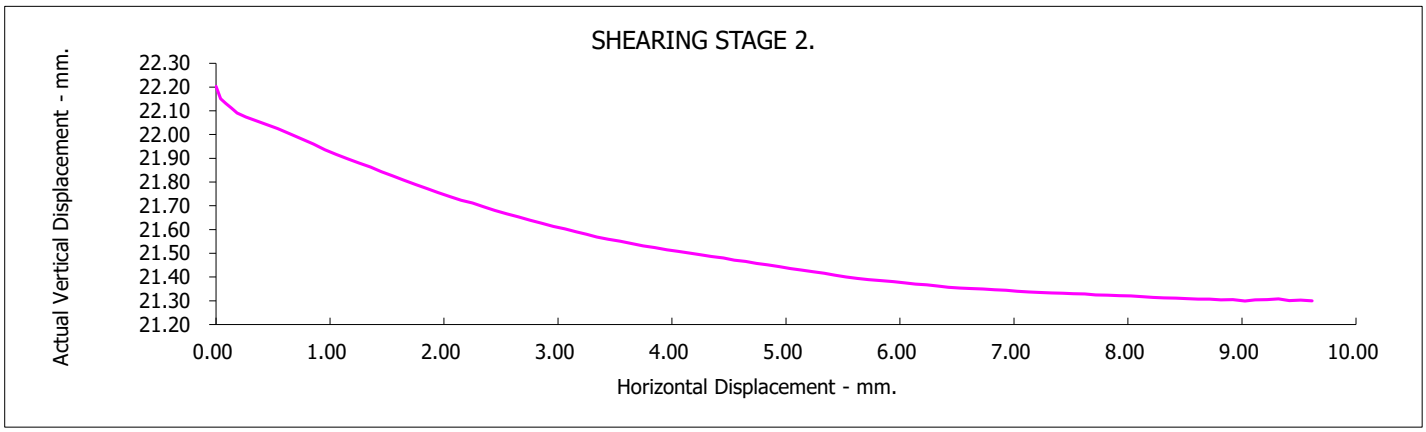
Figure.

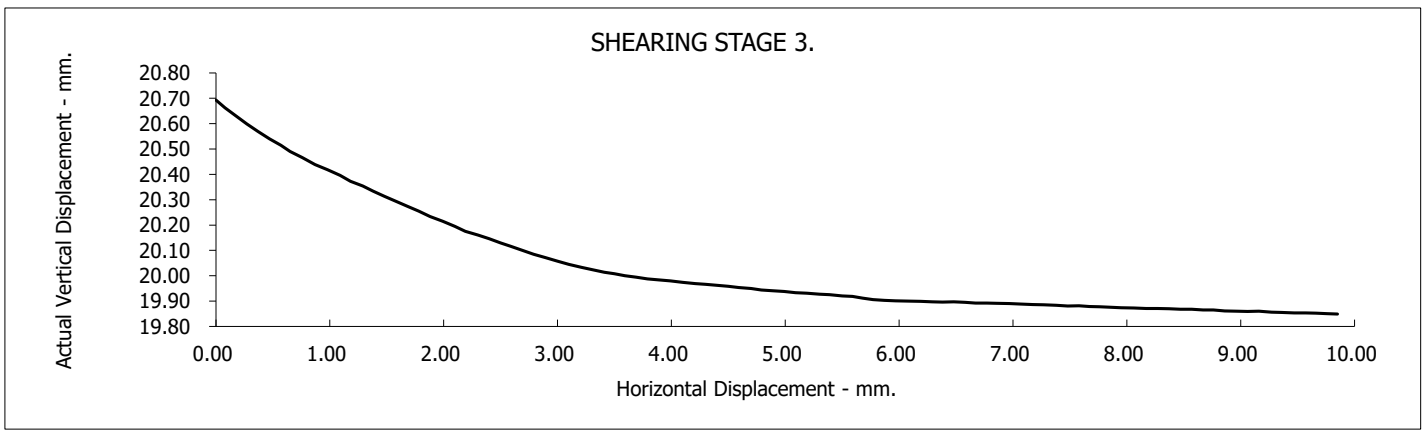
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	1.00
Sample Number :		Depth to (m):	







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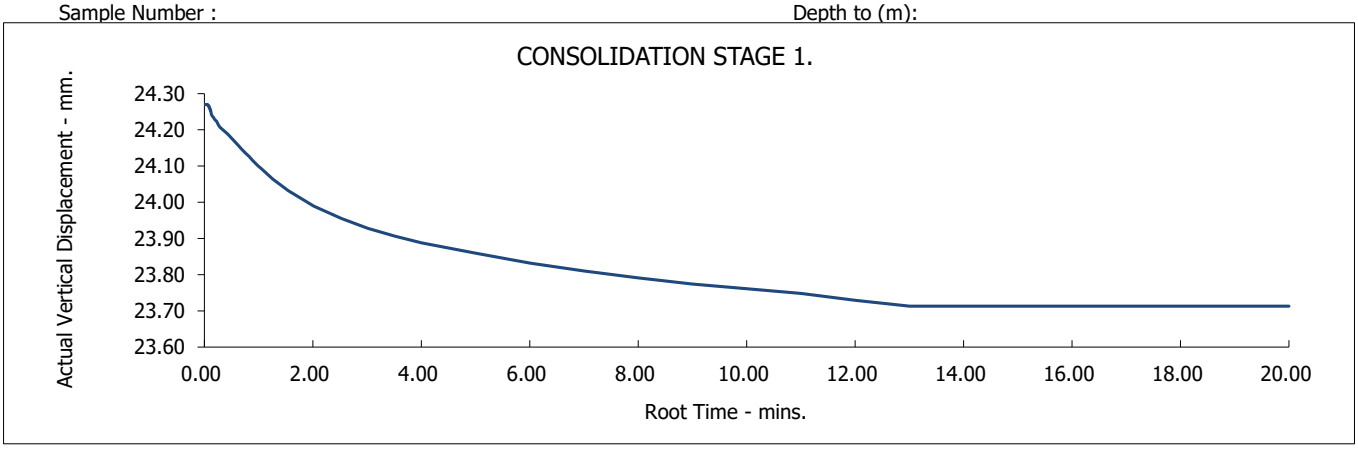
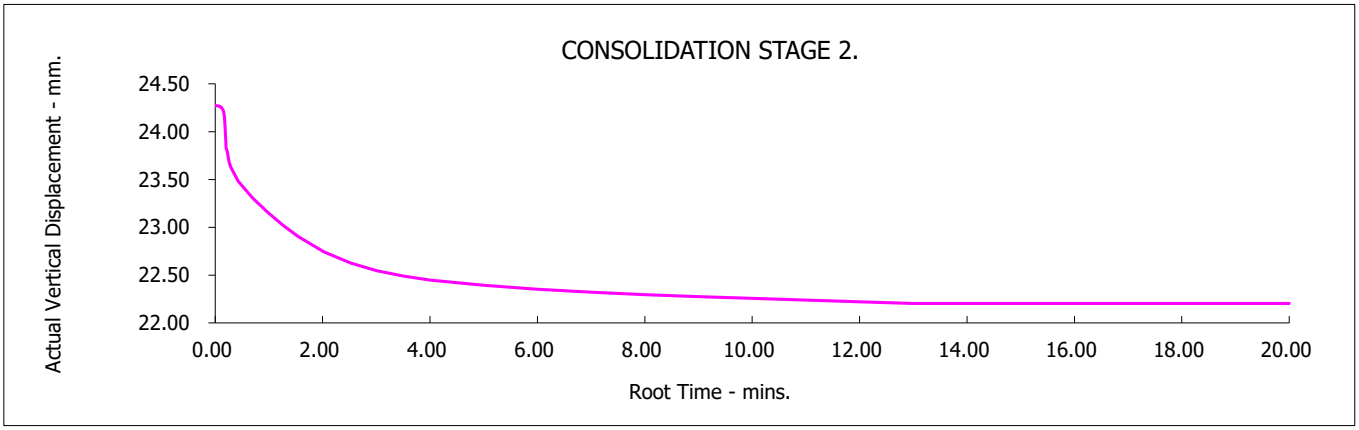
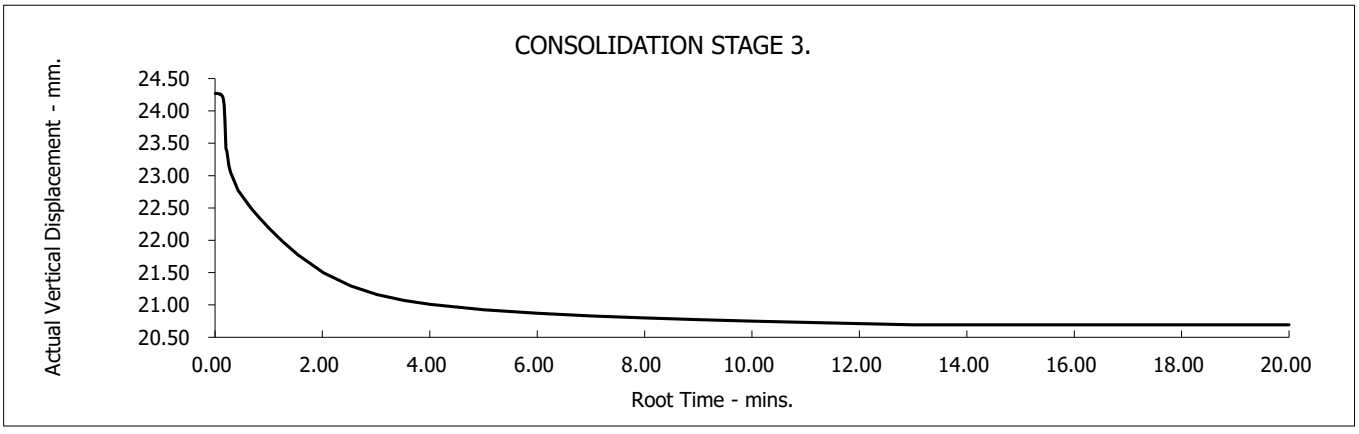
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	1.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	6.50
Sample Number :		Depth to (m):	

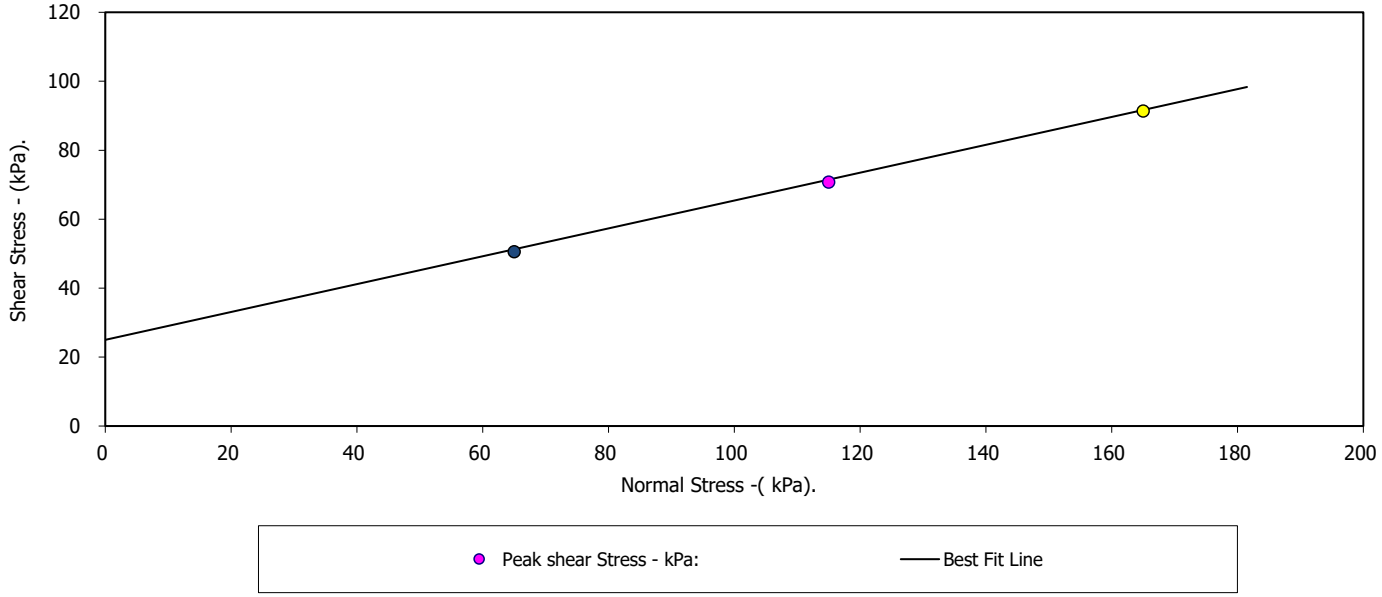
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft slightly sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	51	51	51
Bulk Density - Mg/m3:	1.66	1.66	1.66
Dry Density - Mg/m3:	1.10	1.10	1.10
Voids Ratio:	1.4084	1.4101	1.4051
Normal Pressure- kPa	65	115	165
Consolidation			
Consolidated Height - mm:	21.74	21.06	20.13
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.44	5.38	5.14
Peak shear Stress - kPa:	51	71	91

PEAK	
Angle of Shearing Resistance:(θ)	**22.0**
Effective Cohesion - kPa:	**25**

FAILURE CONDITIONS



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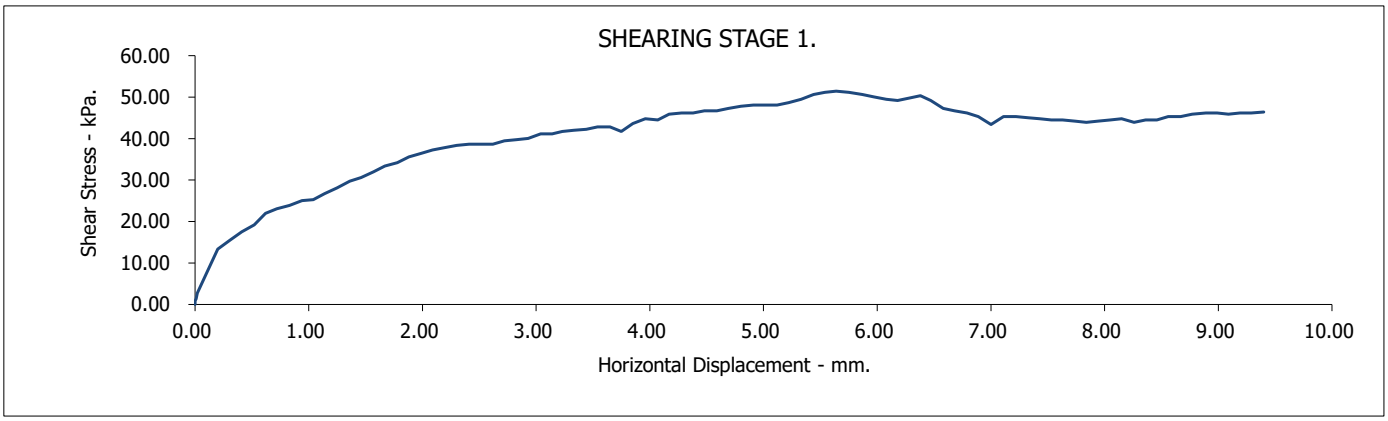
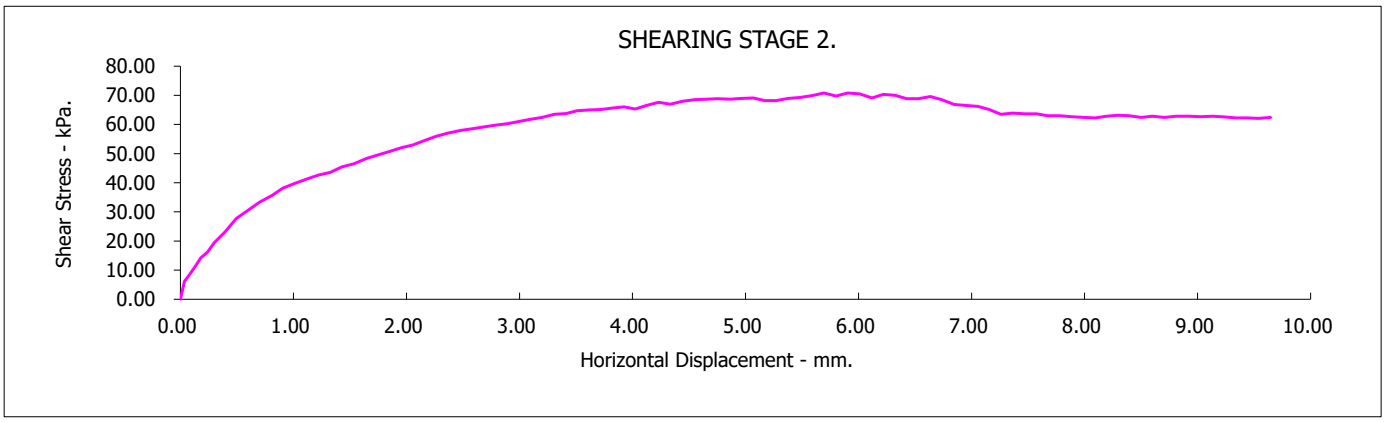
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	6.50
Sample Number :		Depth to (m):	





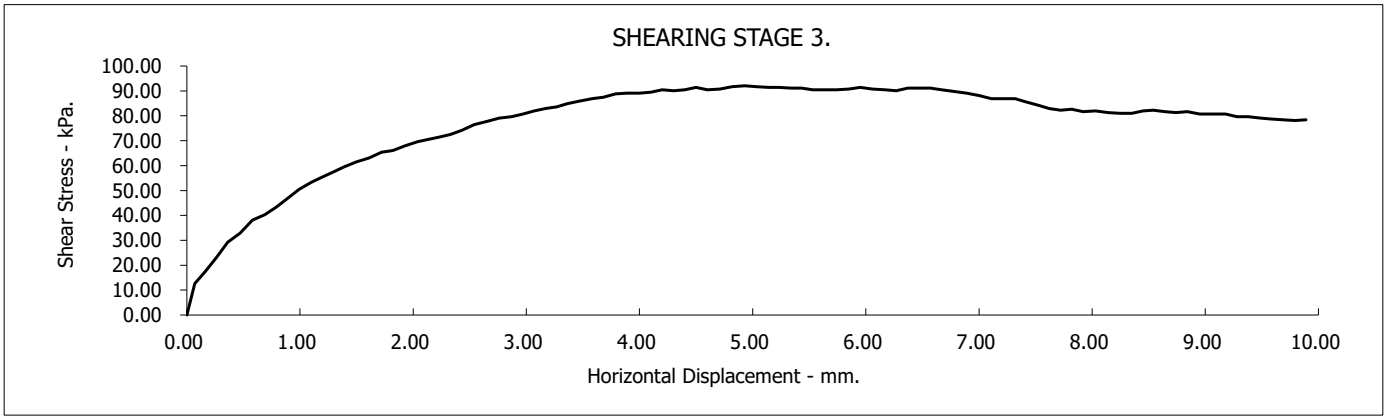


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Figure.

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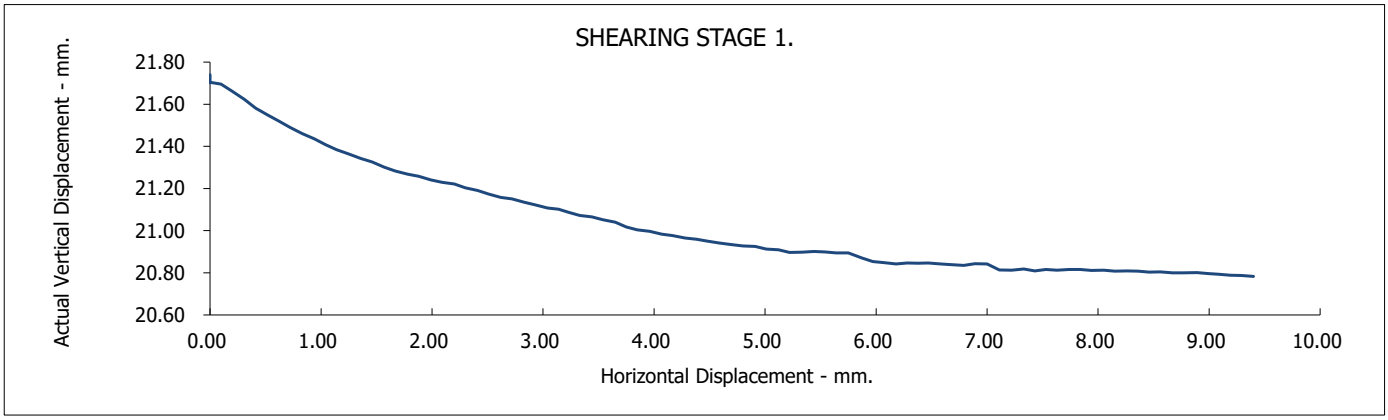
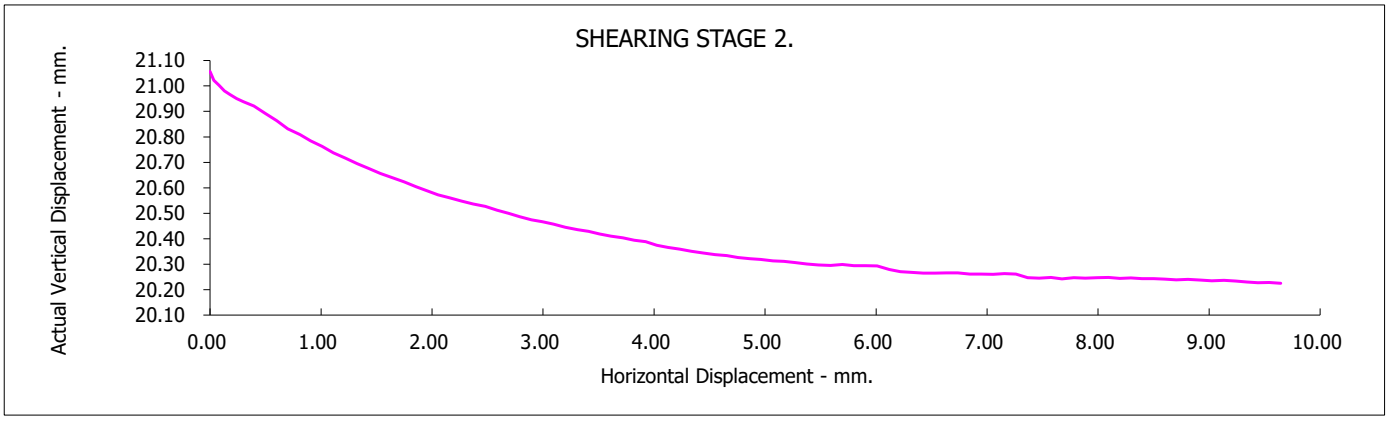
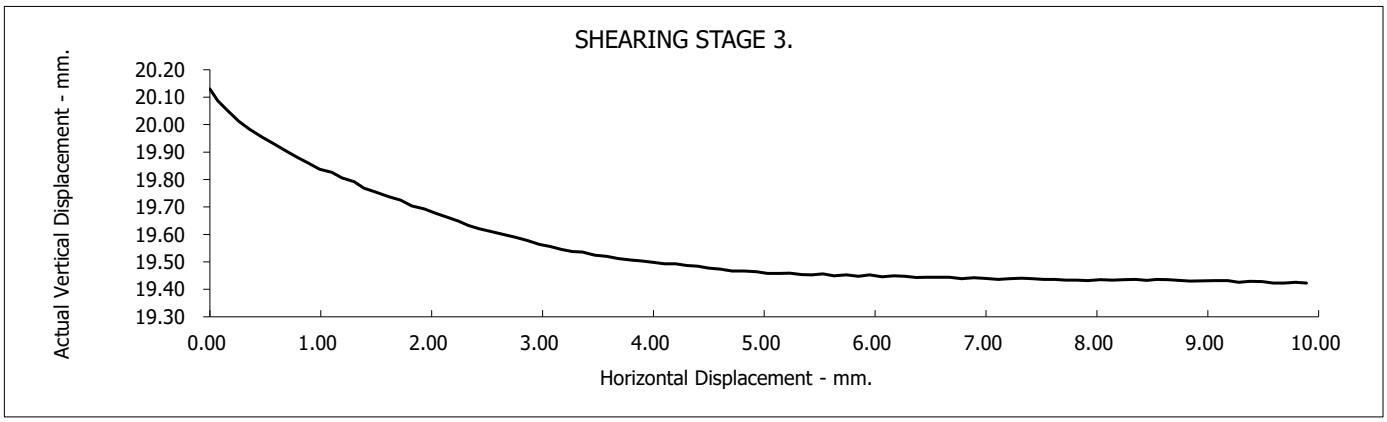
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	6.50
Sample Number :		Depth to (m):	







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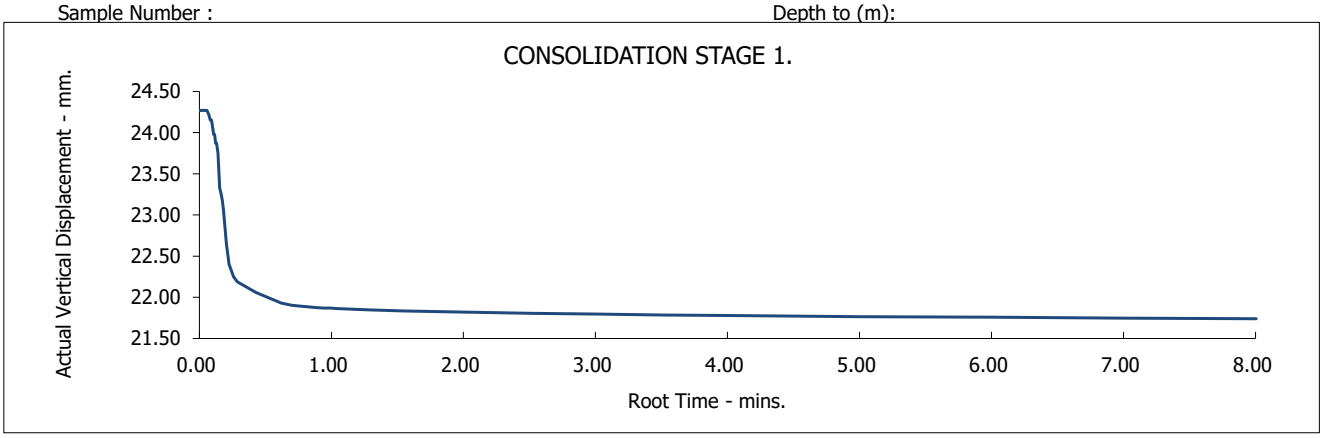
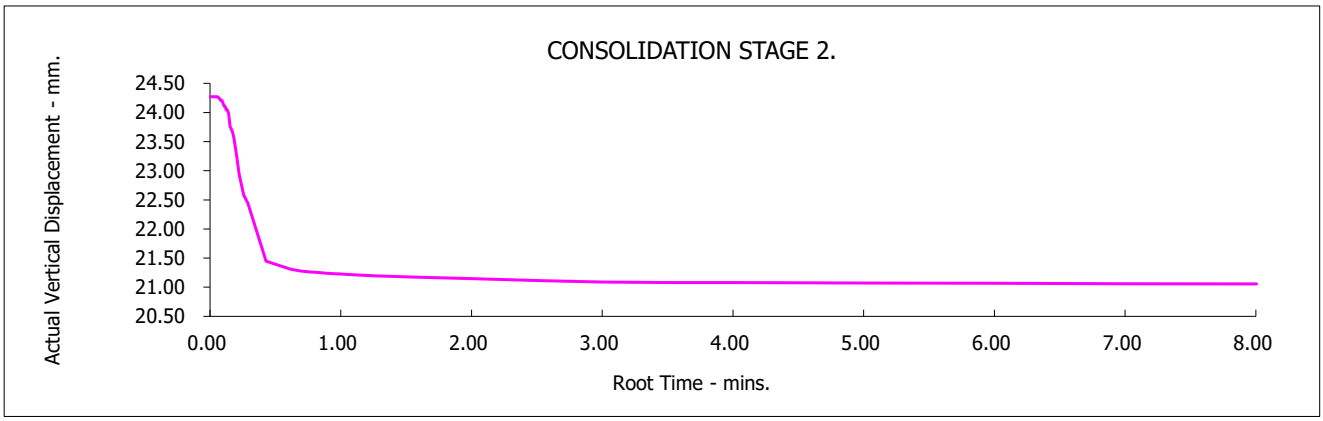
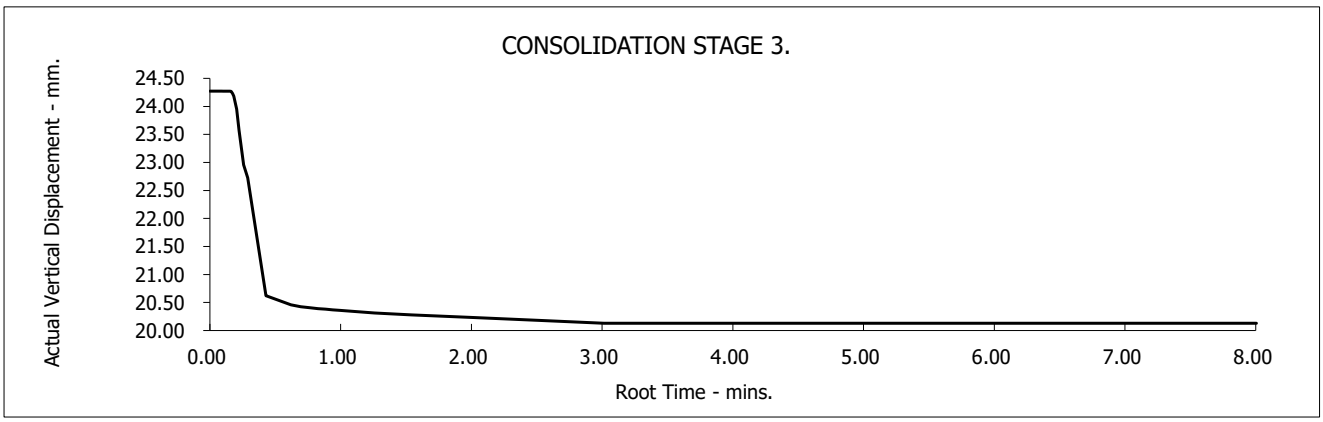
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L04	Depth from (m):	6.50
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	2.00
Sample Number :		Depth to (m):	

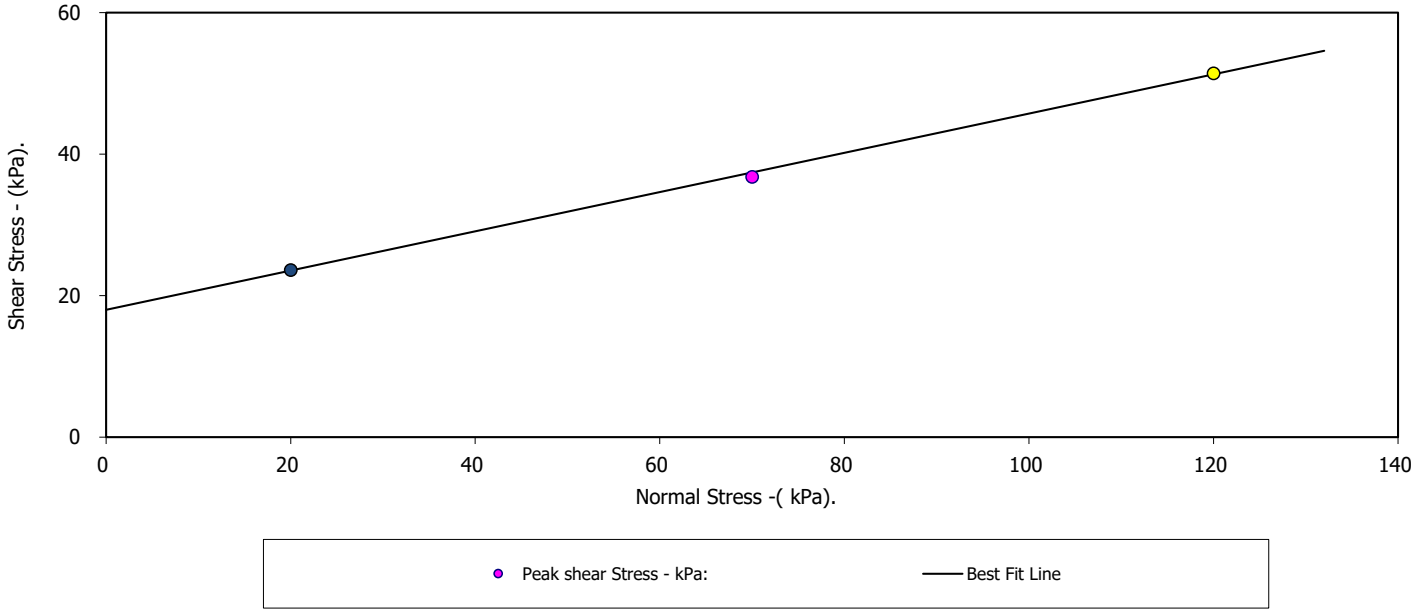
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown grey sandy soft silty organic CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	53	53	53
Bulk Density - Mg/m3:	1.65	1.65	1.65
Dry Density - Mg/m3:	1.08	1.08	1.08
Voids Ratio:	1.4564	1.4537	1.4543
Normal Pressure- kPa	20	70	120
Consolidation			
Consolidated Height - mm:	23.78	22.75	21.72
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	7.59	4.50	4.03
Peak shear Stress - kPa:	24	37	51

PEAK	
Angle of Shearing Resistance:(θ)	**15.5**
Effective Cohesion - kPa:	**18**

FAILURE CONDITIONS



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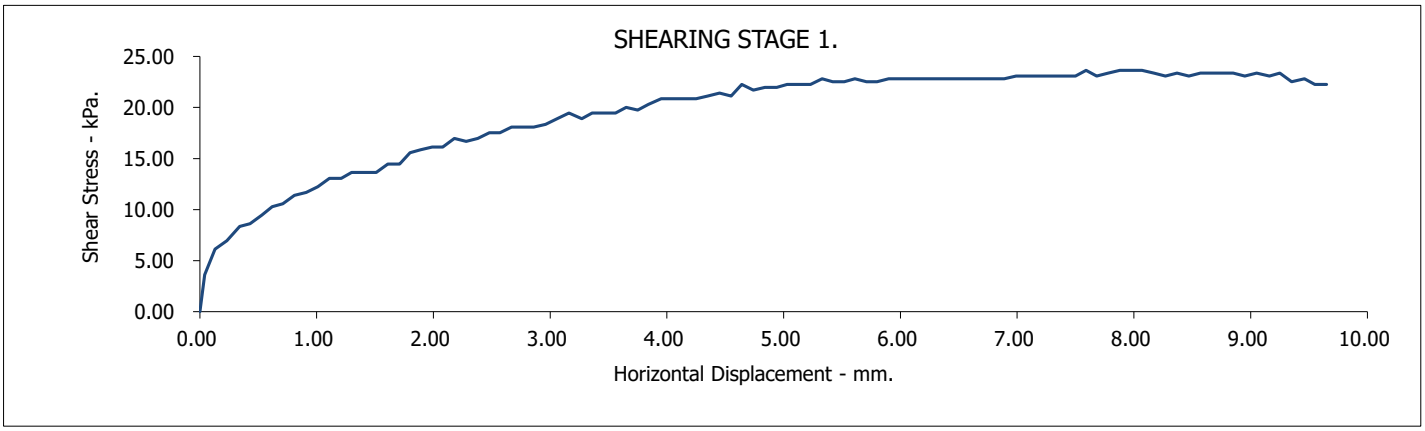
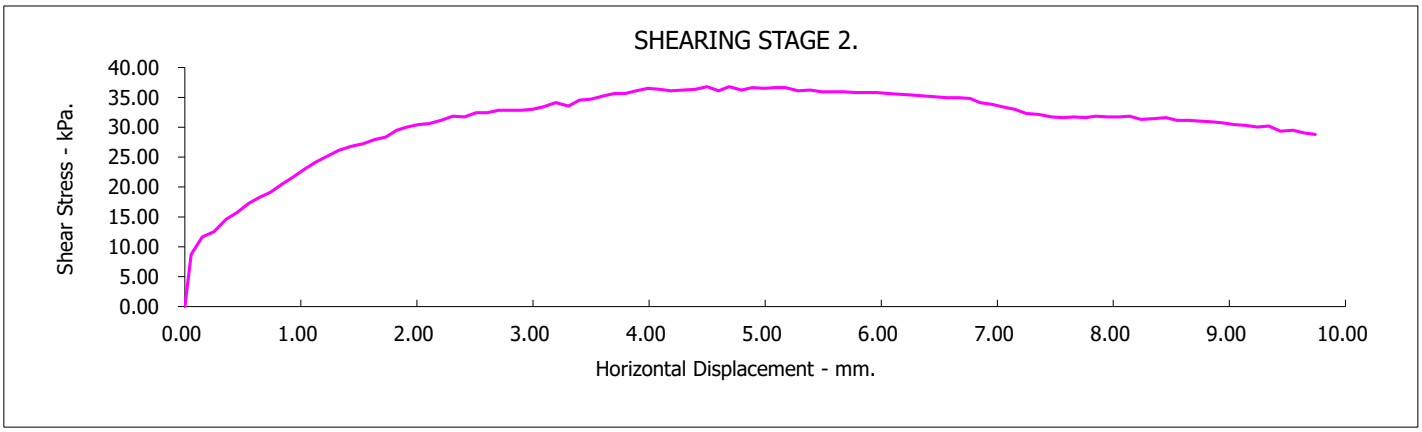
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	2.00
Sample Number :		Depth to (m):	





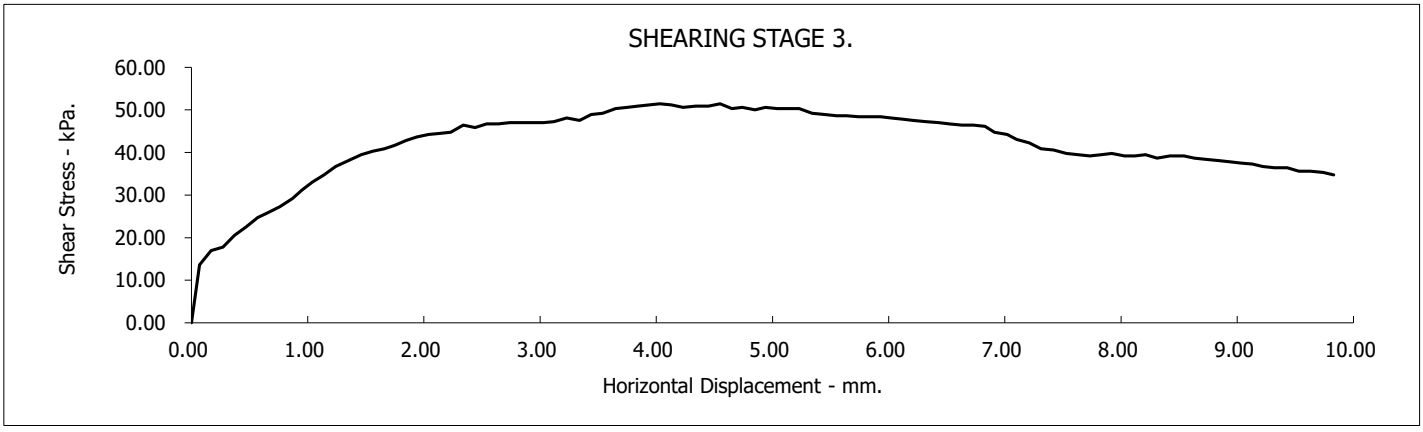


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Figure.

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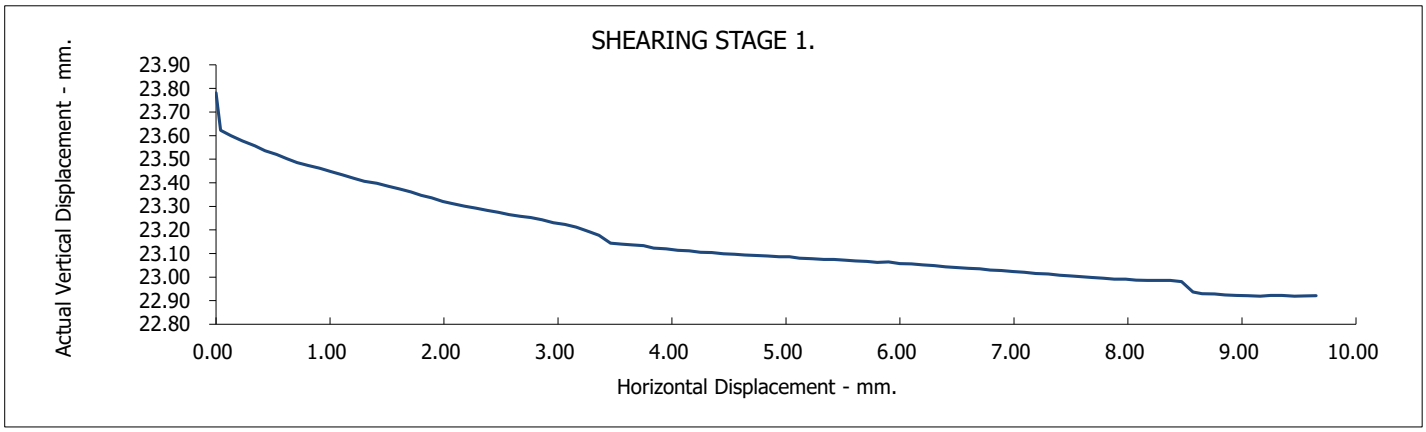
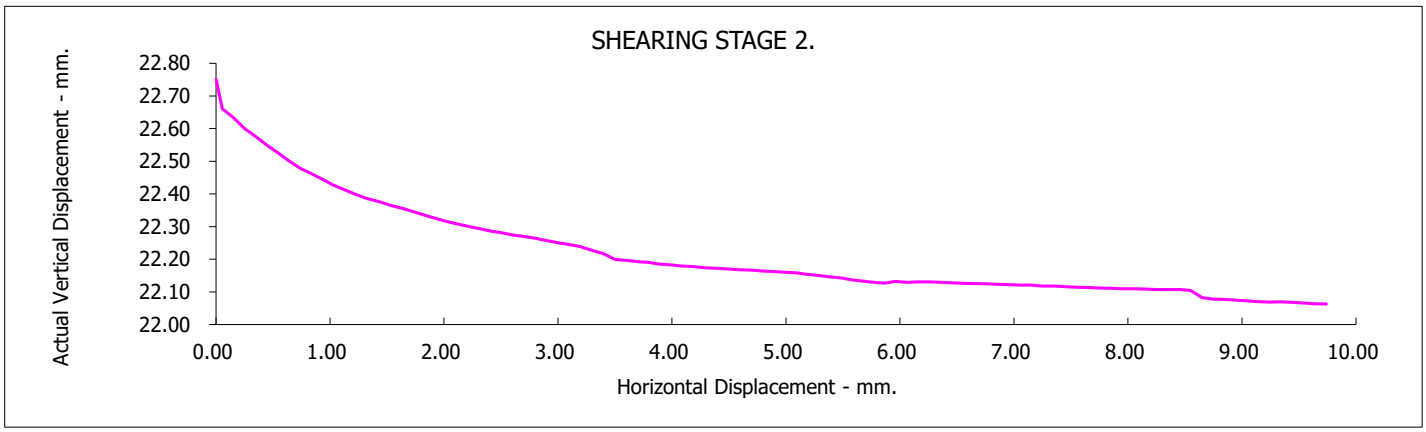
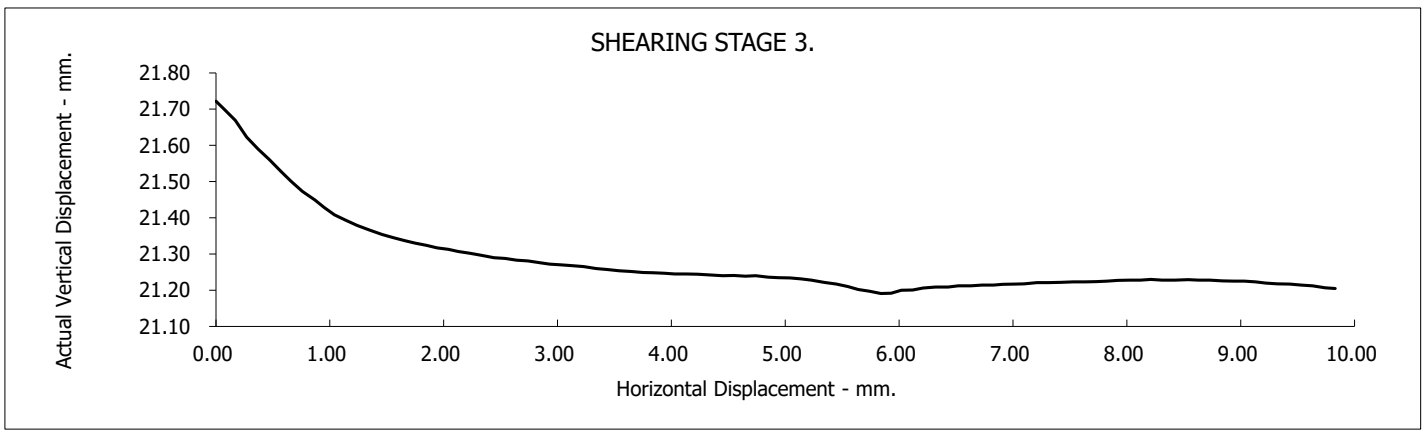
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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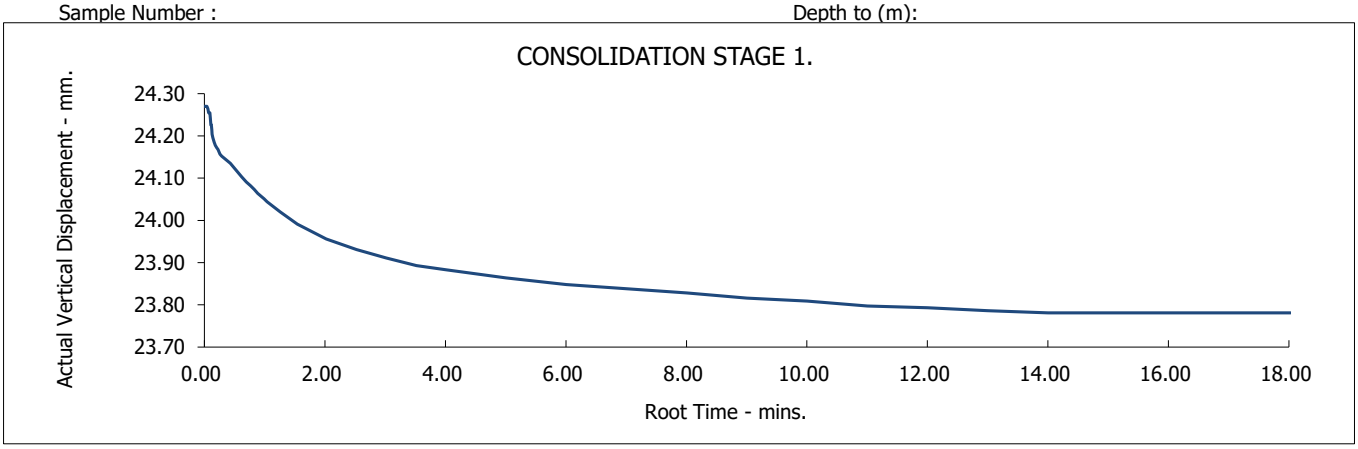
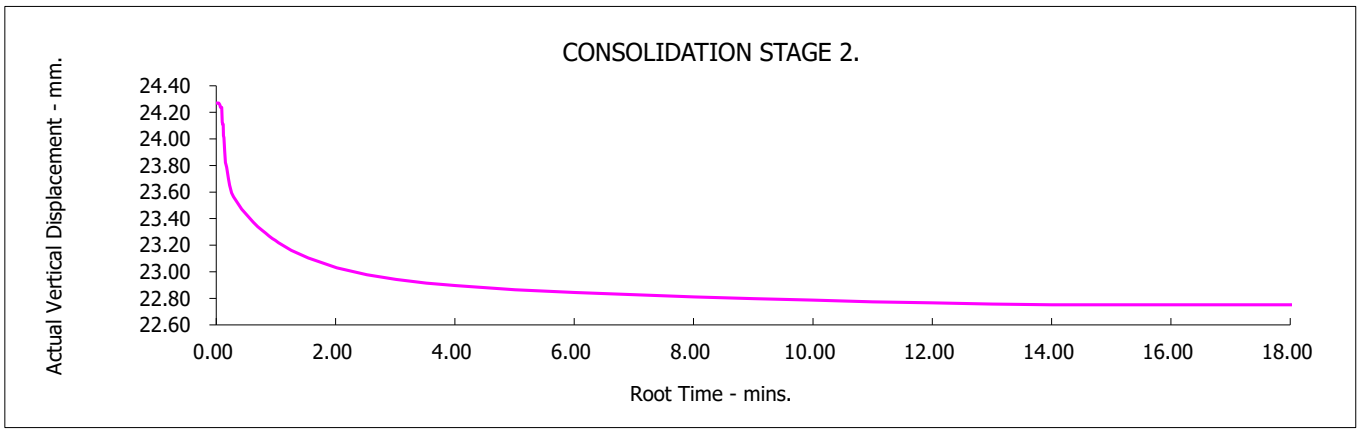
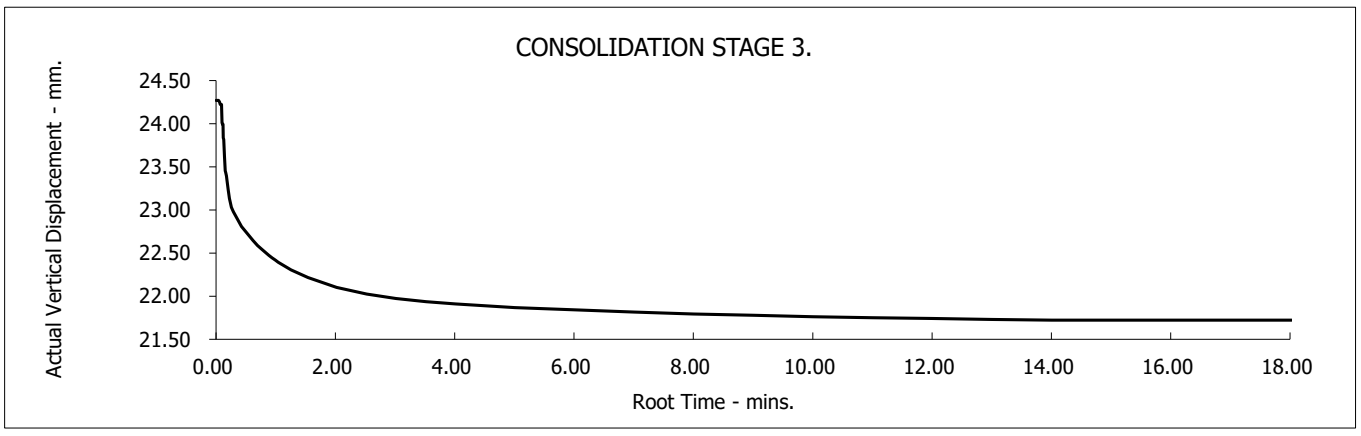
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	3.00
Sample Number :		Depth to (m):	

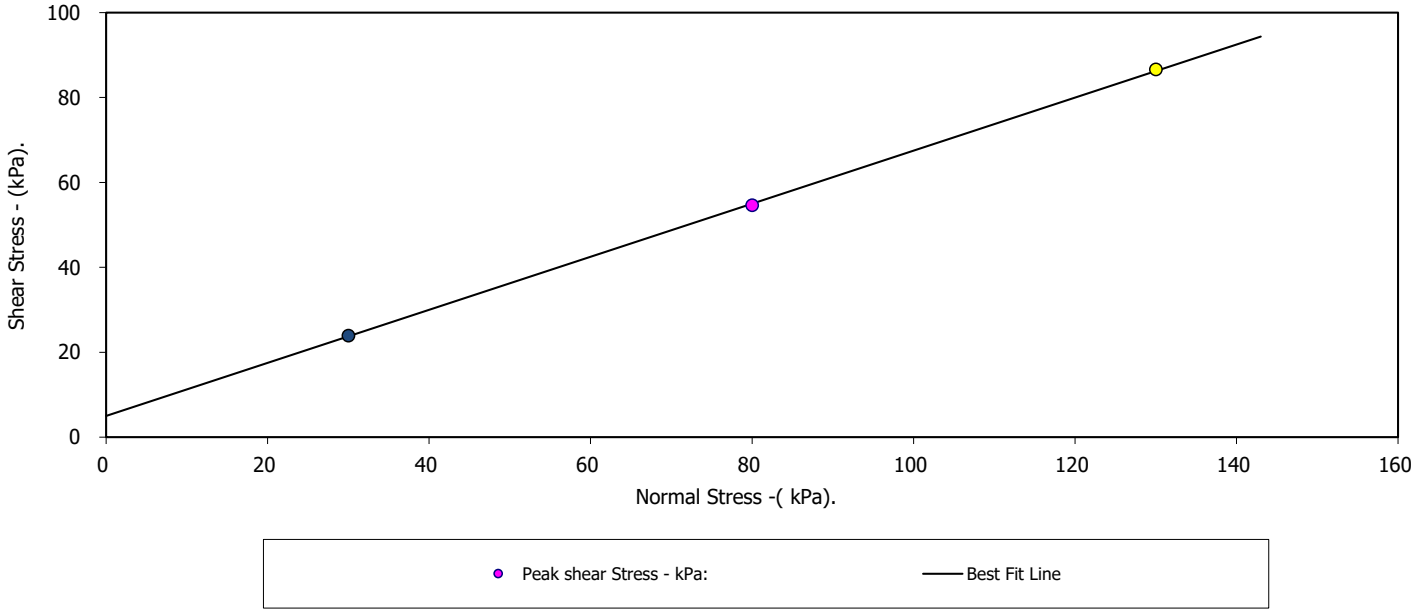
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown grey slightly sandy soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	49	49	49
Bulk Density - Mg/m3:	1.67	1.67	1.68
Dry Density - Mg/m3:	1.12	1.12	1.13
Voids Ratio:	1.3660	1.3596	1.3515
Normal Pressure- kPa	30	80	130
Consolidation			
Consolidated Height - mm:	23.07	21.81	20.56
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.88	7.43	8.22
Peak shear Stress - kPa:	24	55	87

PEAK	
Angle of Shearing Resistance:(θ)	**32.0**
Effective Cohesion - kPa:	**5**

FAILURE CONDITIONS



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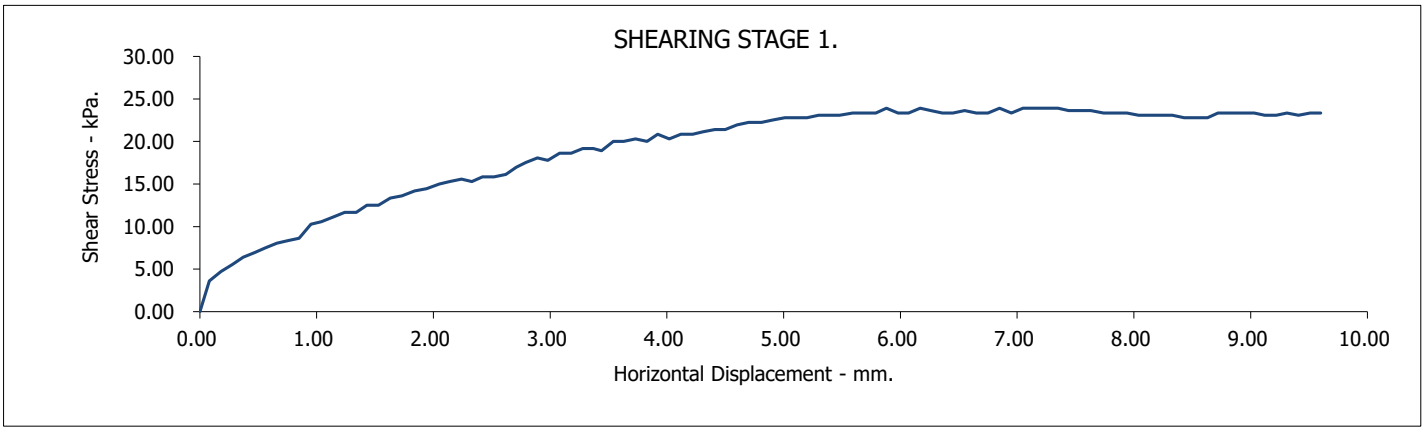
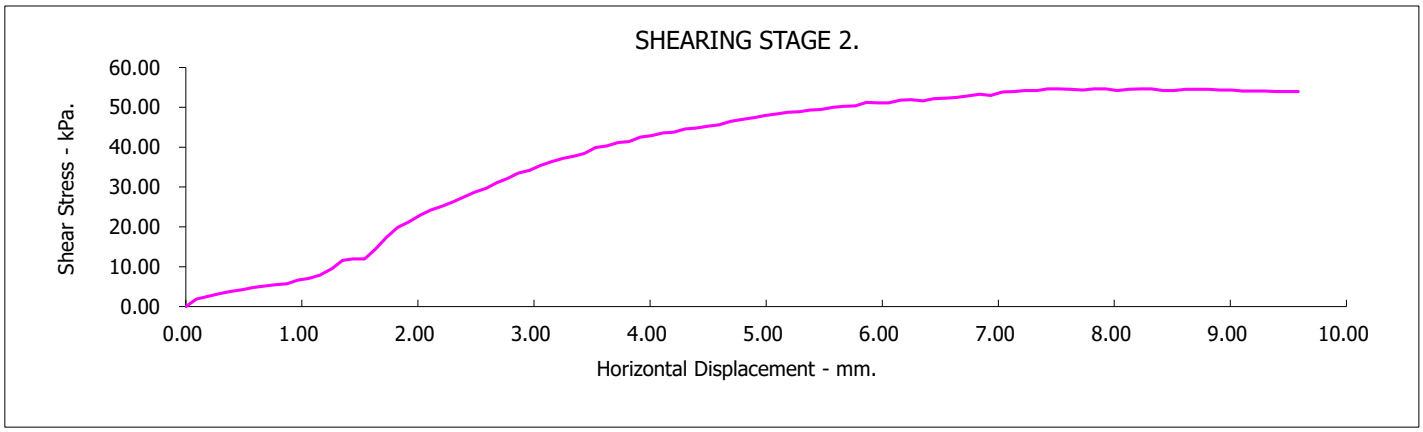
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	3.00
Sample Number :		Depth to (m):	





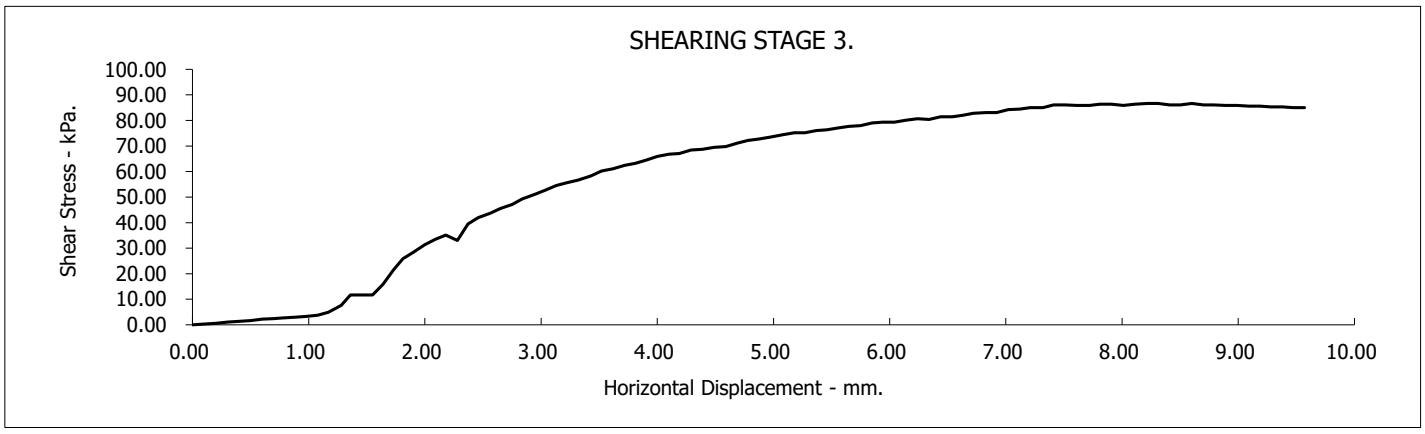


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Figure.

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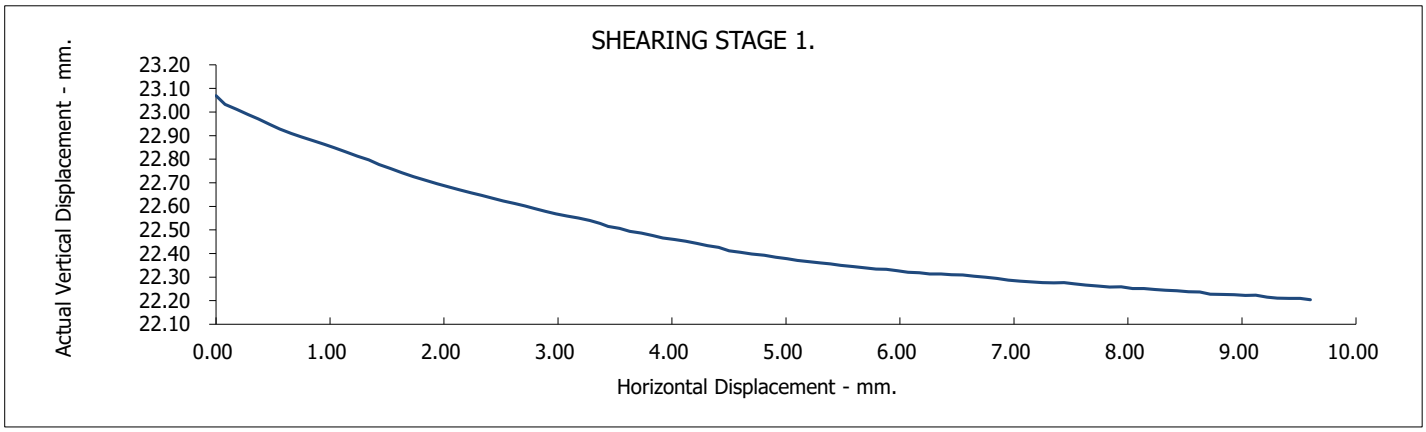
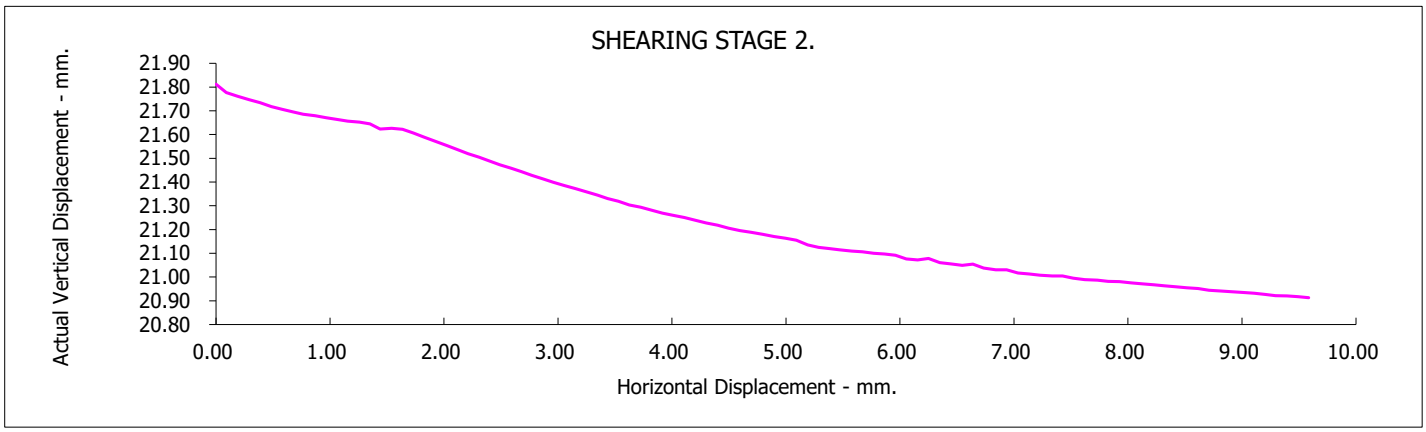
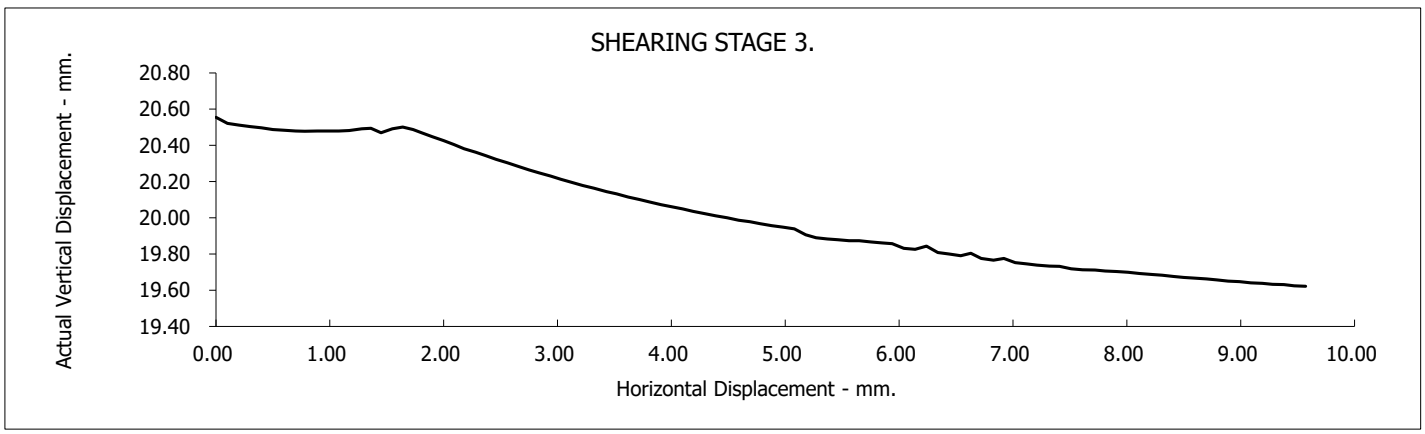
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	3.00
Sample Number :		Depth to (m):	







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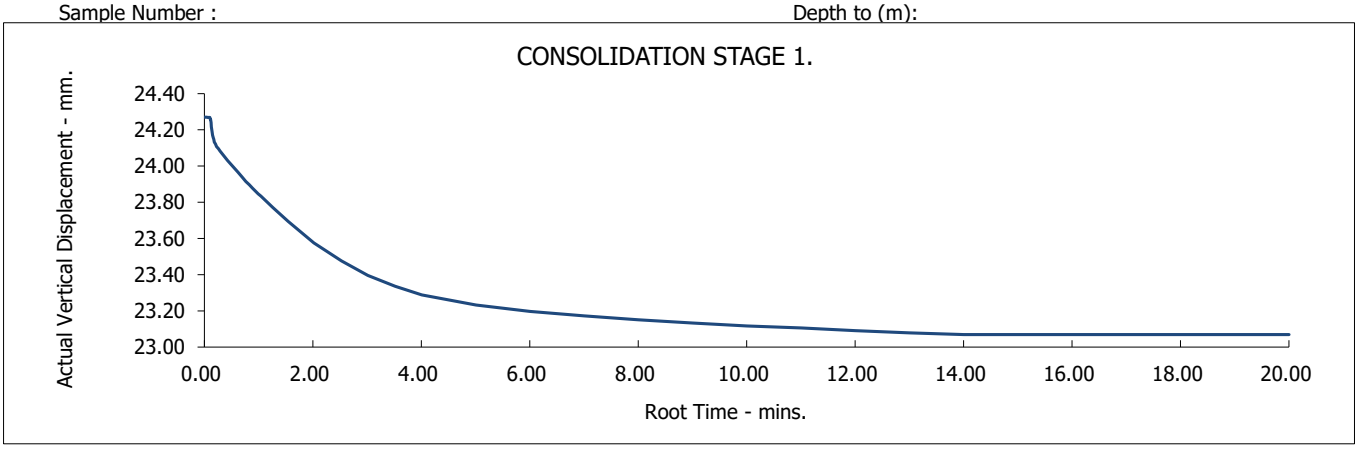
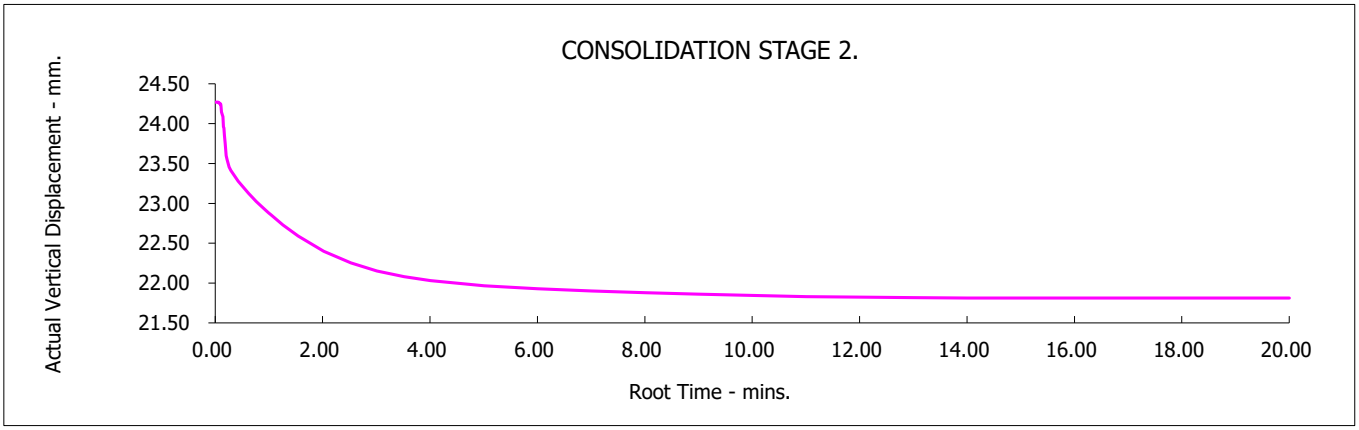
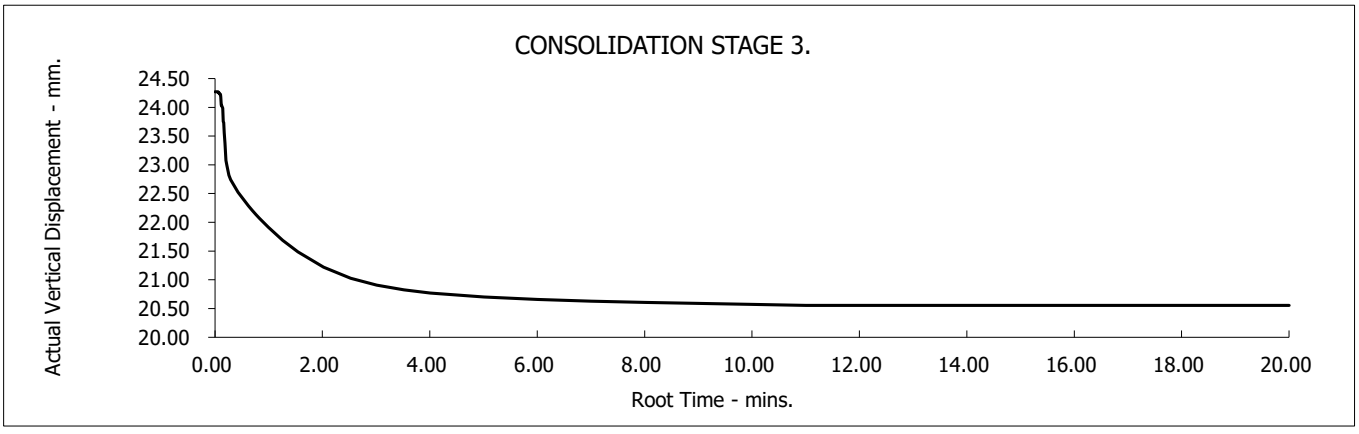
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	3.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	8.00
Sample Number :		Depth to (m):	

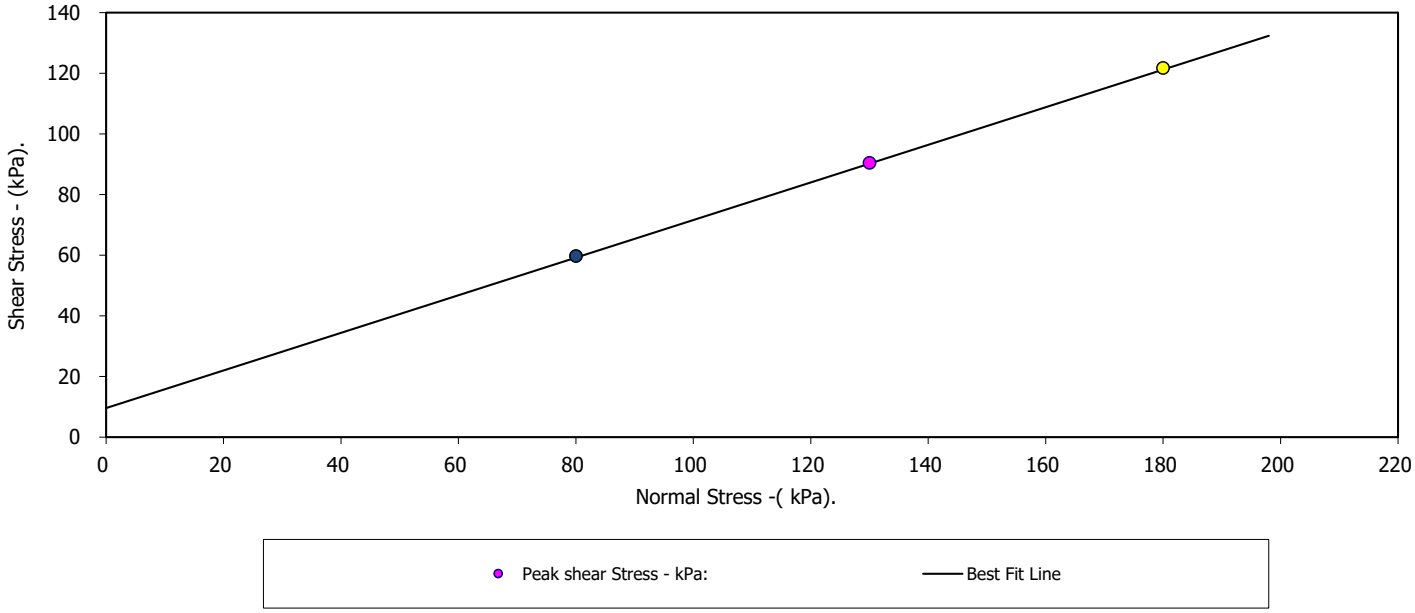
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	39	39	39
Bulk Density - Mg/m3:	1.71	1.71	1.71
Dry Density - Mg/m3:	1.23	1.23	1.23
Voids Ratio:	1.1503	1.1539	1.1575
Normal Pressure- kPa	80	130	180
Consolidation			
Consolidated Height - mm:	22.77	21.34	19.92
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	7.07	6.80	7.59
Peak shear Stress - kPa:	60	91	122

PEAK	
Angle of Shearing Resistance:(θ)	**31.8**
Effective Cohesion - kPa:	**10**

FAILURE CONDITIONS



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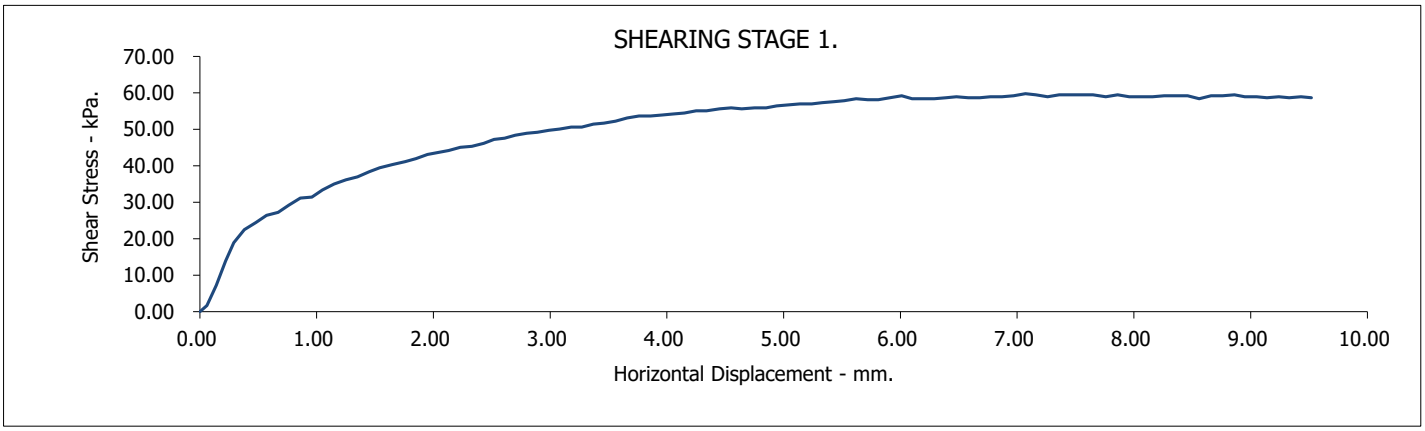
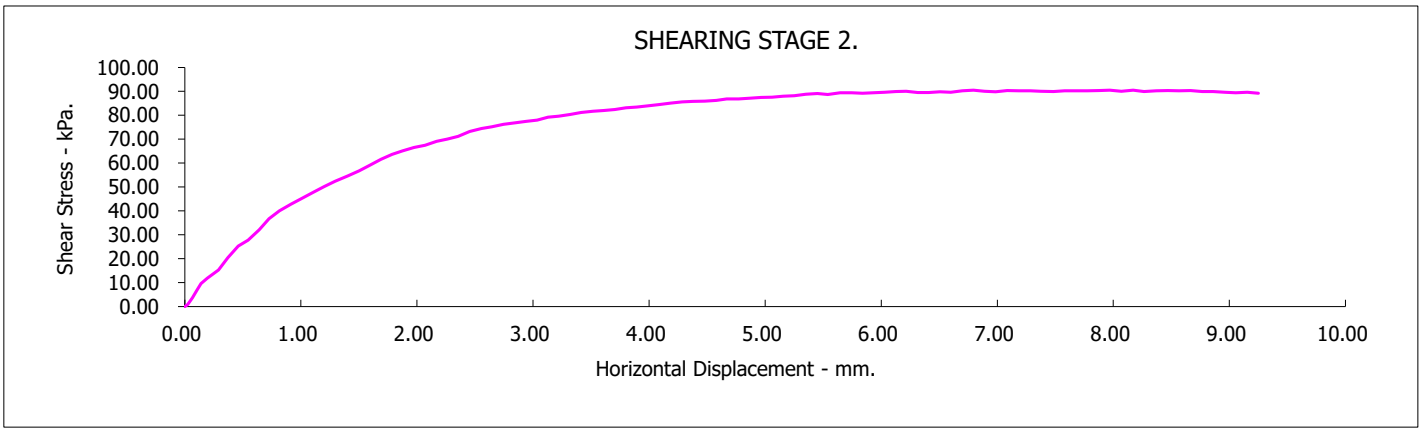
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	8.00
Sample Number :		Depth to (m):	





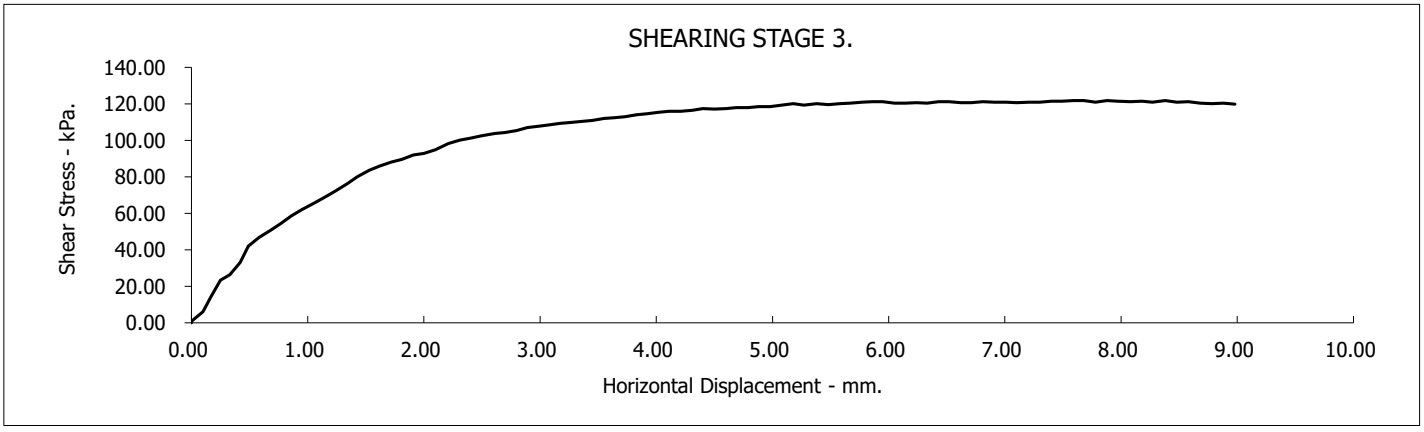


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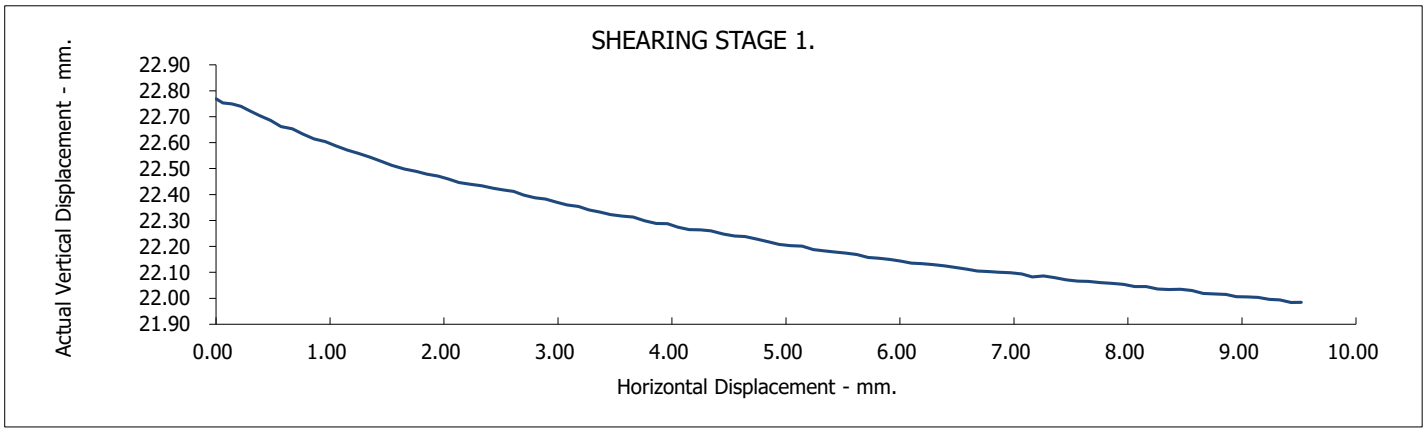
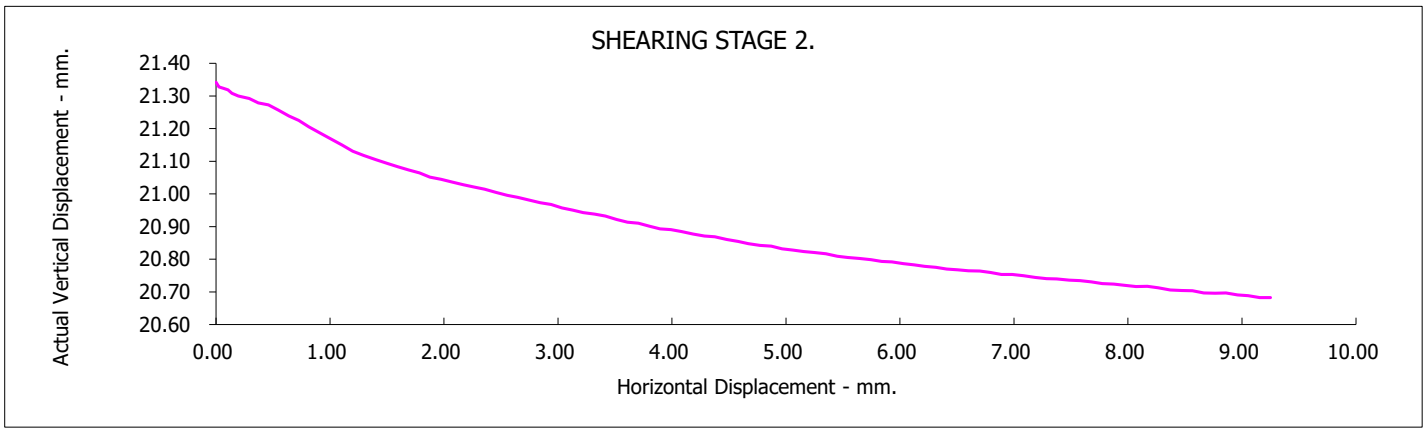
Figure.

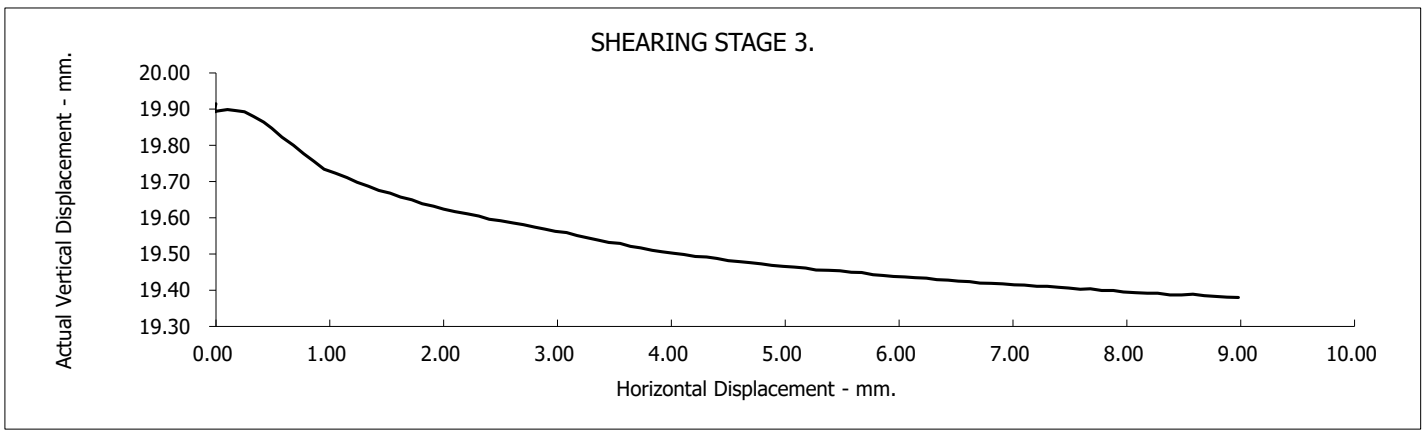
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number: L05 Depth from (m): 8.00
Sample Number : Depth to (m):







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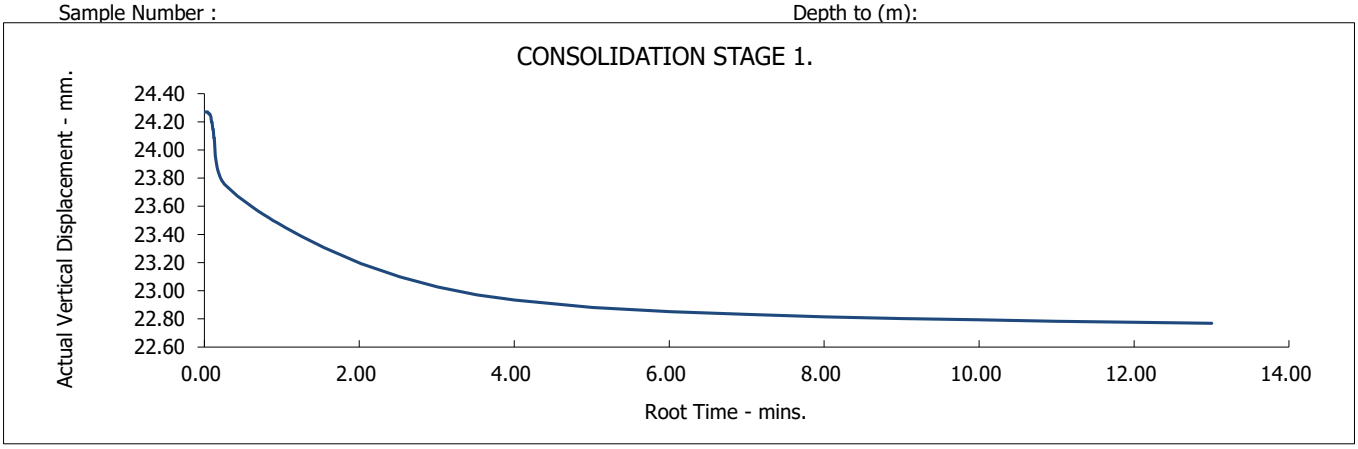
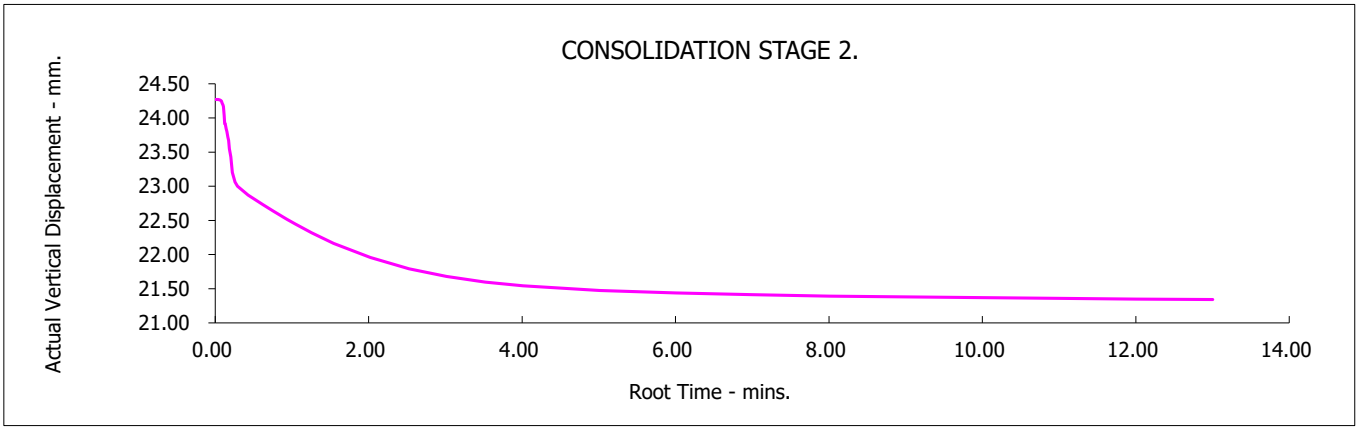
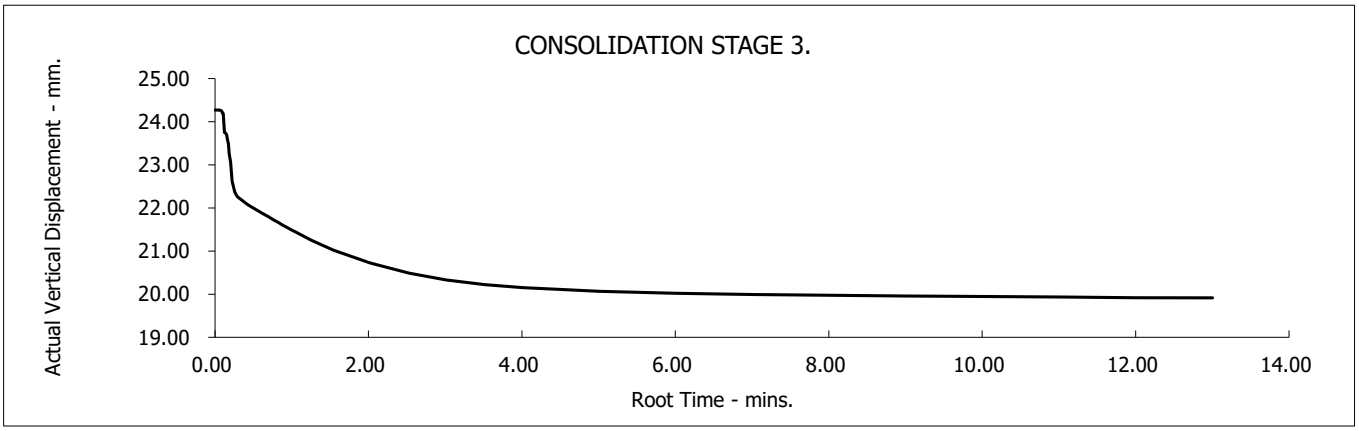
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	L05	Depth from (m):	8.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M01	Depth from (m):	6.00
Sample Number :		Depth to (m):	

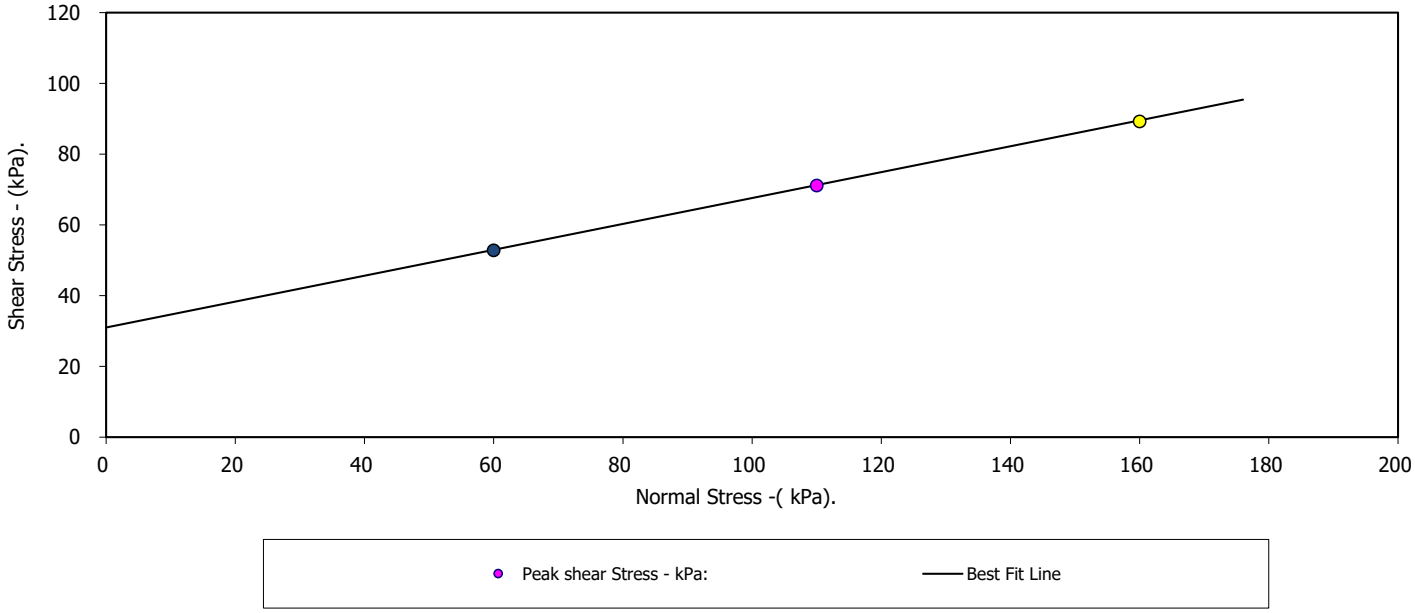
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Grey fine sandy SILT

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	30	30	30
Bulk Density - Mg/m3:	1.94	1.94	1.94
Dry Density - Mg/m3:	1.49	1.50	1.50
Voids Ratio:	0.7732	0.7724	0.7717
Normal Pressure- kPa	60	110	160
Consolidation			
Consolidated Height - mm:	23.63	23.29	22.95
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	3.81	4.27	4.32
Peak shear Stress - kPa:	53	71	89

PEAK	
Angle of Shearing Resistance:(θ)	**20.1**
Effective Cohesion - kPa:	**31**

FAILURE CONDITIONS



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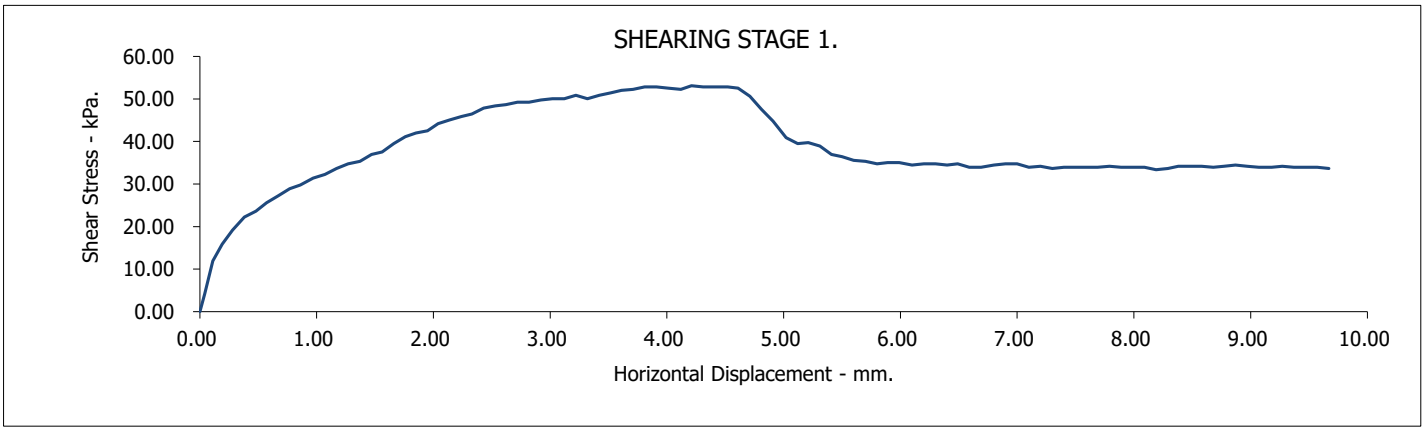
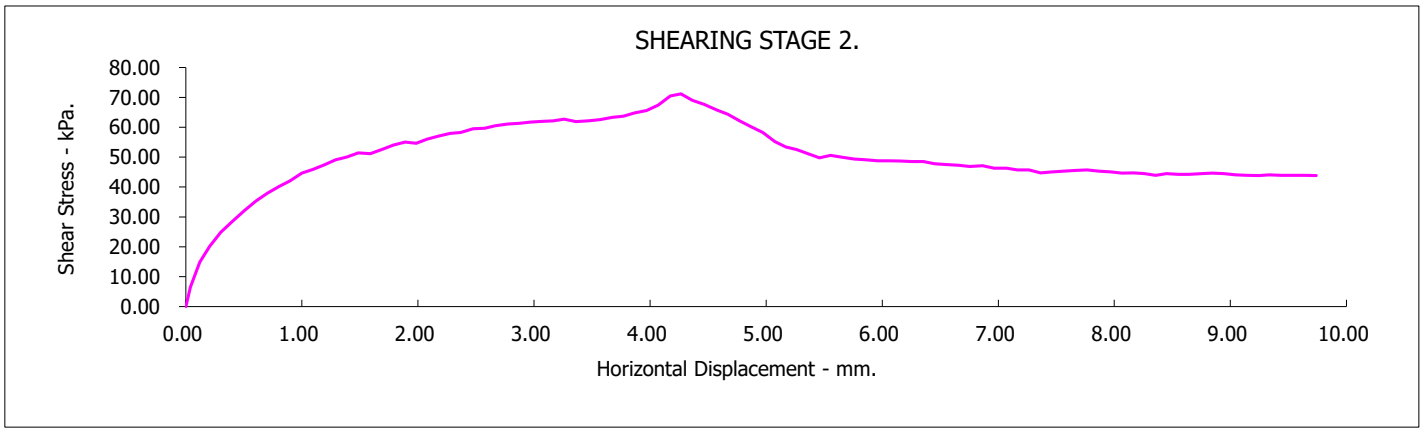
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M01	Depth from (m):	6.00
Sample Number :		Depth to (m):	





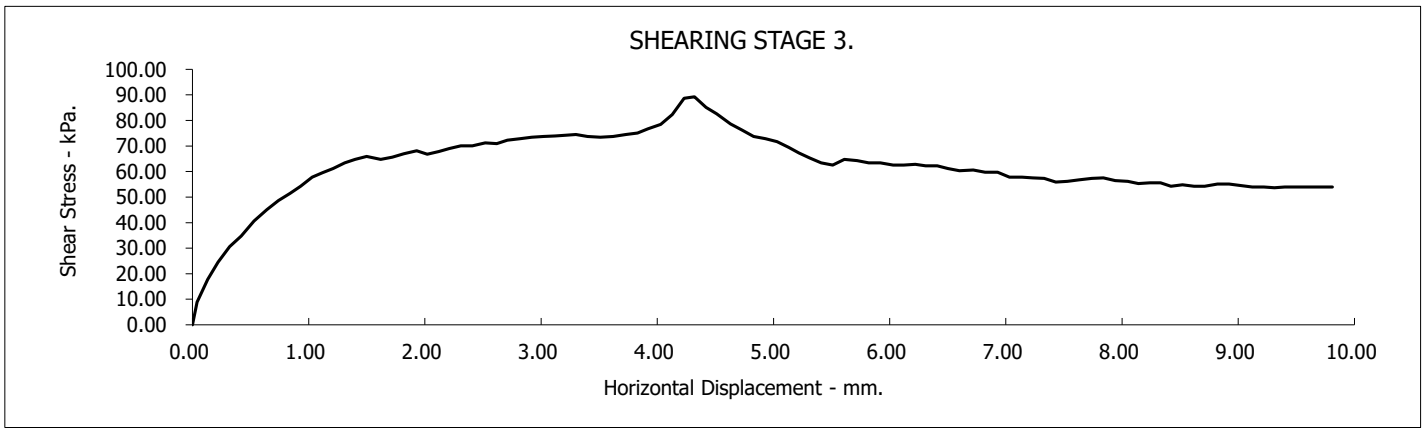


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Figure.

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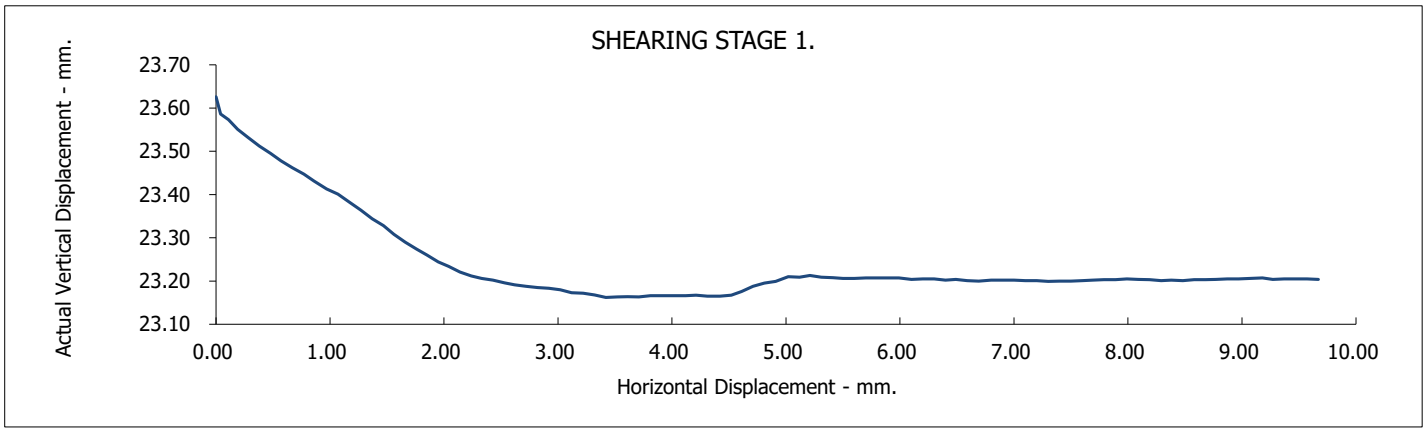
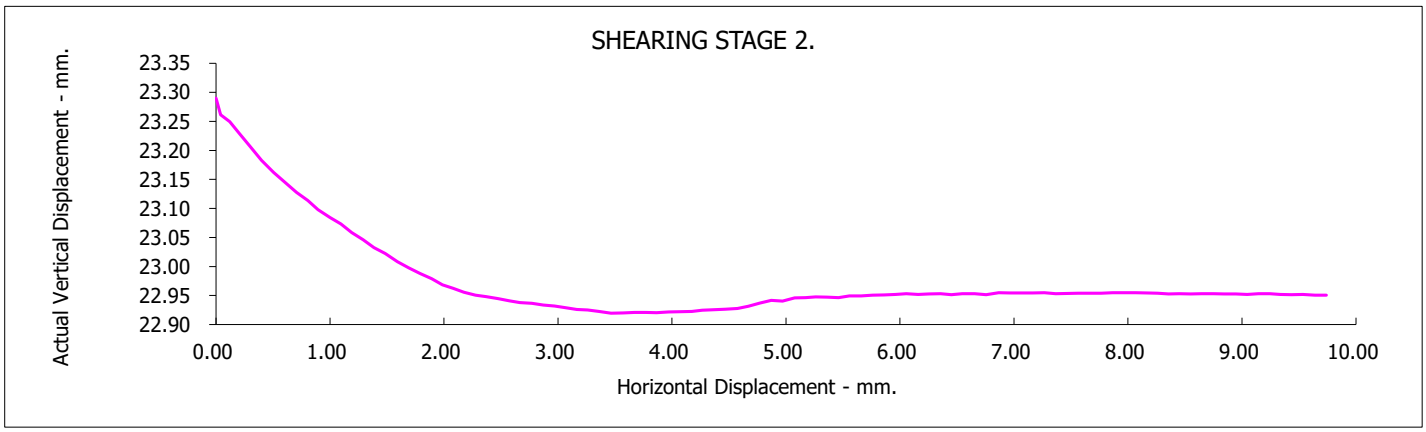
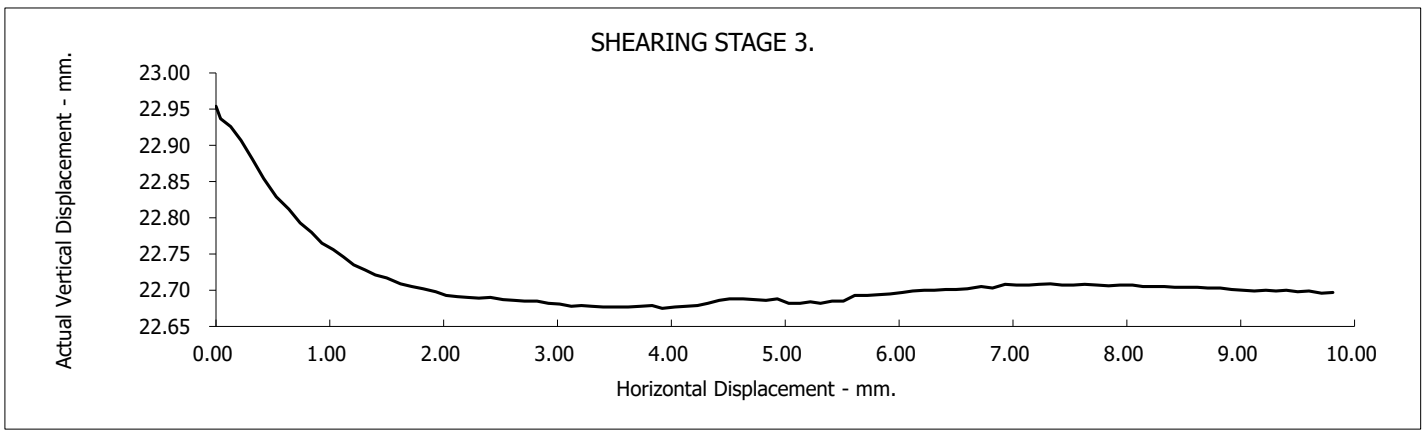
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M01	Depth from (m):	6.00
Sample Number :		Depth to (m):	







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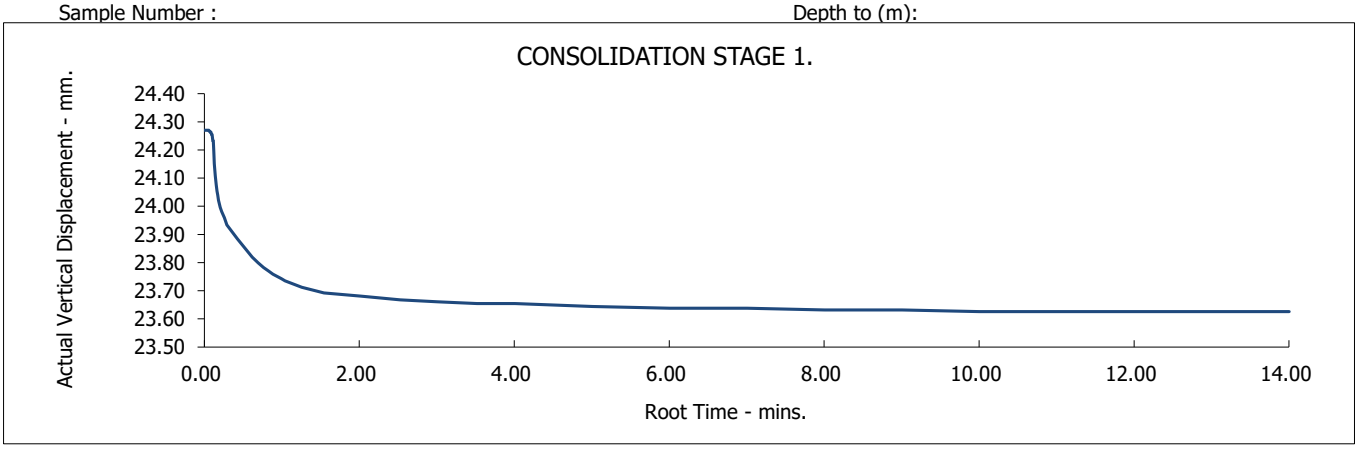
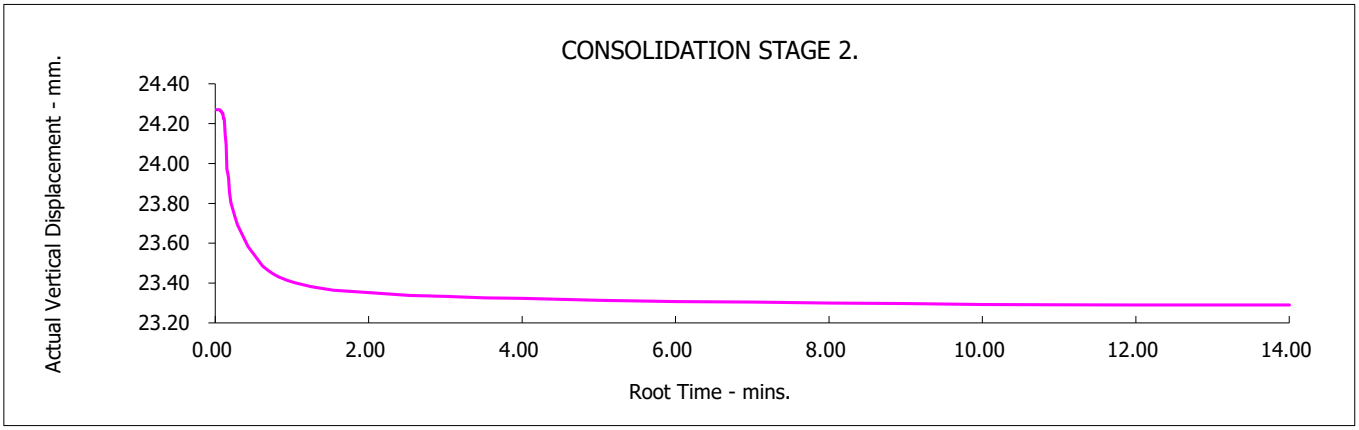
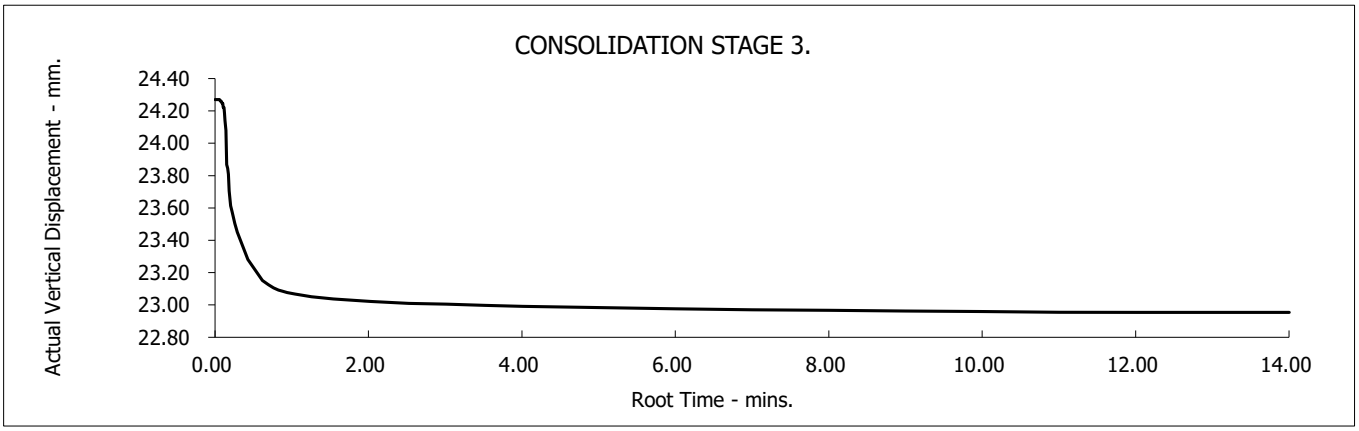
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M01	Depth from (m):	6.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	2.00
Sample Number :		Depth to (m):	

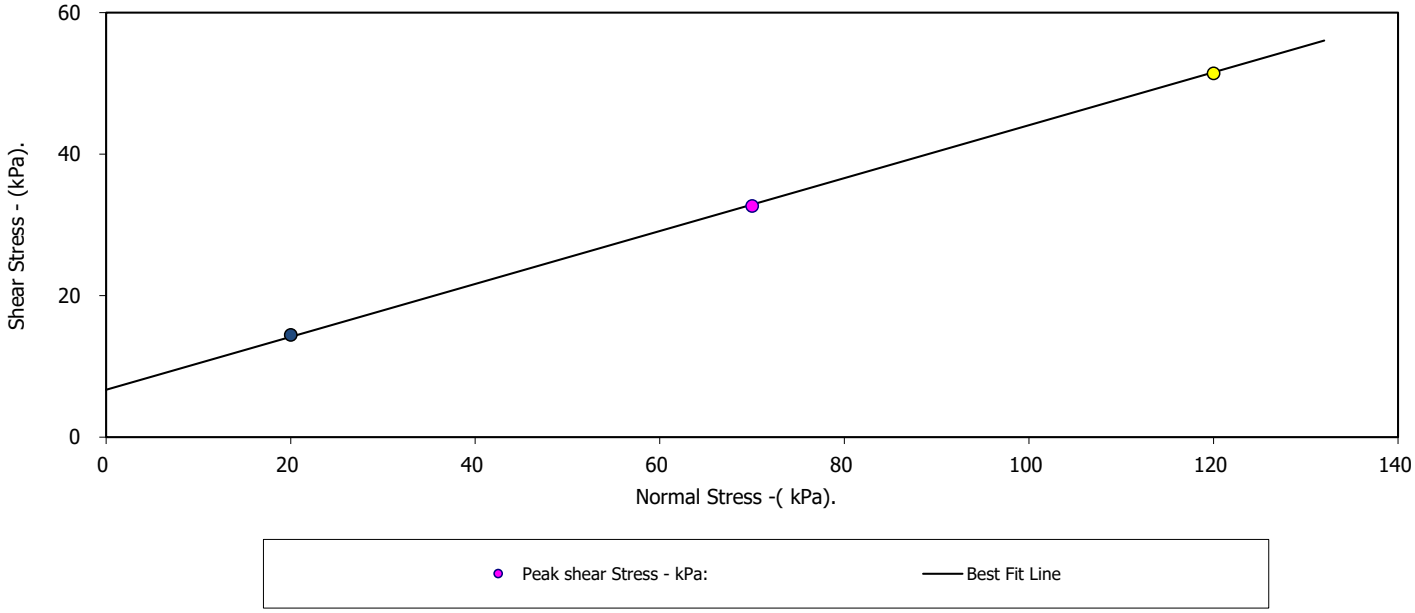
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Grey sandy clayey SILT

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	41	41	41
Bulk Density - Mg/m3:	1.74	1.74	1.74
Dry Density - Mg/m3:	1.23	1.23	1.23
Voids Ratio:	1.1478	1.1486	1.1529
Normal Pressure- kPa	20	70	120
Consolidation			
Consolidated Height - mm:	23.84	22.75	21.65
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.09	3.41	3.41
Peak shear Stress - kPa:	14	33	51

PEAK	
Angle of Shearing Resistance:(θ)	**20.5**
Effective Cohesion - kPa:	**7**

FAILURE CONDITIONS



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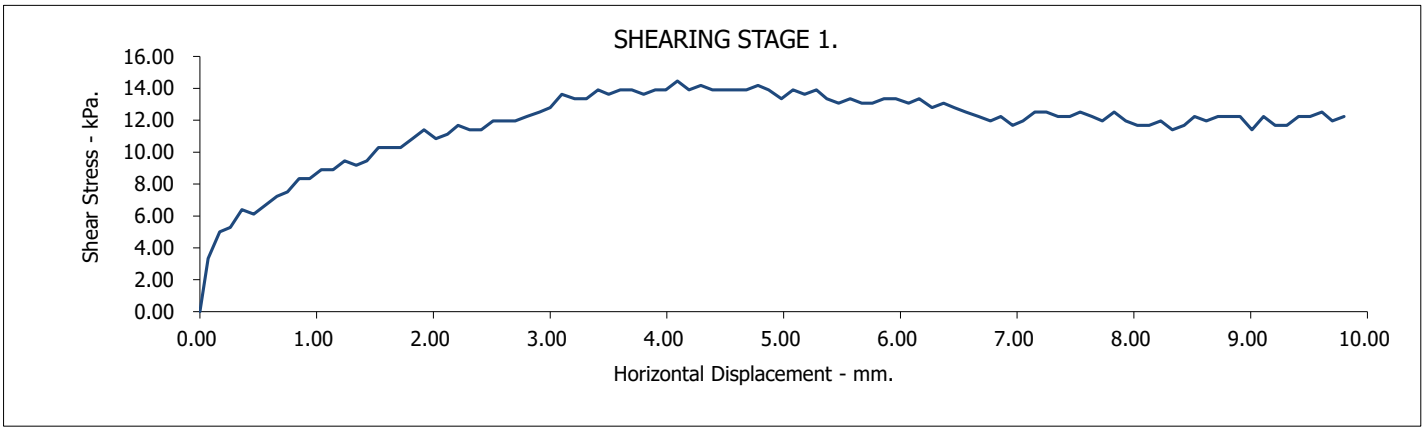
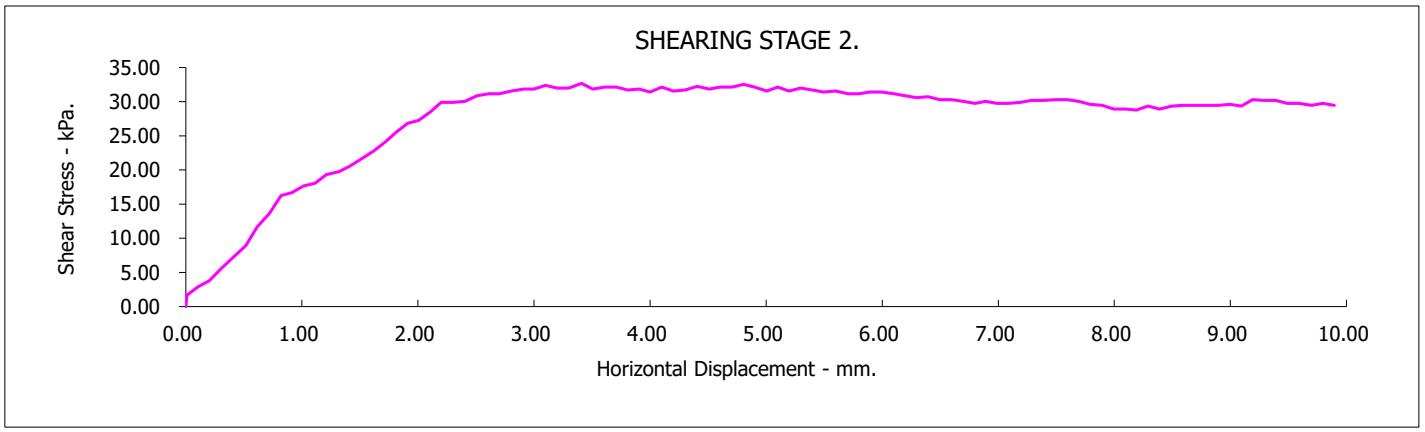
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	2.00
Sample Number :		Depth to (m):	





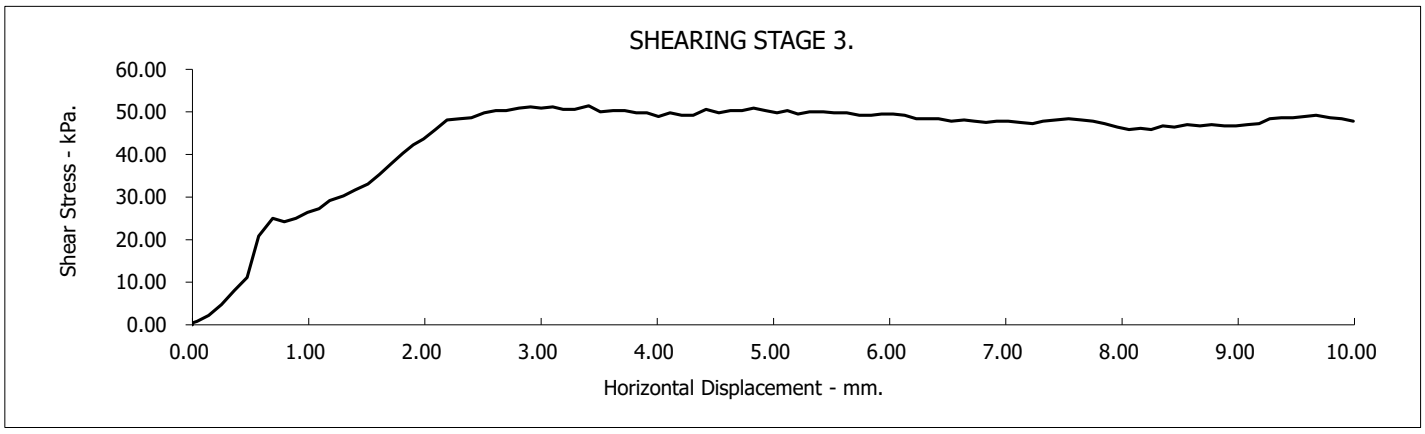


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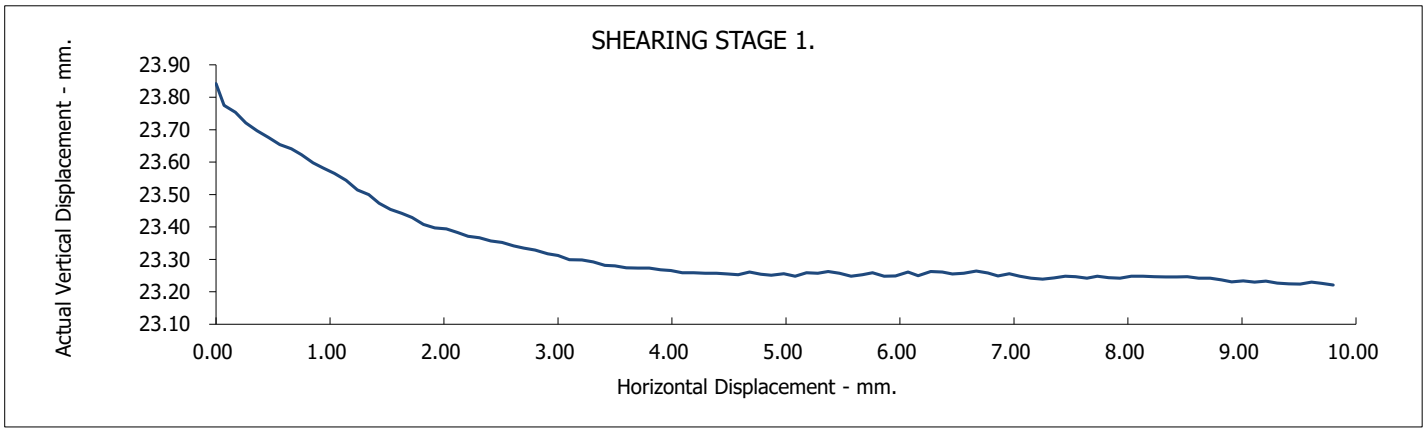
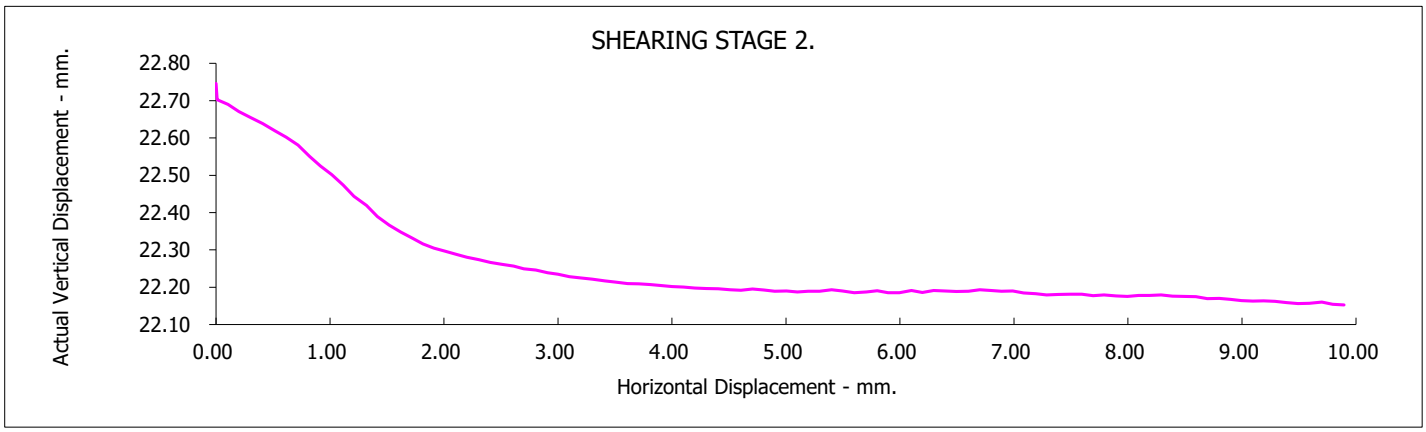
Figure.

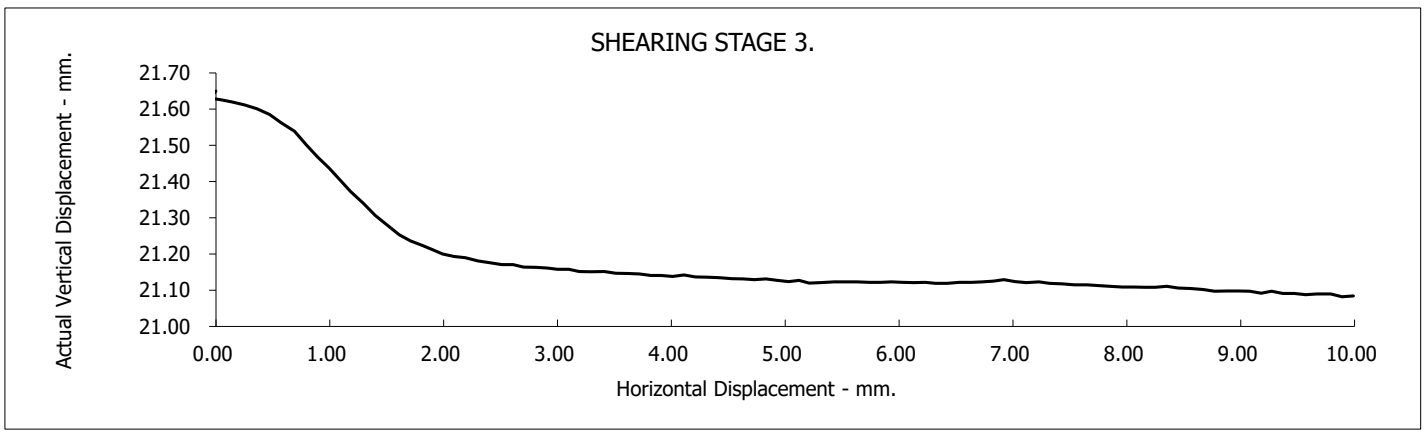
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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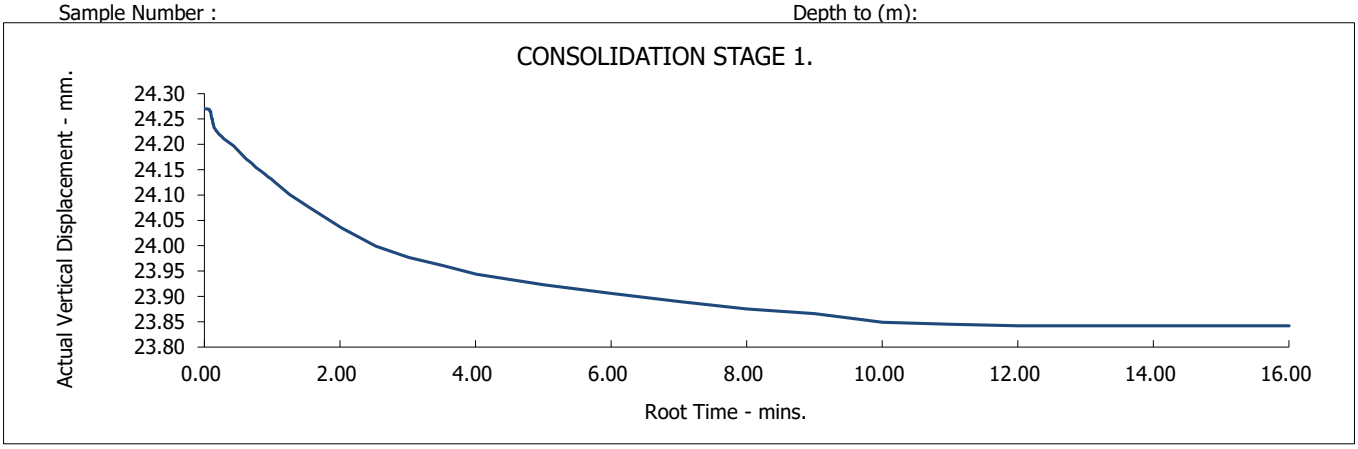
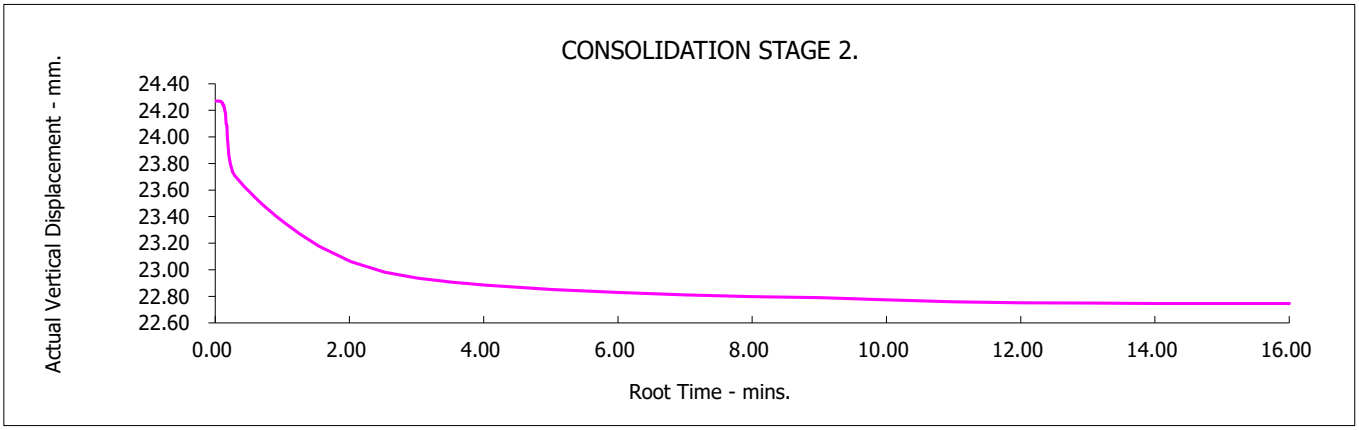
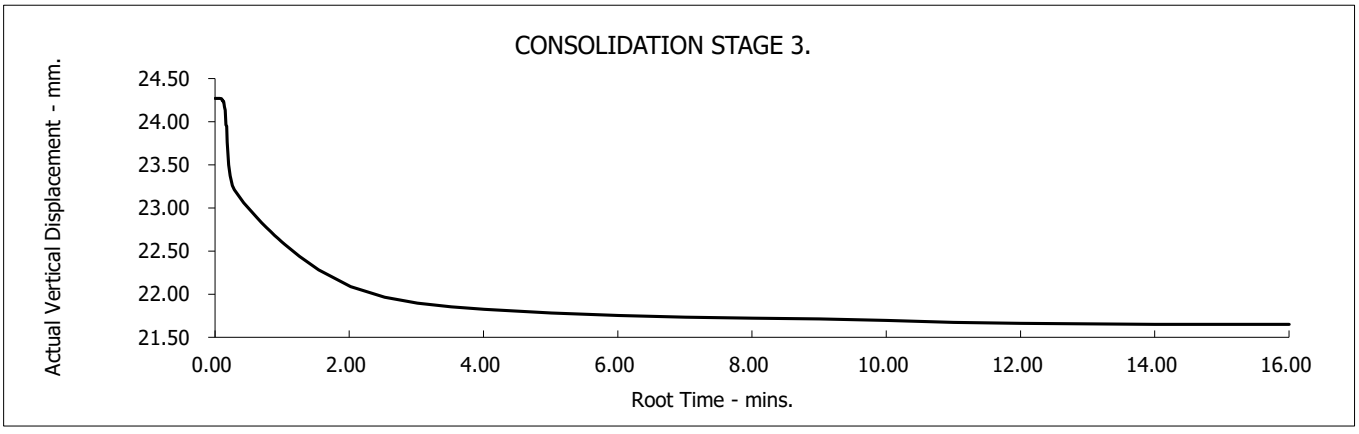
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	5.00
Sample Number :		Depth to (m):	

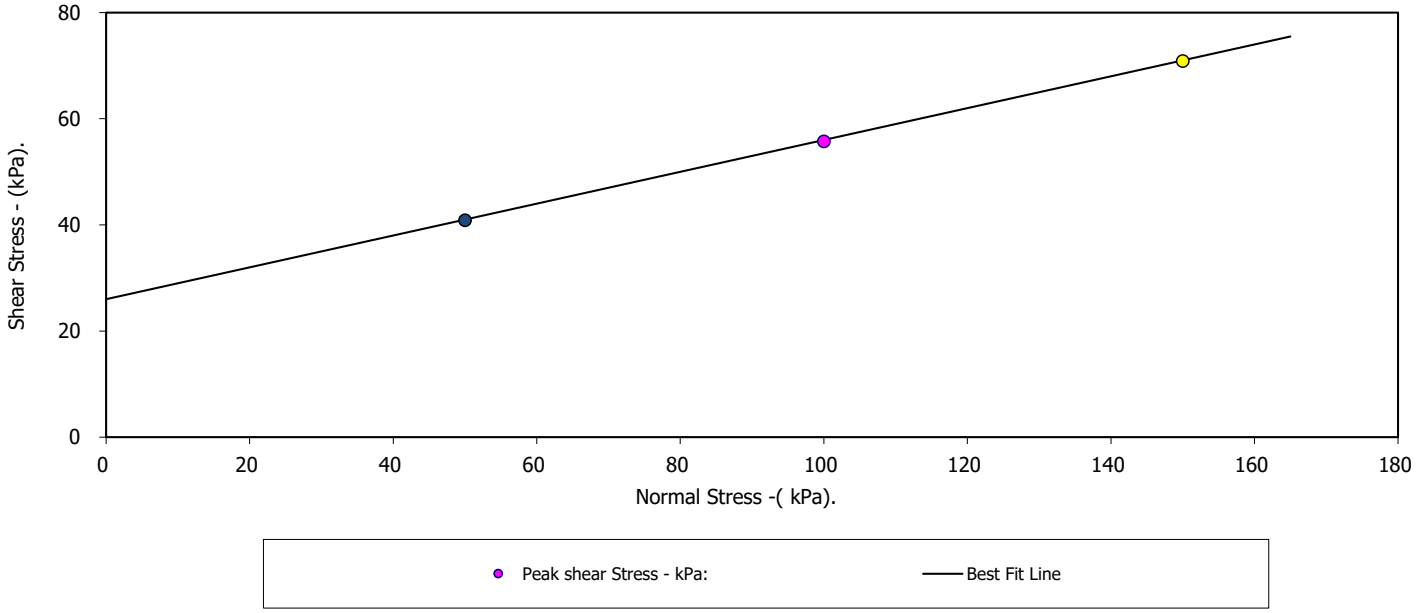
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey sandy clayey SILT

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	33	33	33
Bulk Density - Mg/m3:	1.86	1.78	1.84
Dry Density - Mg/m3:	1.40	1.33	1.38
Voids Ratio:	0.8995	0.9868	0.9208
Normal Pressure- kPa	50	100	150
Consolidation			
Consolidated Height - mm:	23.60	22.78	21.95
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.43	5.95	5.13
Peak shear Stress - kPa:	41	56	71

PEAK	
Angle of Shearing Resistance:(θ)	**16.7**
Effective Cohesion - kPa:	**26**

FAILURE CONDITIONS



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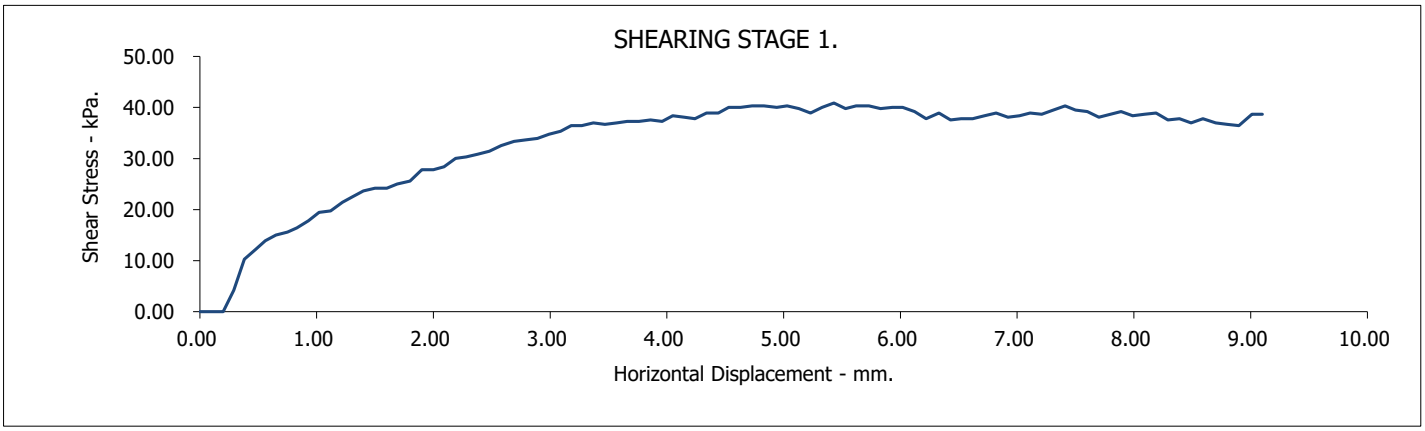
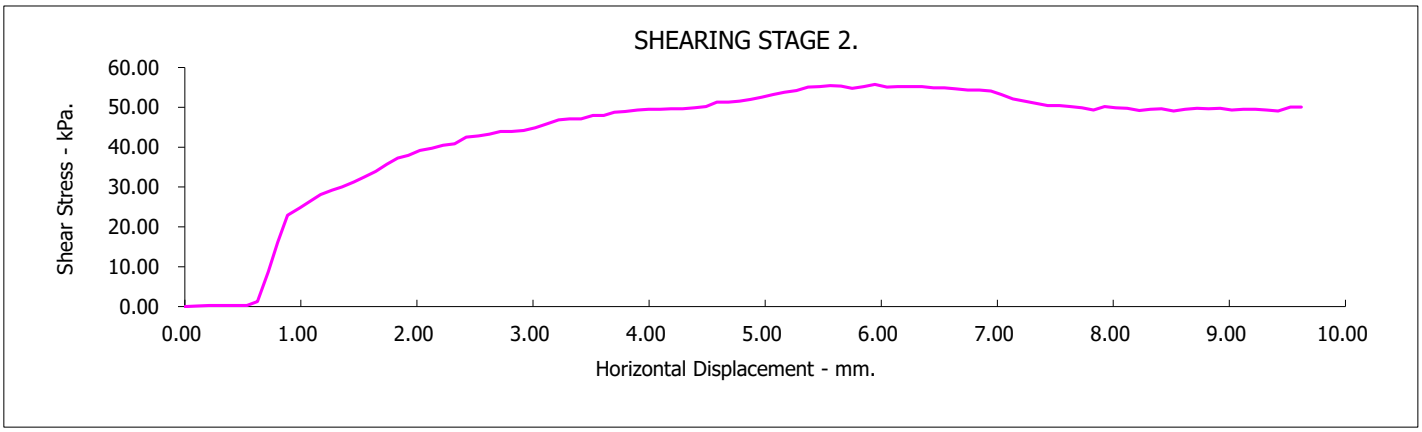
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	5.00
Sample Number :		Depth to (m):	





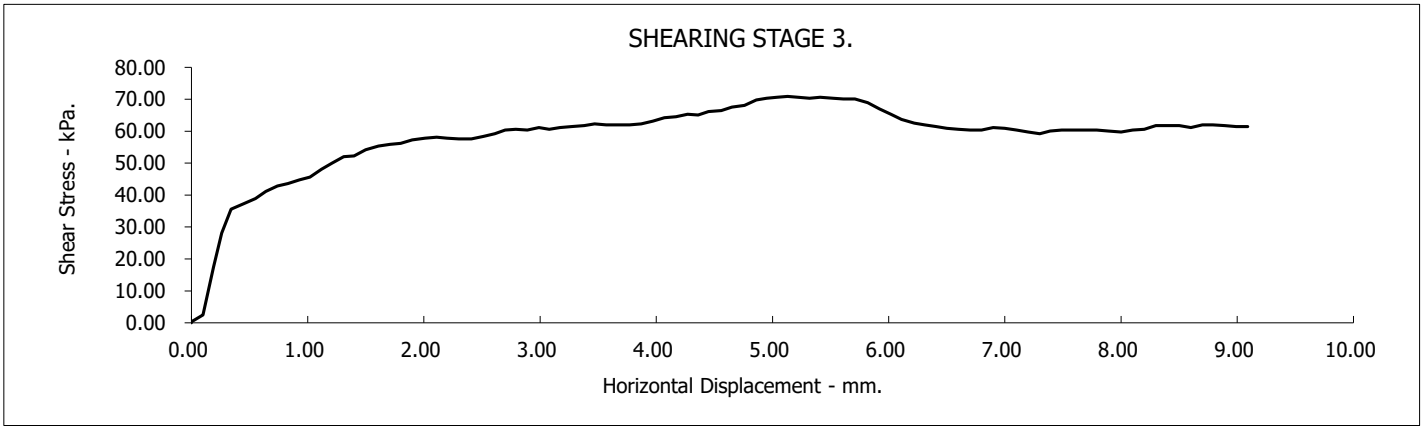


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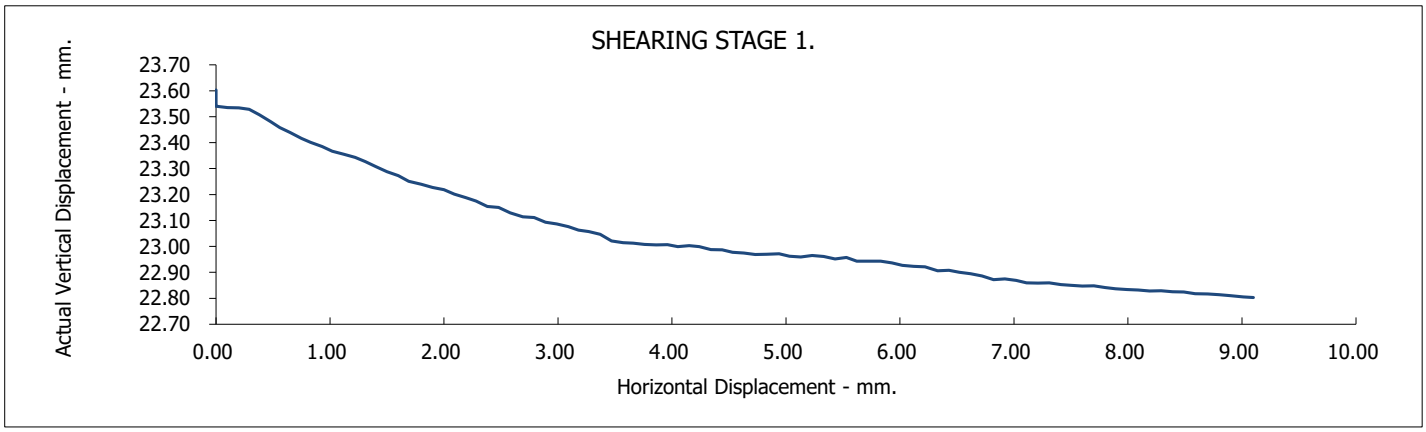
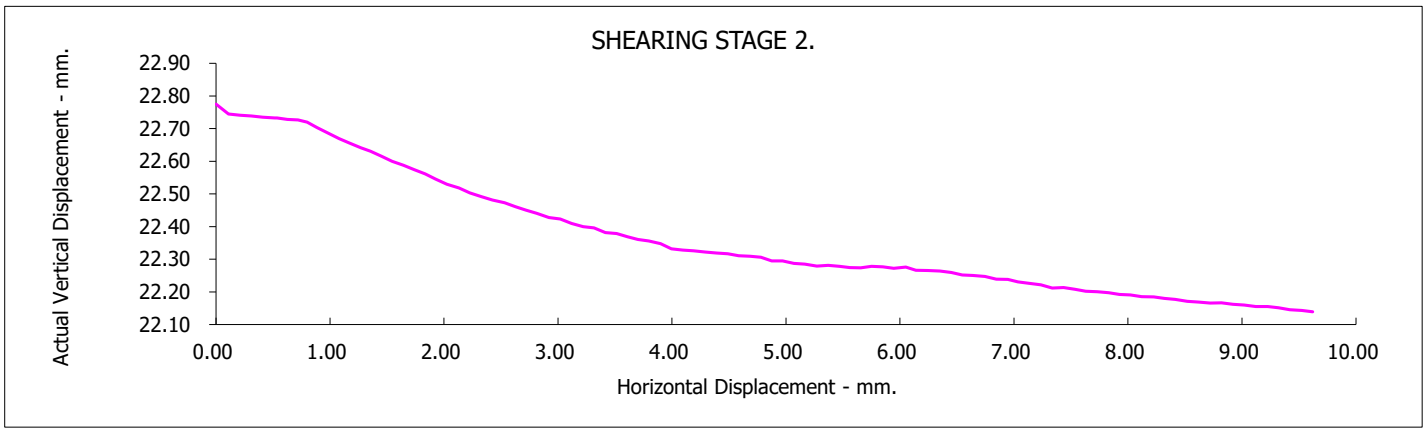
Figure.

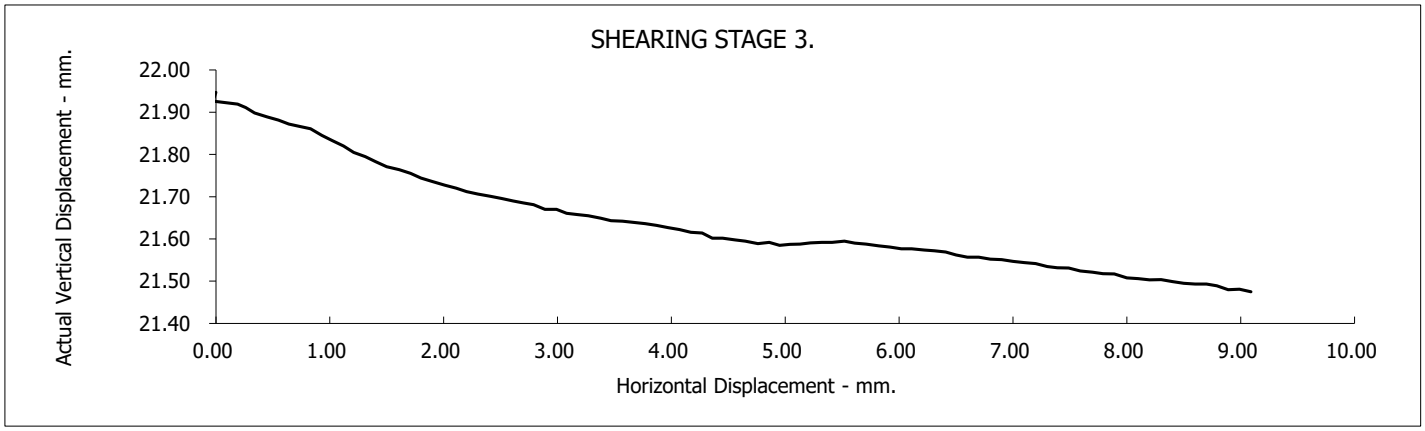
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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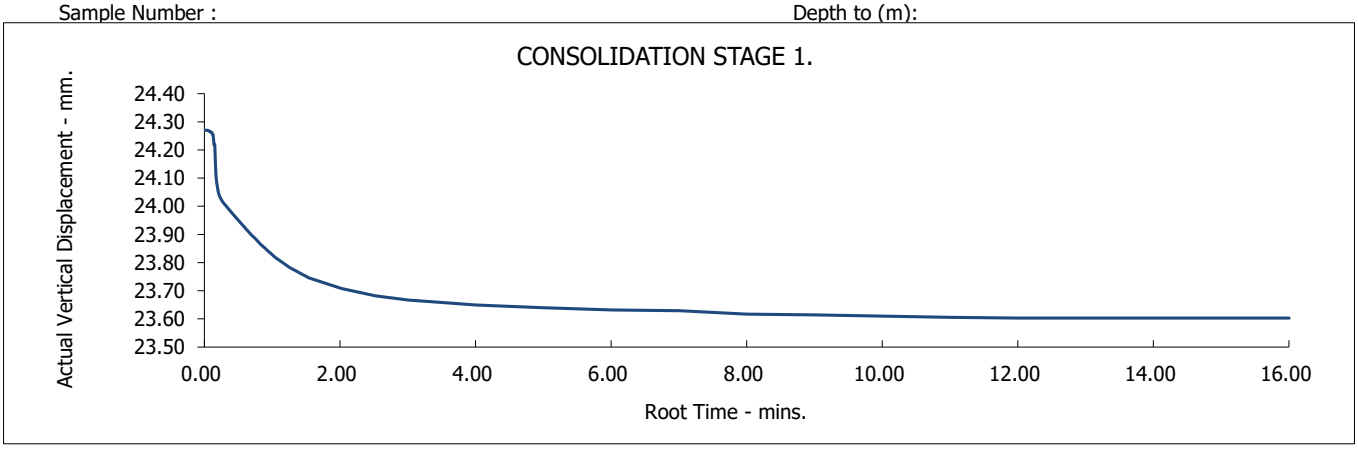
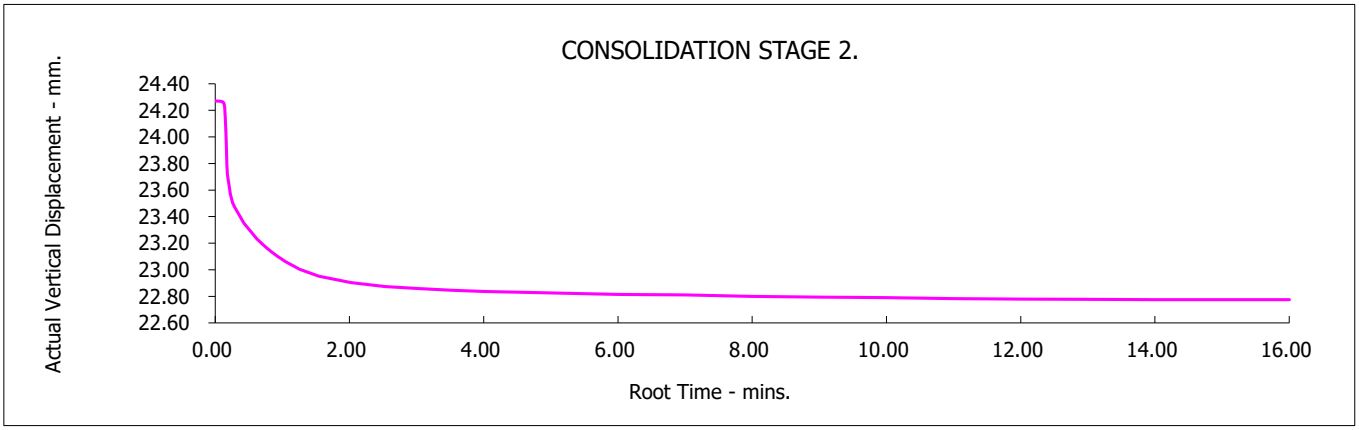
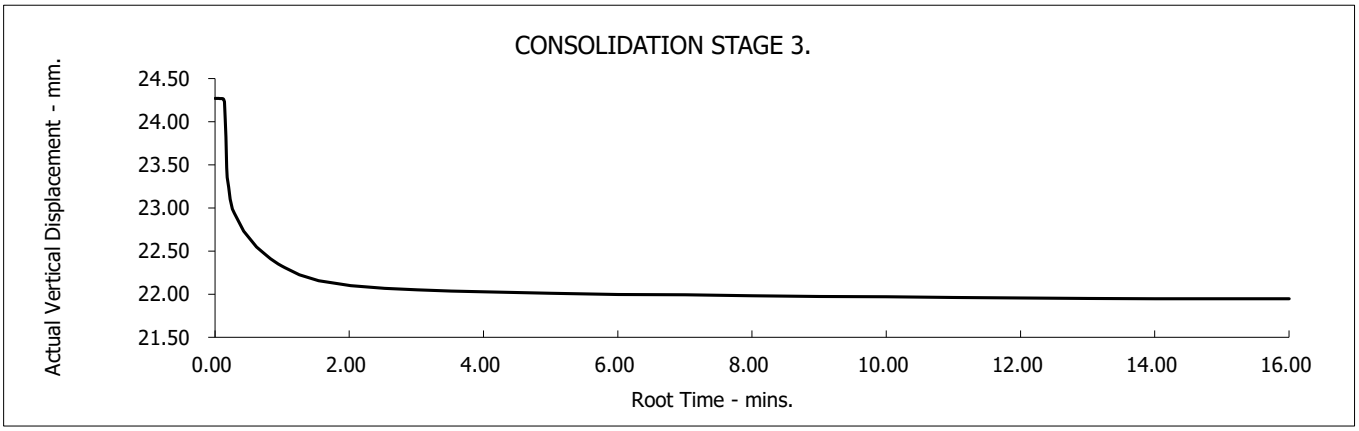
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M02	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	4.00
Sample Number :		Depth to (m):	

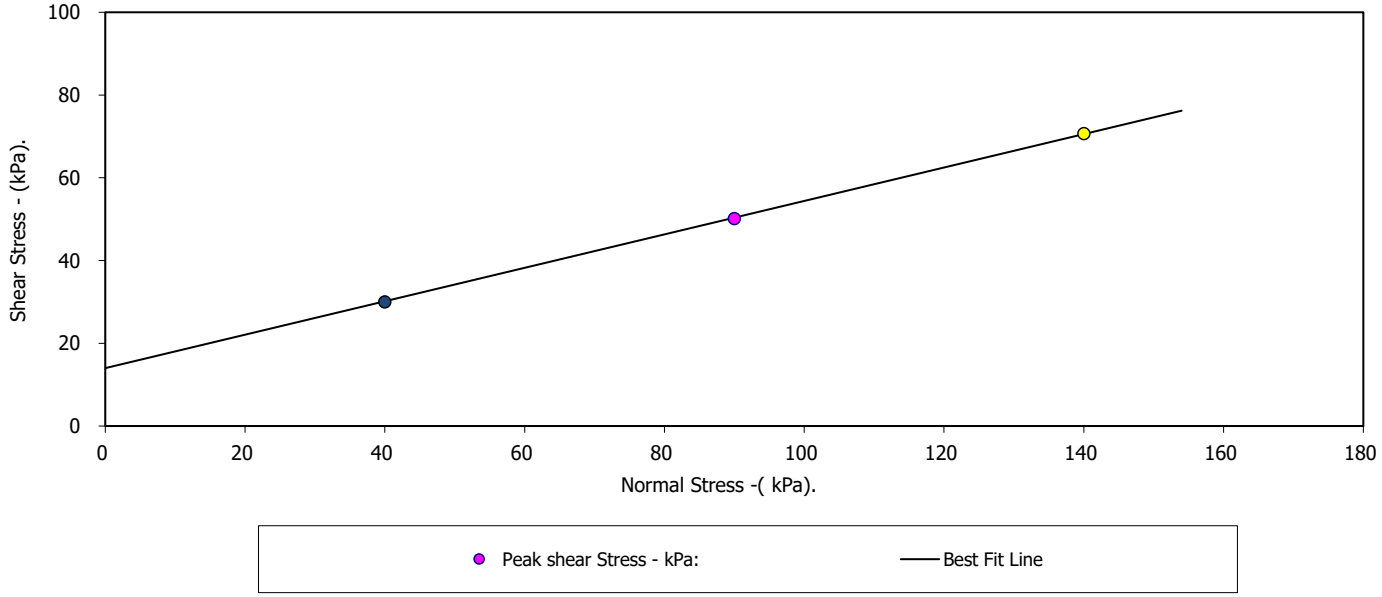
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	51	51	51
Bulk Density - Mg/m3:	1.70	1.70	1.70
Dry Density - Mg/m3:	1.13	1.13	1.13
Voids Ratio:	1.3487	1.3479	1.3491
Normal Pressure- kPa	40	90	140
Consolidation			
Consolidated Height - mm:	22.63	21.84	20.87
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.78	4.57	4.28
Peak shear Stress - kPa:	30	50	71

PEAK	
Angle of Shearing Resistance:(θ)	**22.0**
Effective Cohesion - kPa:	**14**

FAILURE CONDITIONS



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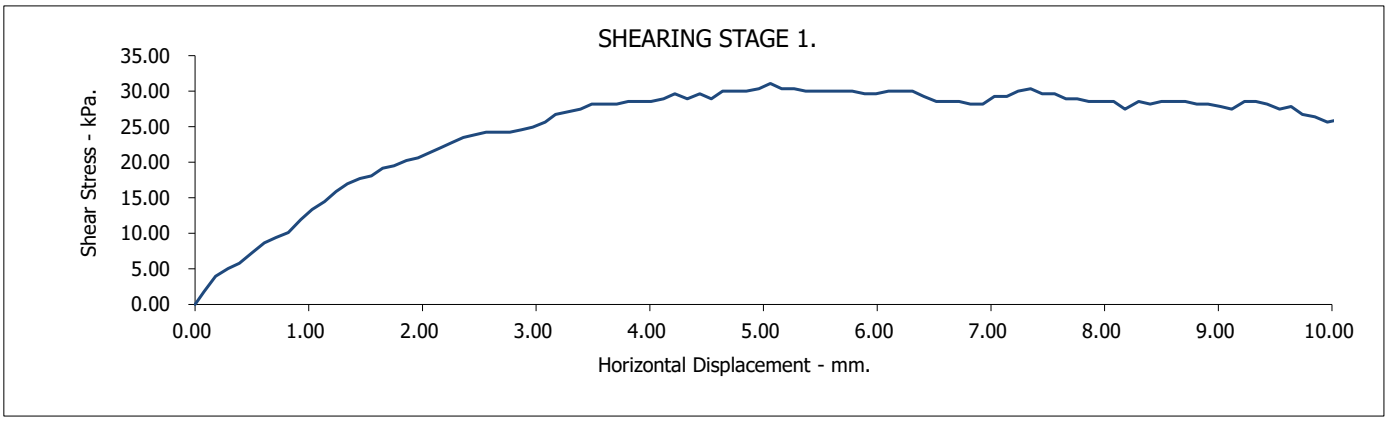
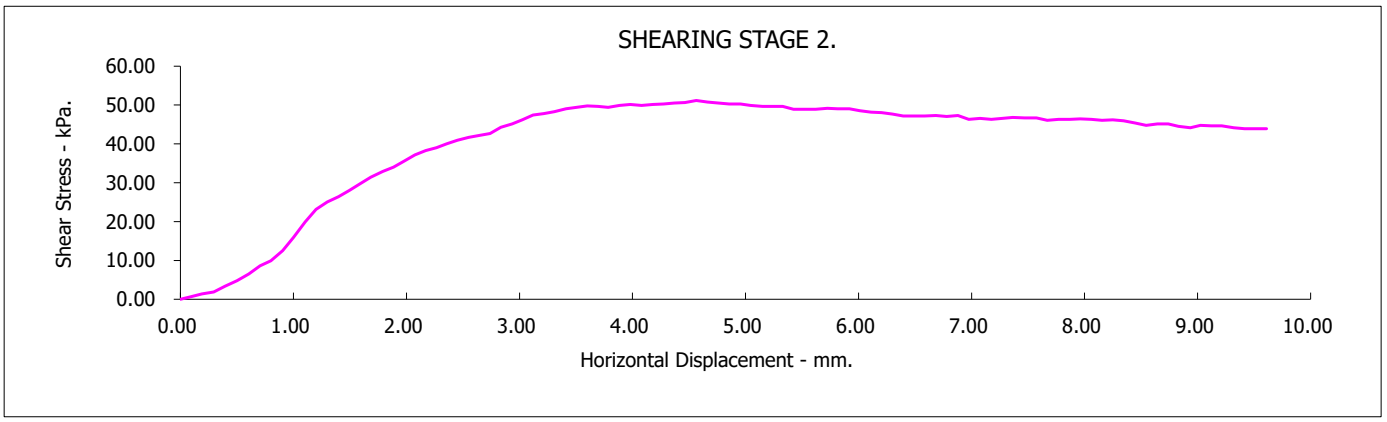
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	4.00
Sample Number :		Depth to (m):	





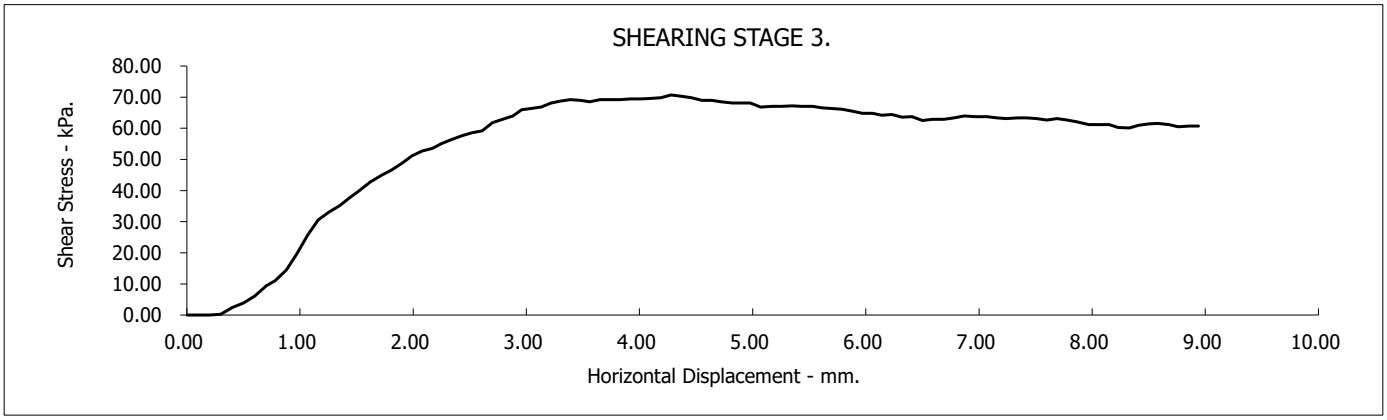


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Figure.

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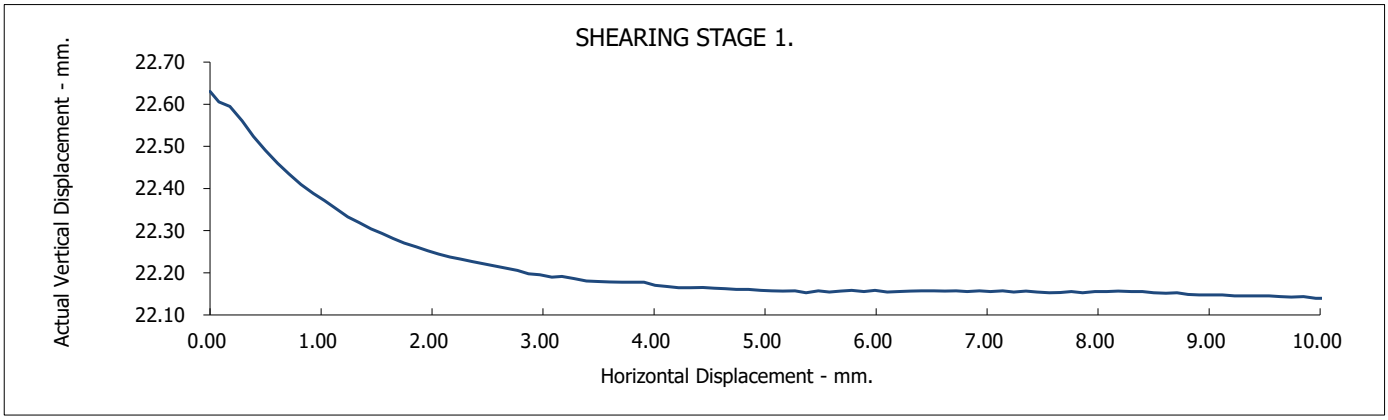
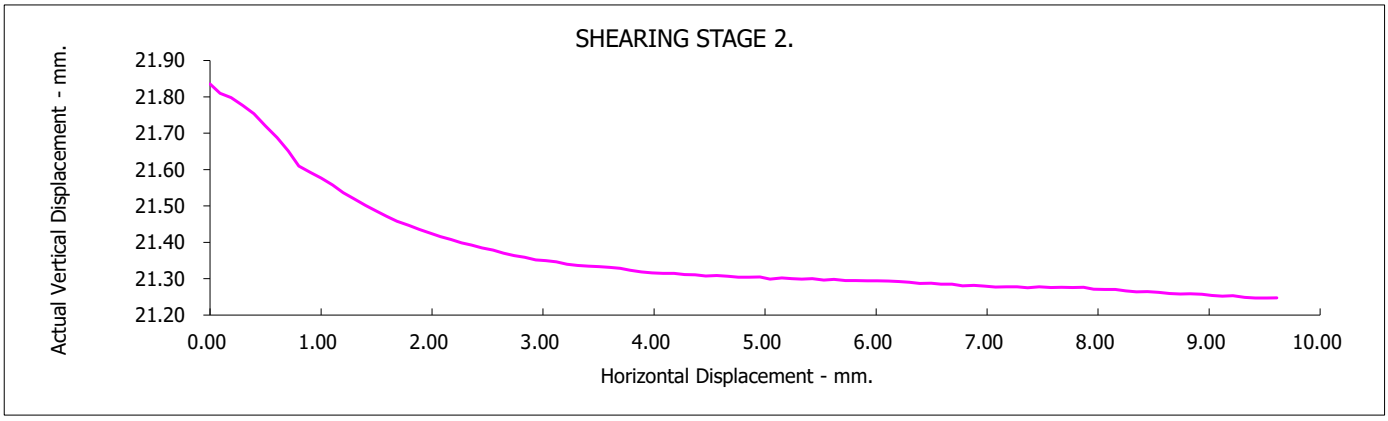
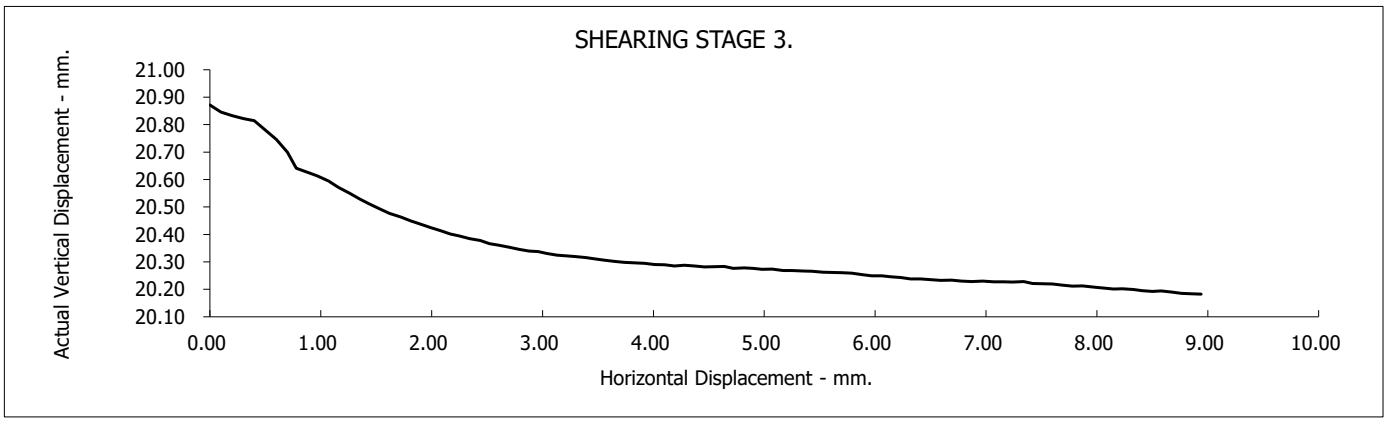
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	4.00
Sample Number :		Depth to (m):	







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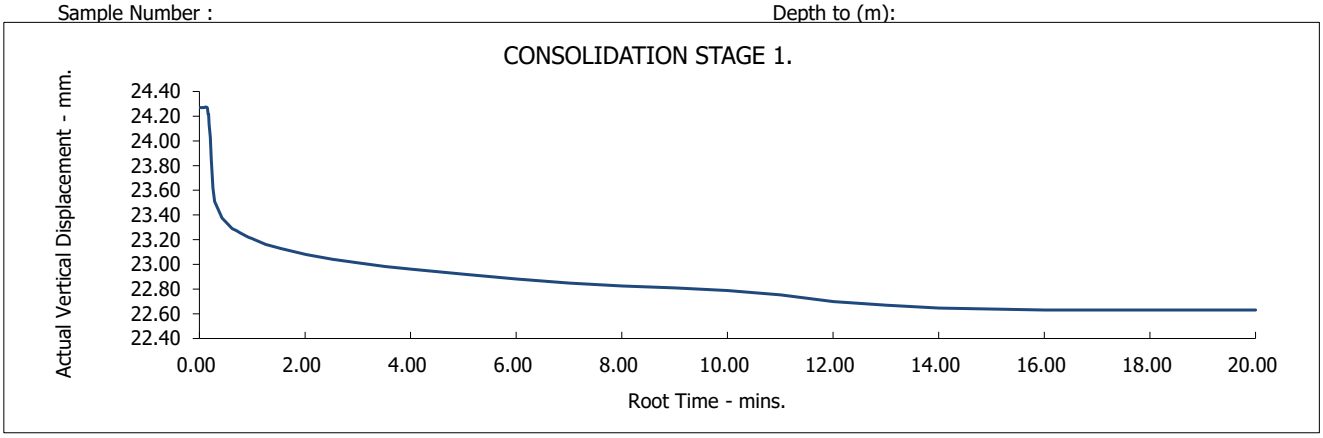
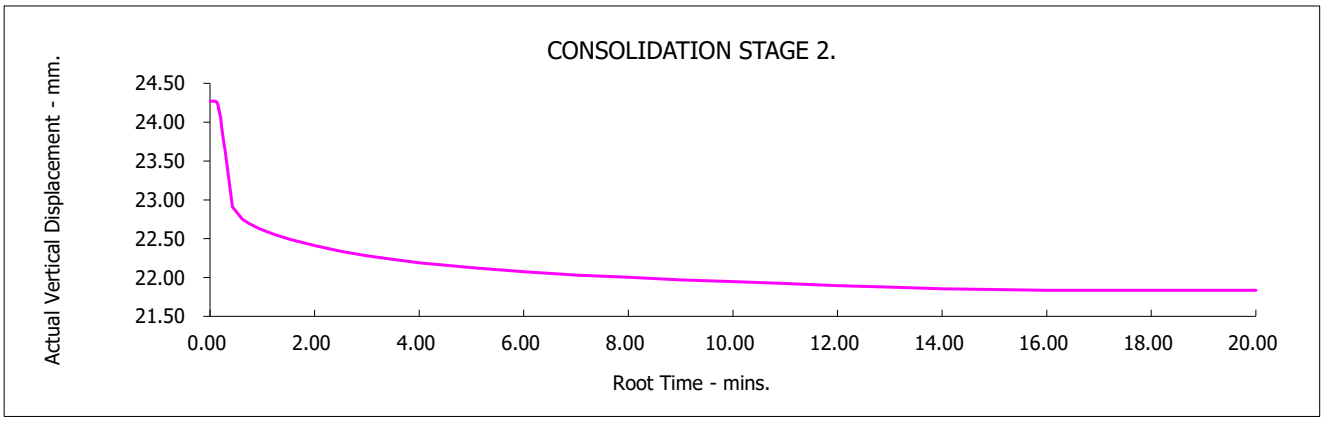
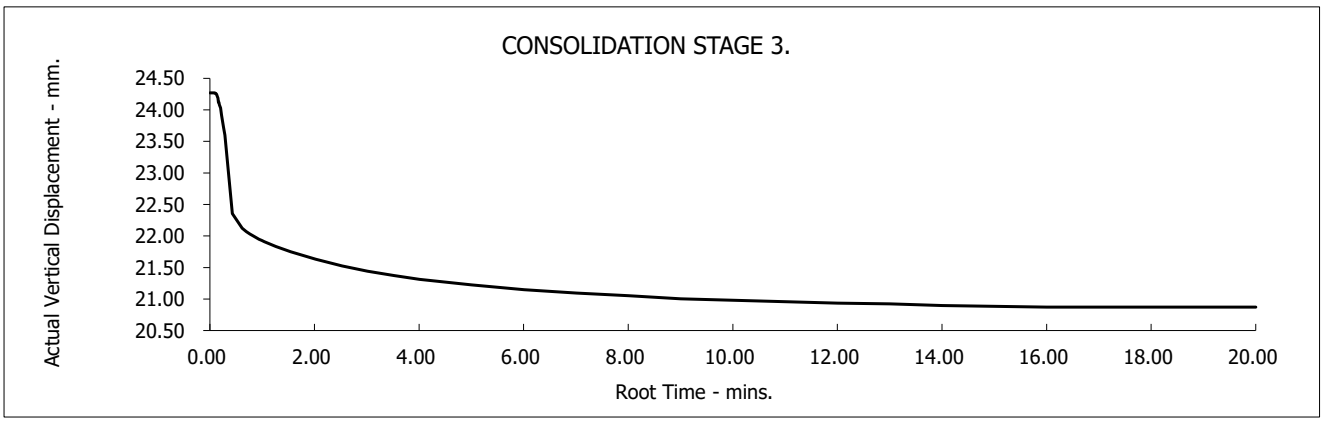
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	4.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	9.00
Sample Number :	1	Depth to (m):	9.50

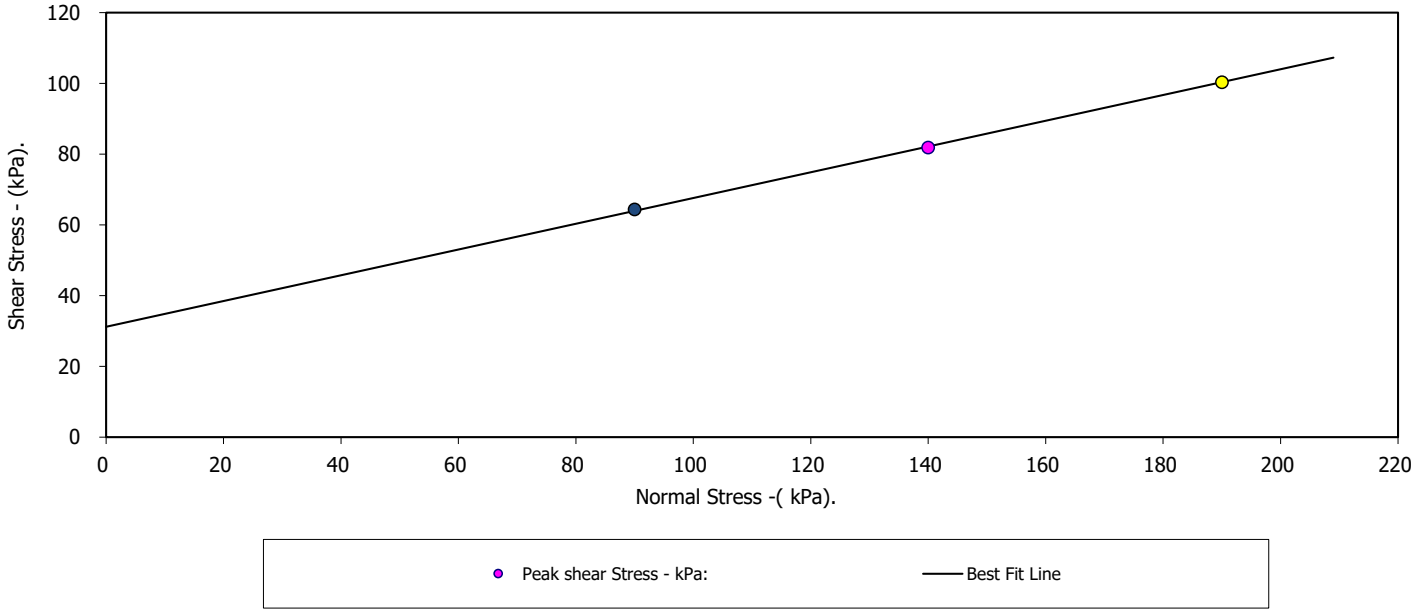
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	30	30	30
Bulk Density - Mg/m3:	1.92	1.92	1.92
Dry Density - Mg/m3:	1.47	1.47	1.47
Voids Ratio:	0.7996	0.7974	0.7985
Normal Pressure- kPa	90	140	190
Consolidation			
Consolidated Height - mm:	23.13	22.75	22.37
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.26	4.84	4.77
Peak shear Stress - kPa:	64	82	100

PEAK	
Angle of Shearing Resistance:(θ)	**20.0**
Effective Cohesion - kPa:	**31**

FAILURE CONDITIONS



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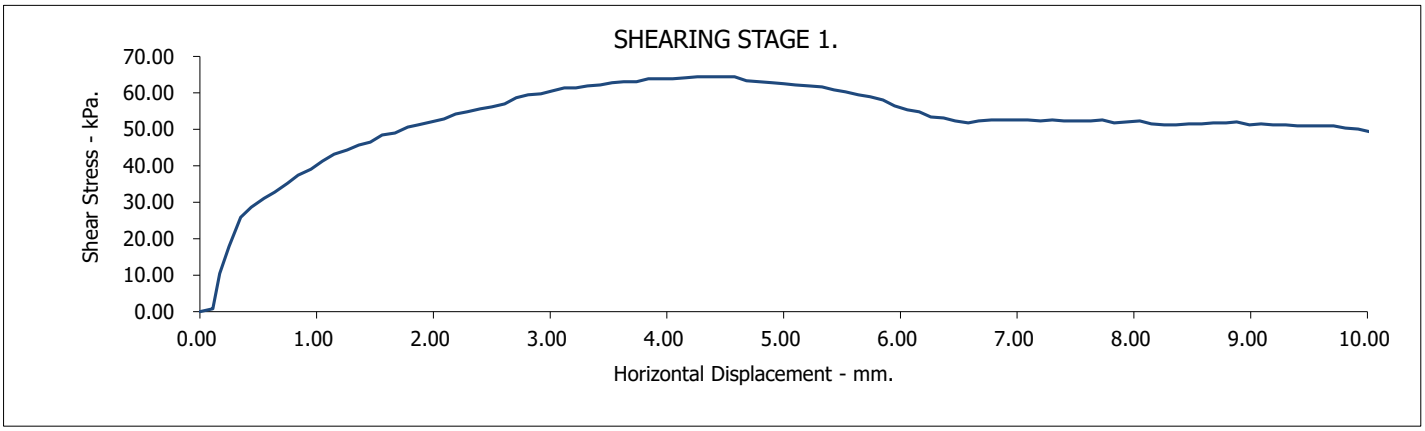
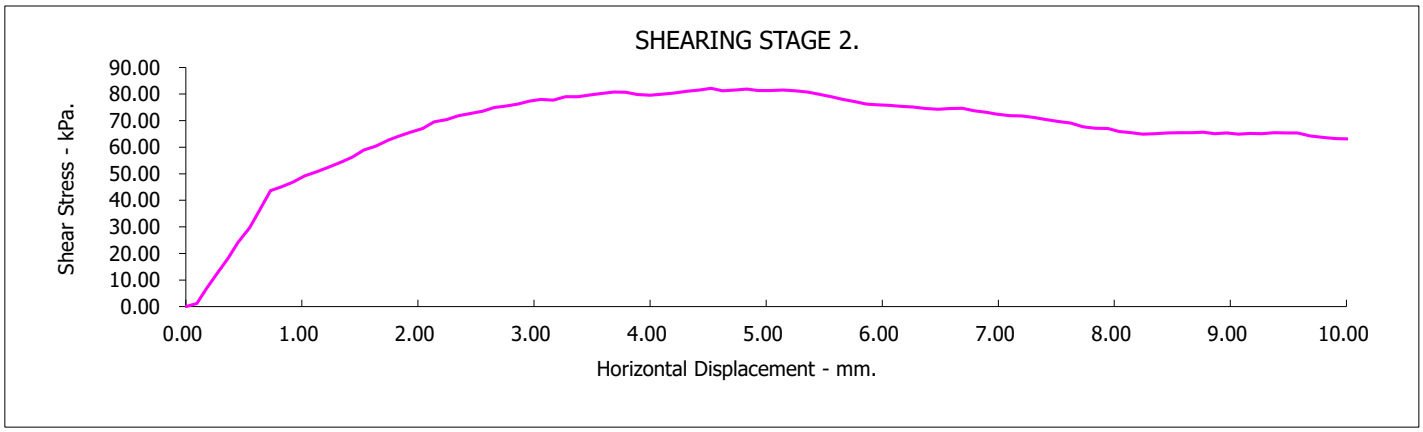
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	9.00
Sample Number :	1	Depth to (m):	9.50





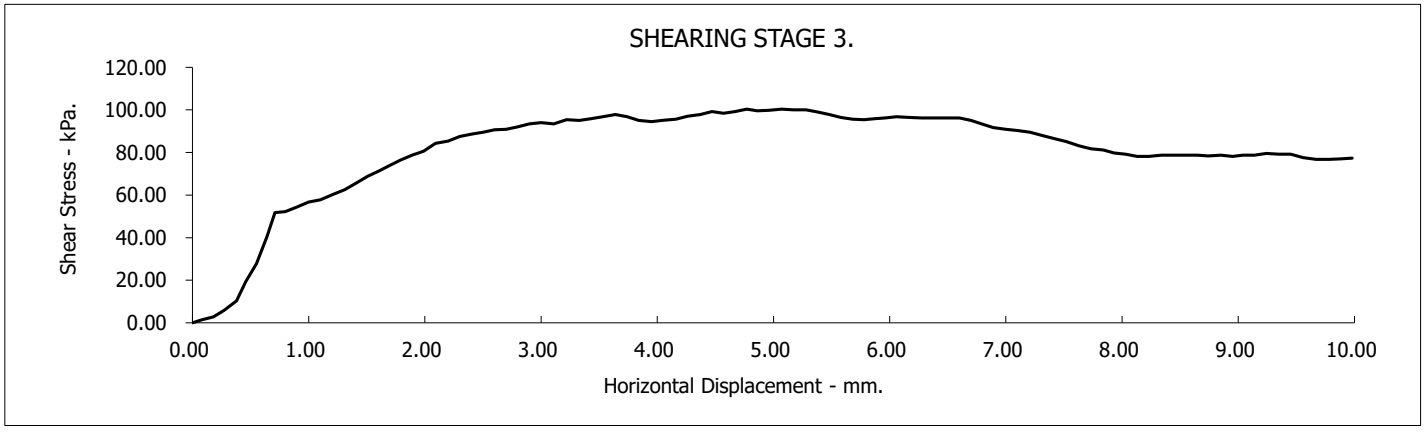


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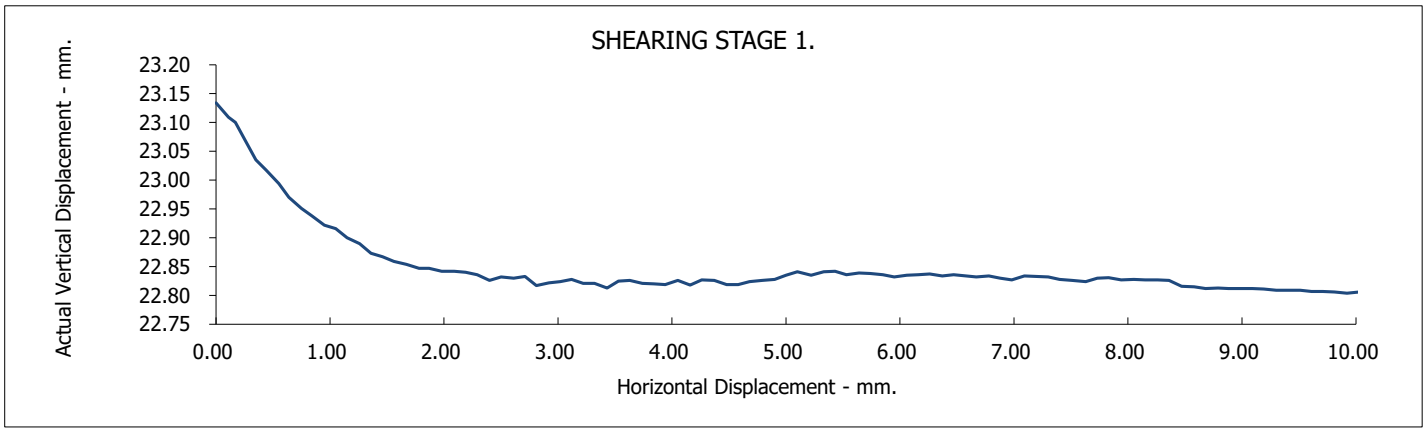
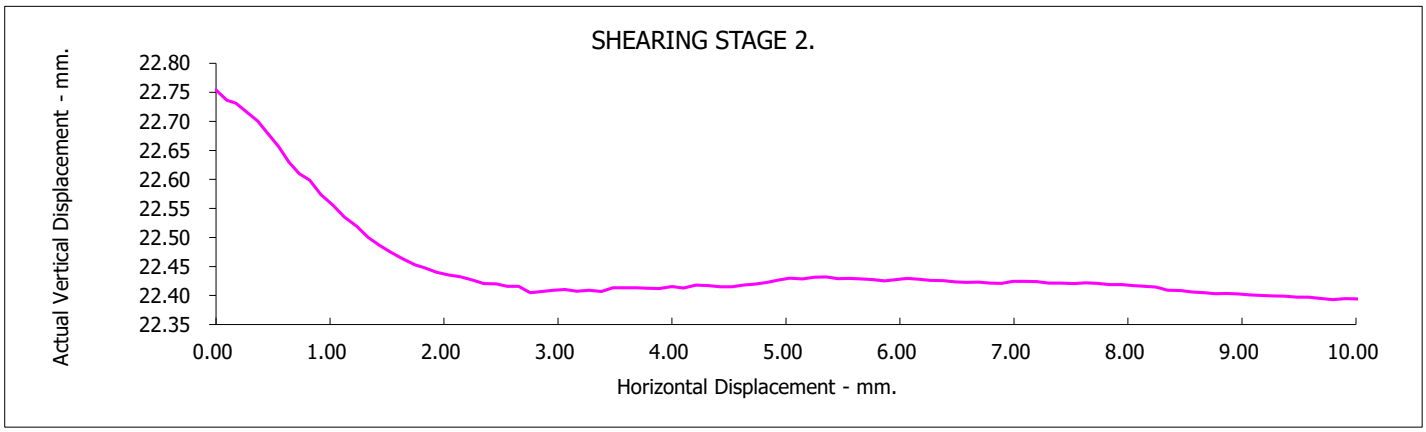
Figure.

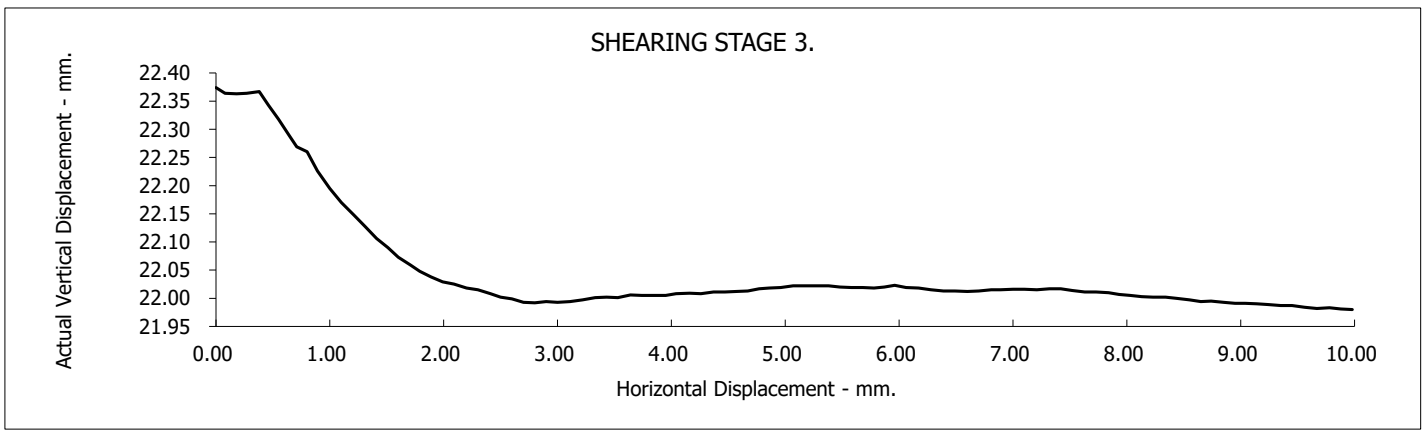
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	9.00
Sample Number :	1	Depth to (m):	9.50







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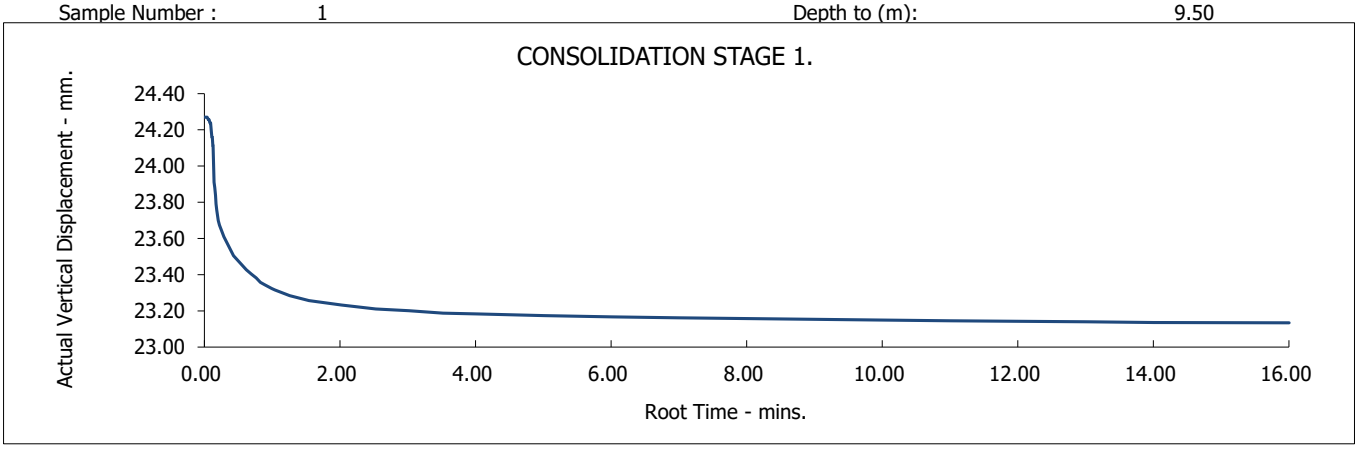
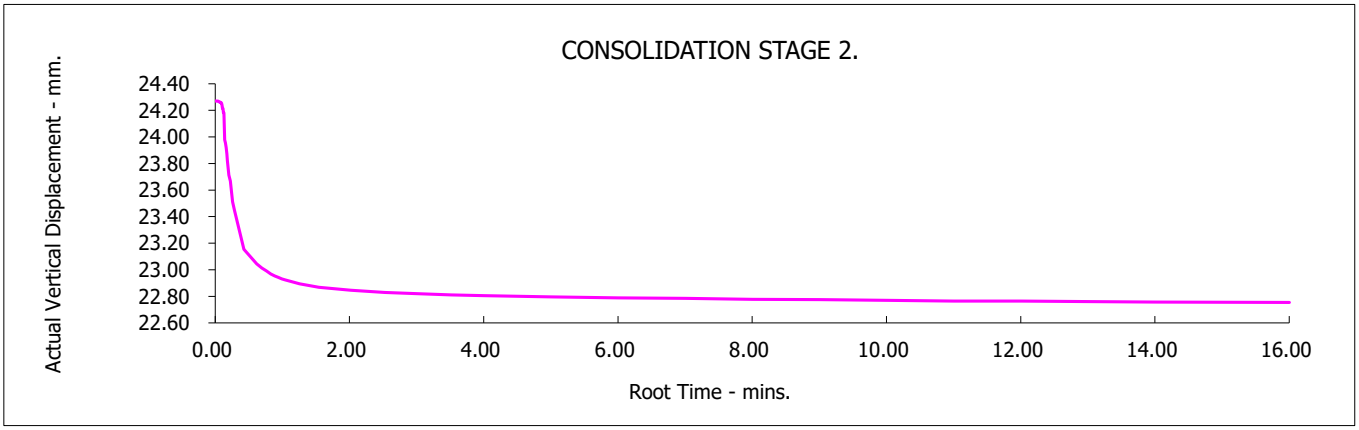
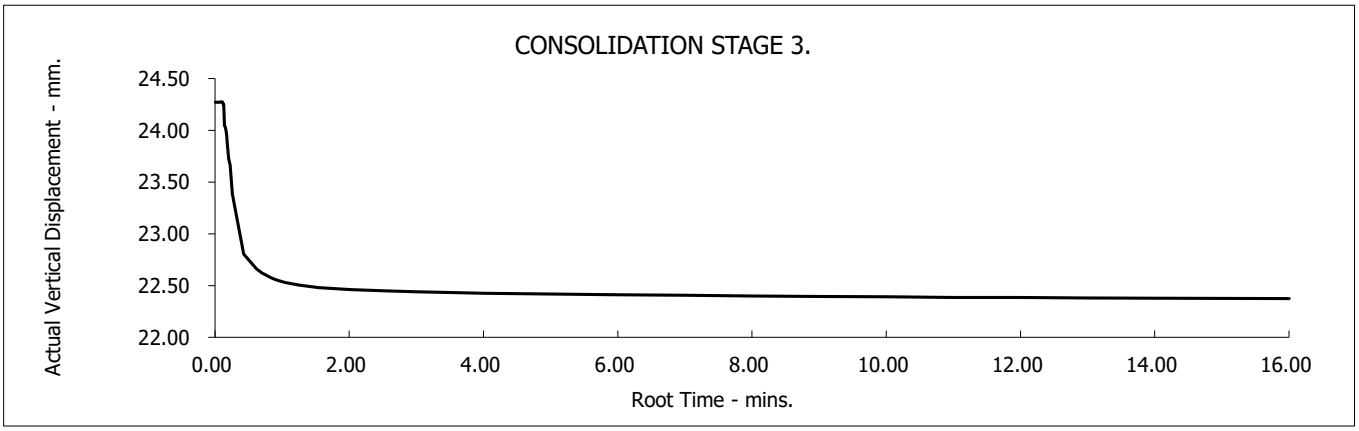
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	9.00
Sample Number :	1	Depth to (m):	9.50







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	12.00
Sample Number :		Depth to (m):	

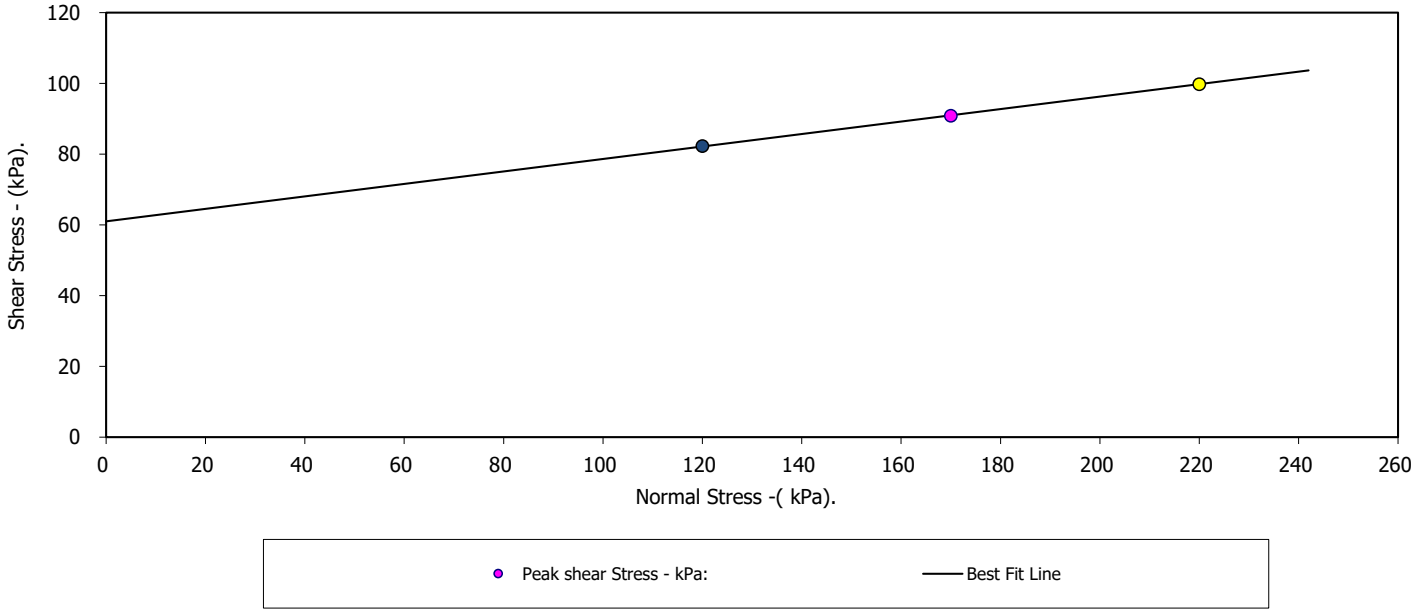
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	36	36	36
Bulk Density - Mg/m3:	1.83	1.83	1.83
Dry Density - Mg/m3:	1.35	1.35	1.35
Voids Ratio:	0.9692	0.9686	0.9674
Normal Pressure- kPa	120	170	220
Consolidation			
Consolidated Height - mm:	21.29	20.75	20.21
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.20	5.21	6.39
Peak shear Stress - kPa:	82	91	100

PEAK	
Angle of Shearing Resistance:(θ)	**10.0**
Effective Cohesion - kPa:	**61**

FAILURE CONDITIONS



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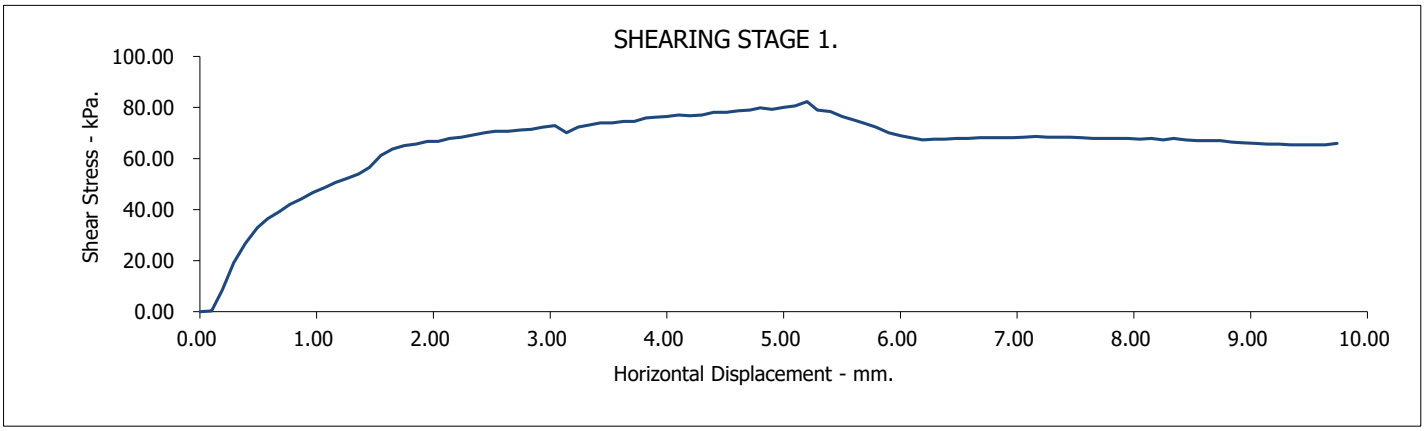
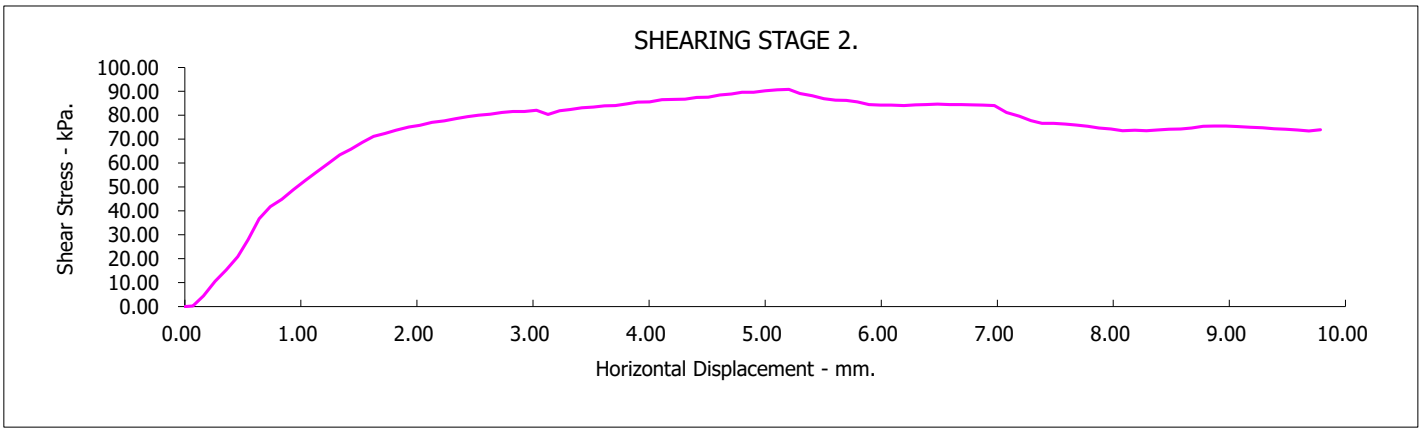
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	12.00
Sample Number :		Depth to (m):	





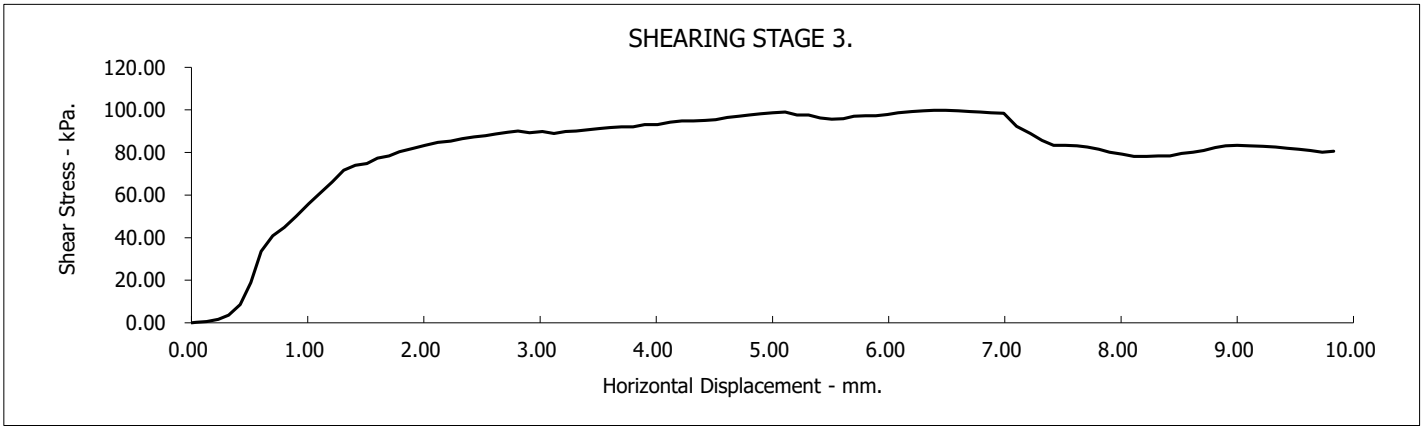


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Figure.

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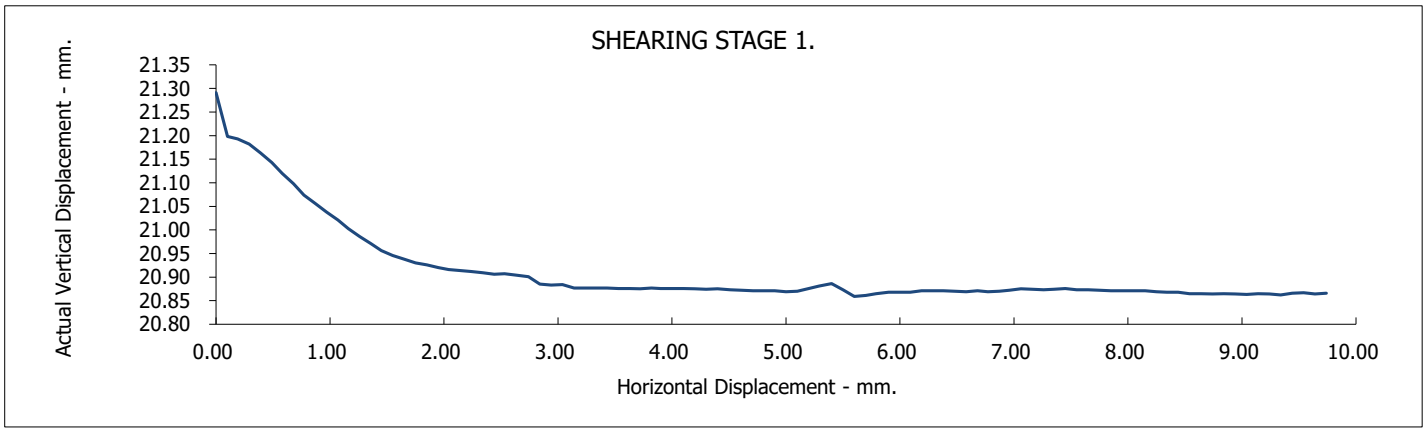
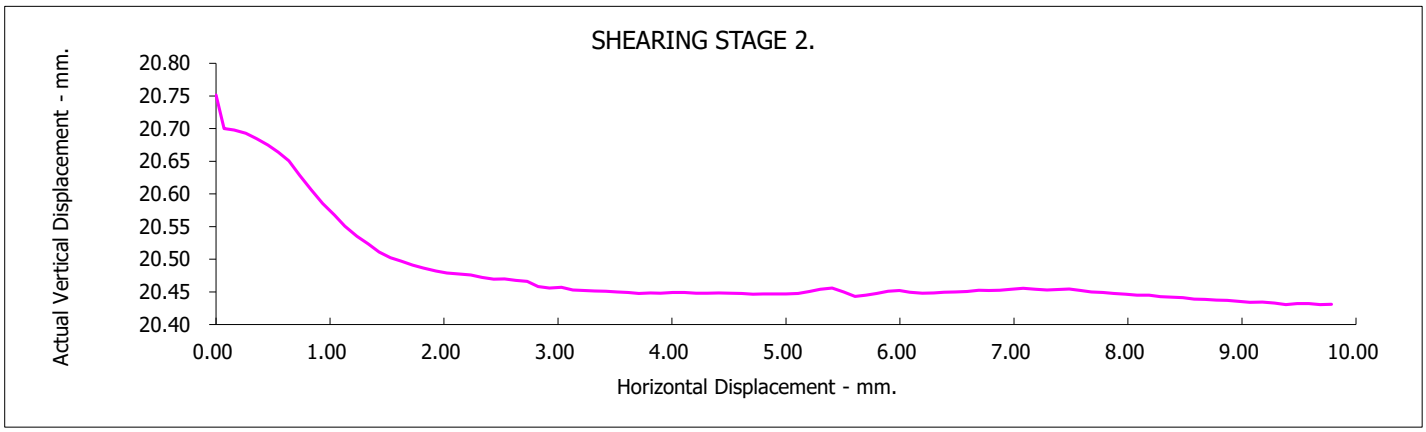
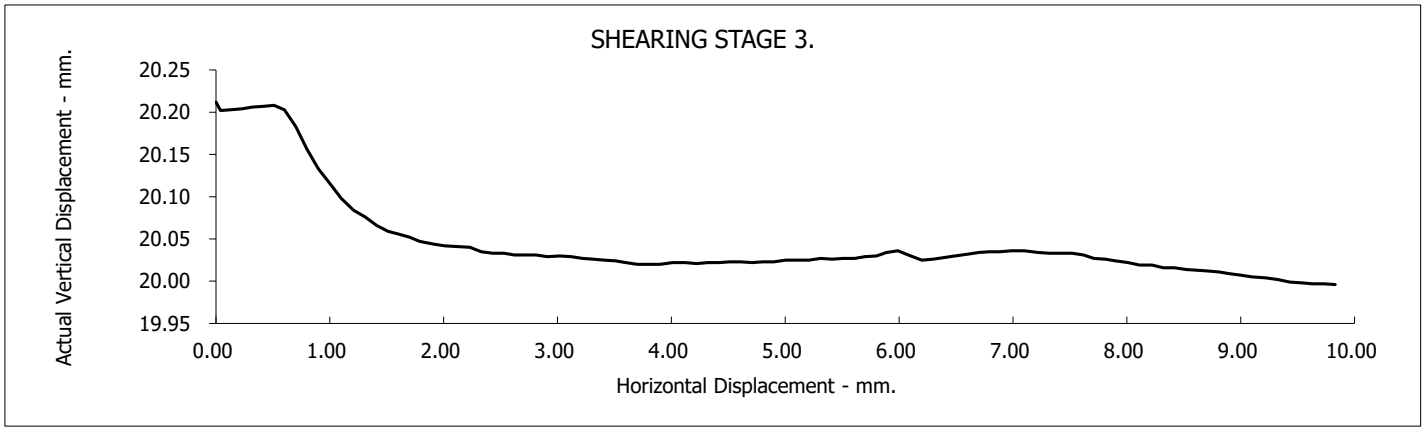
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	12.00
Sample Number :		Depth to (m):	







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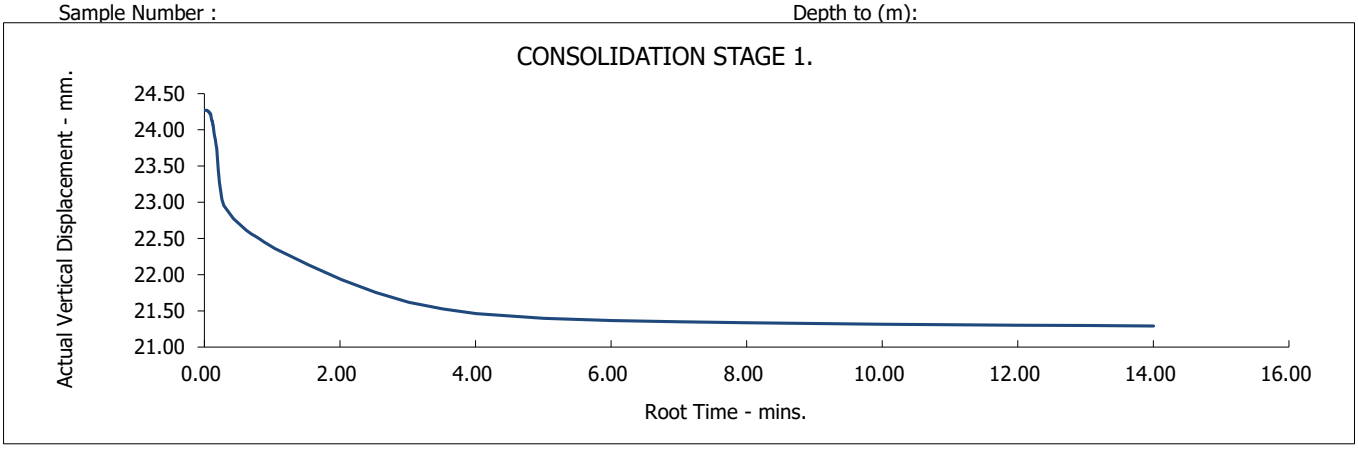
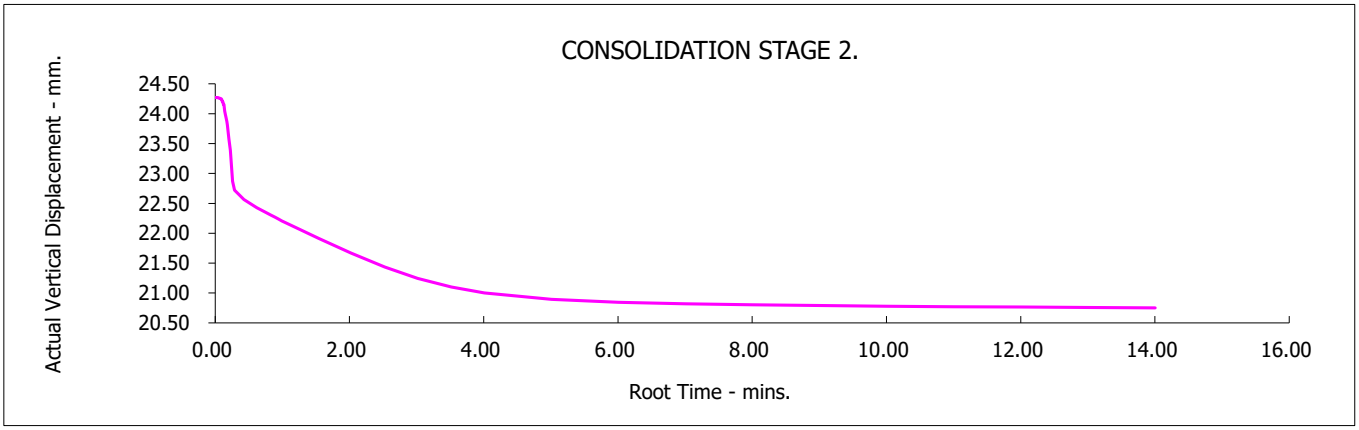
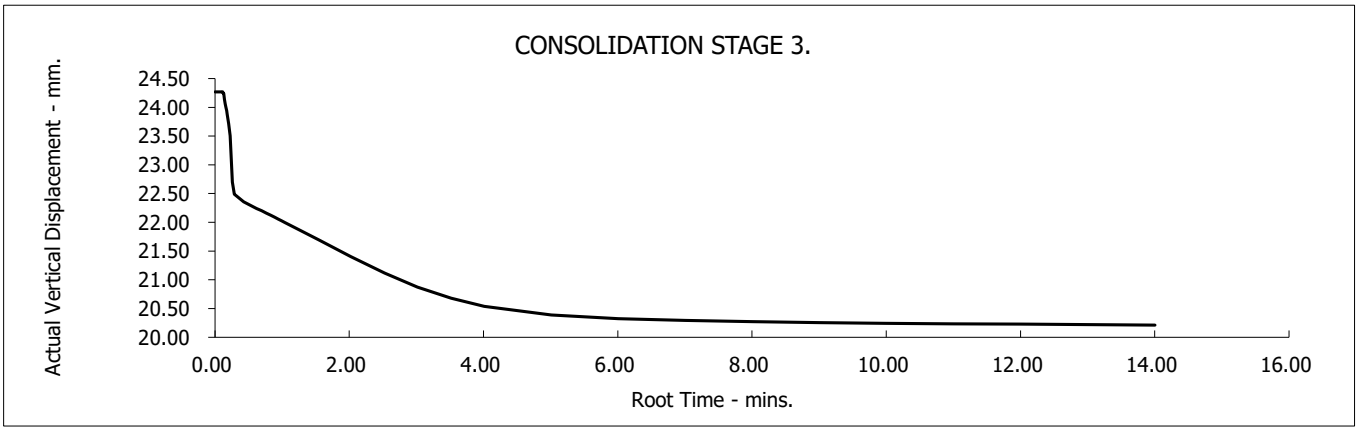
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	12.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	15.00
Sample Number :		Depth to (m):	

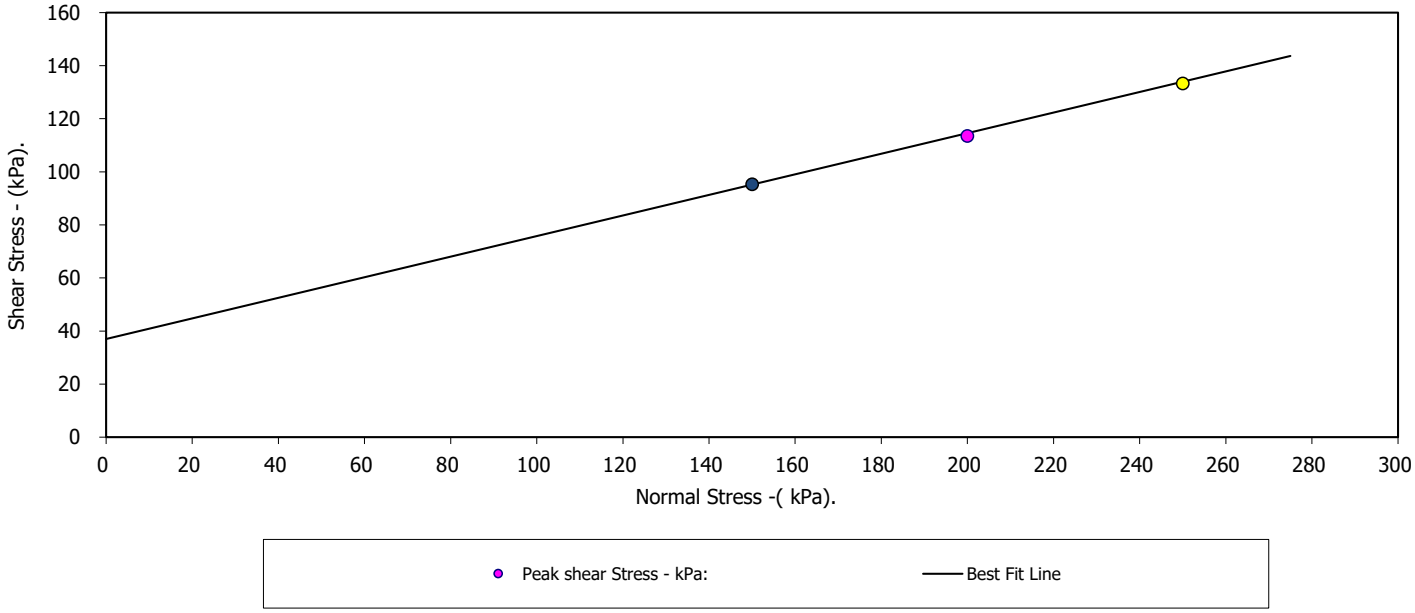
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	54	54	54
Bulk Density - Mg/m3:	1.63	1.64	1.64
Dry Density - Mg/m3:	1.06	1.06	1.07
Voids Ratio:	1.5072	1.4914	1.4862
Normal Pressure- kPa	150	200	250
Consolidation			
Consolidated Height - mm:	21.00	20.38	19.86
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.15	5.59	5.49
Peak shear Stress - kPa:	95	114	133

PEAK	
Angle of Shearing Resistance:(θ)	**21.2**
Effective Cohesion - kPa:	**37**

FAILURE CONDITIONS



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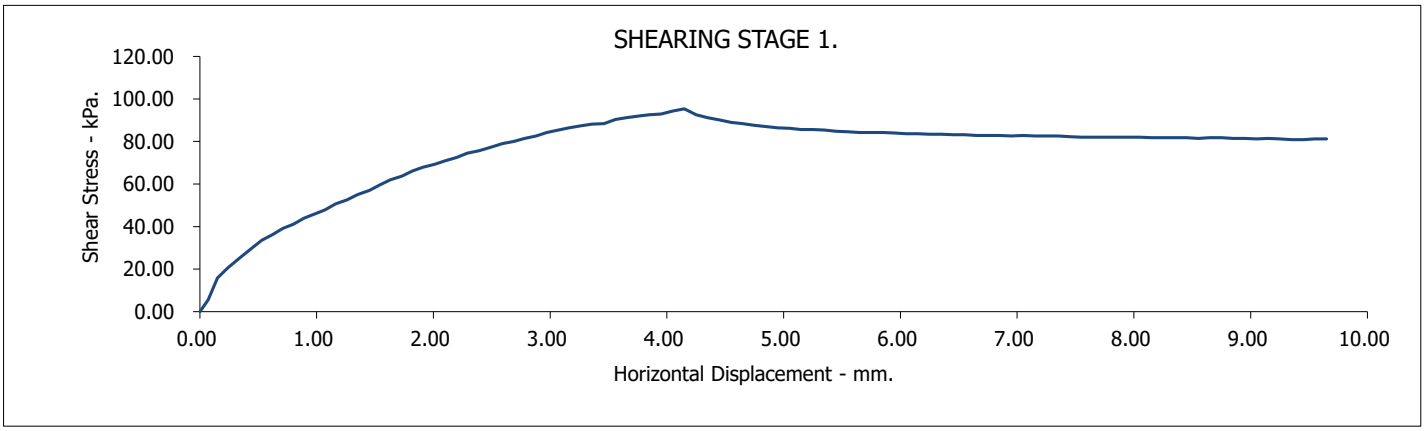
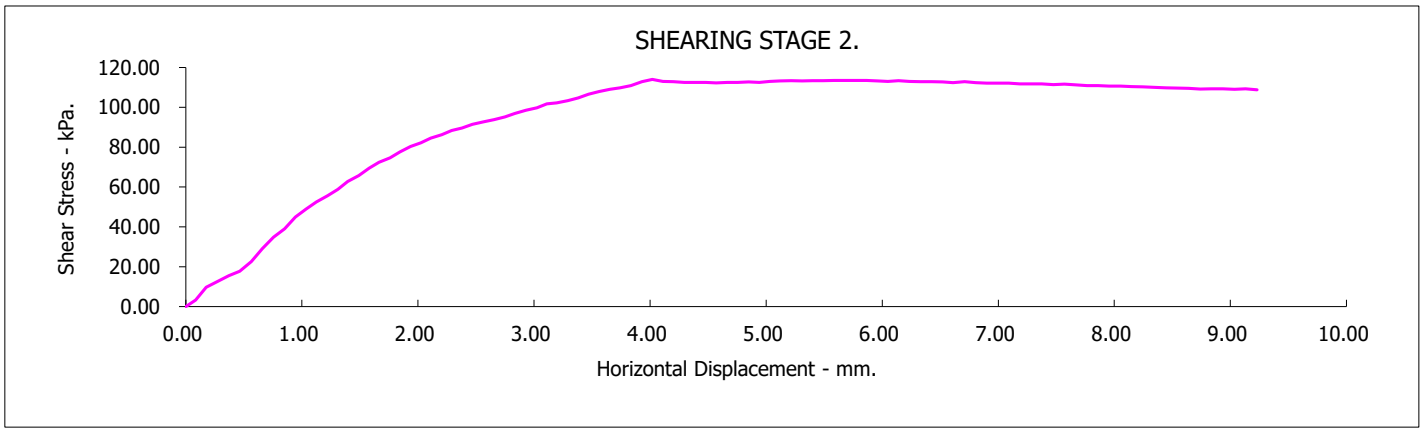
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	15.00
Sample Number :		Depth to (m):	





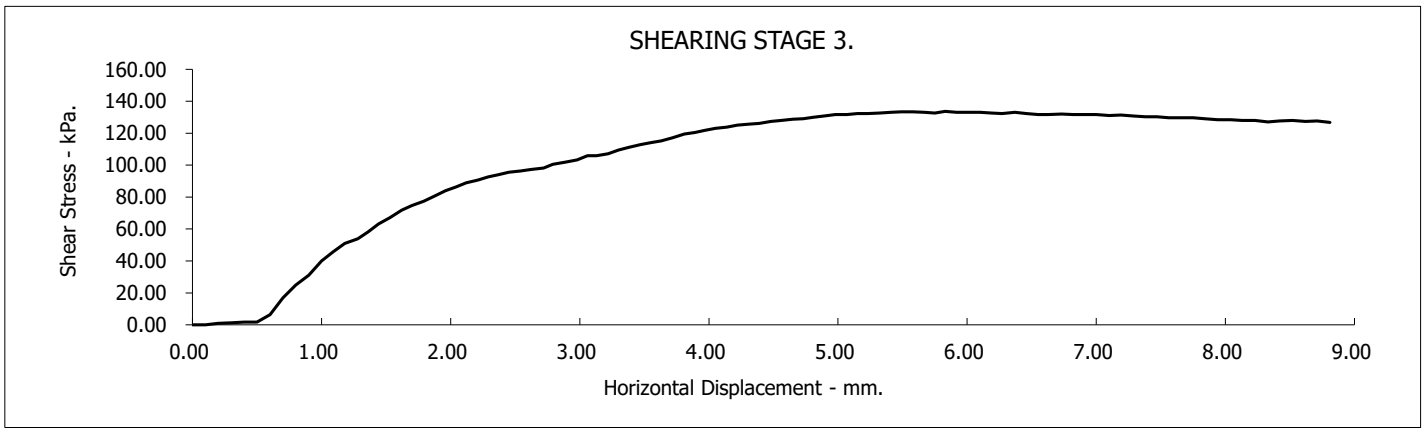


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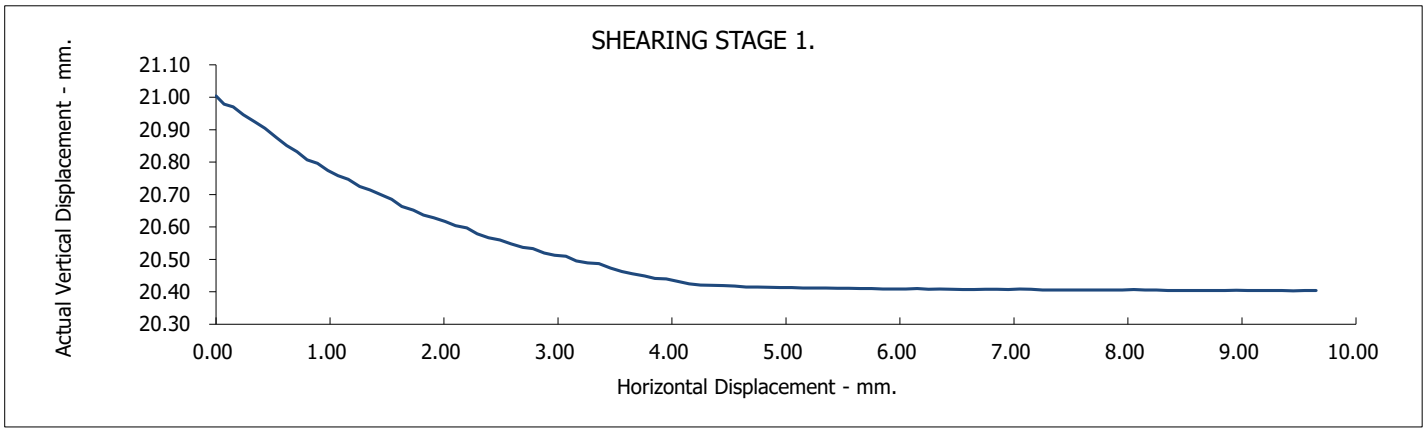
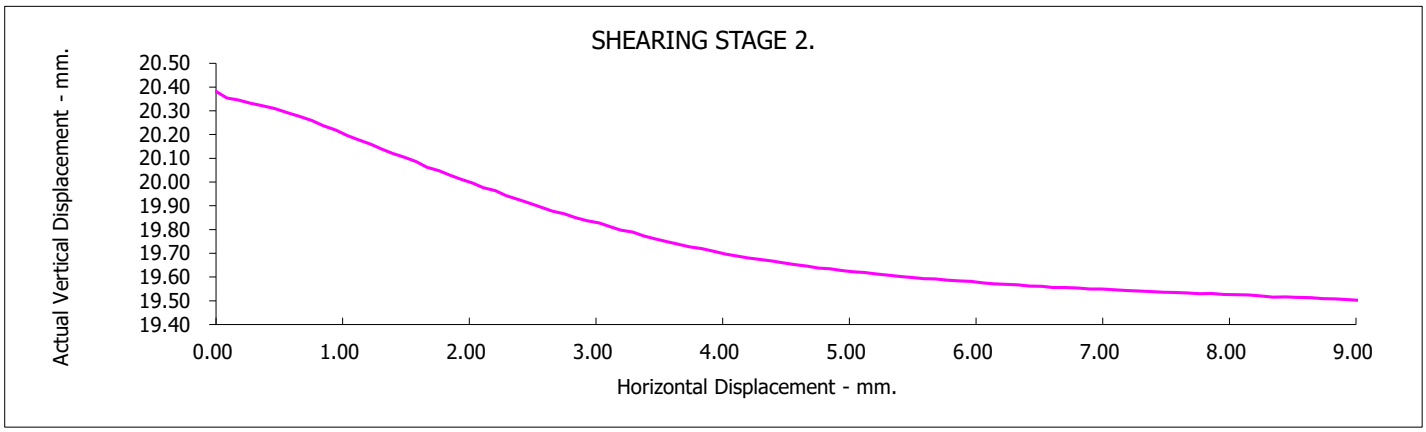
Figure.

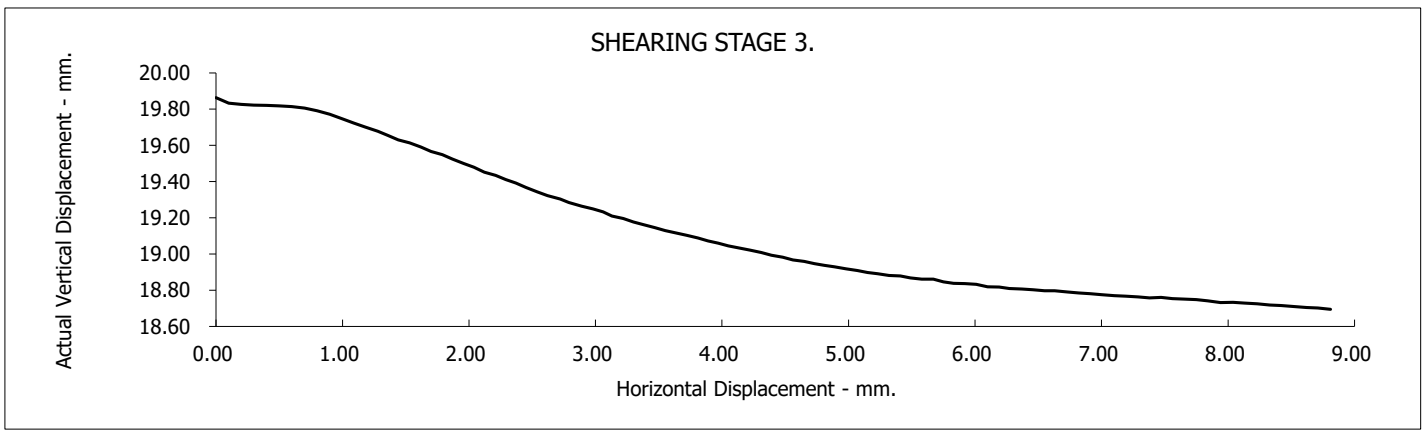
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	15.00
Sample Number :		Depth to (m):	







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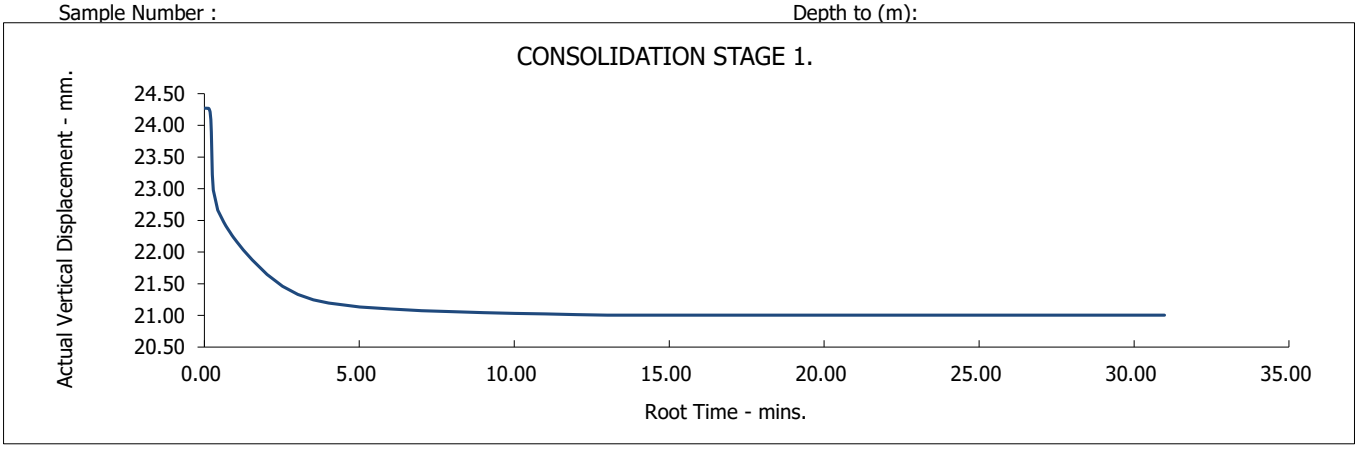
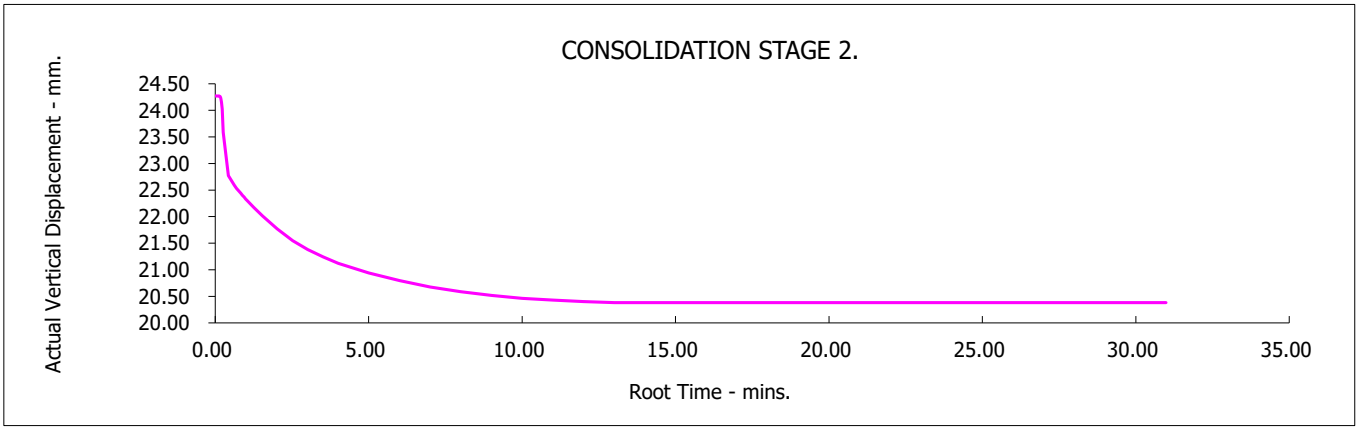
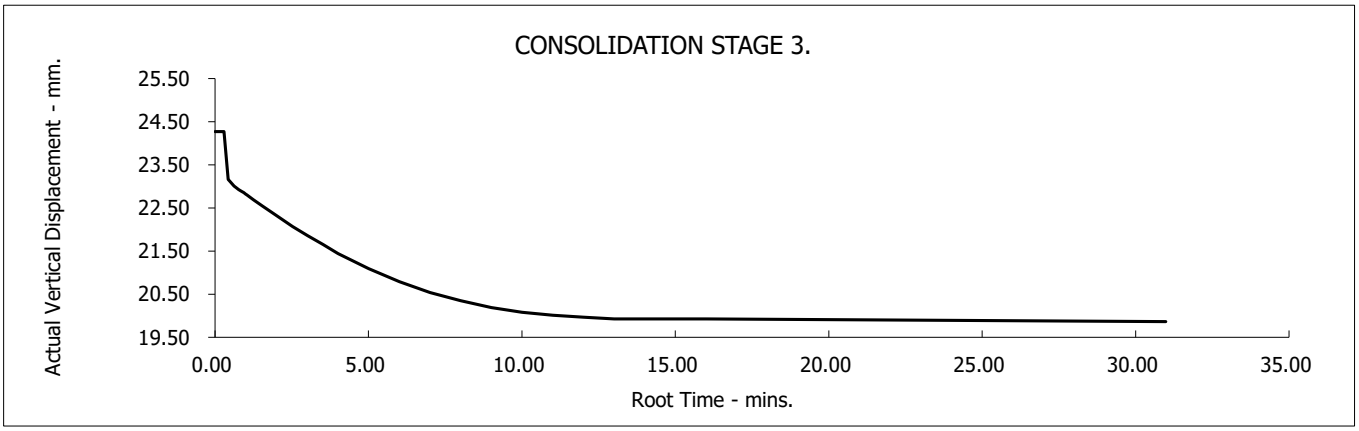
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M03	Depth from (m):	15.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M04	Depth from (m):	3.50
Sample Number:		Depth to (m):	

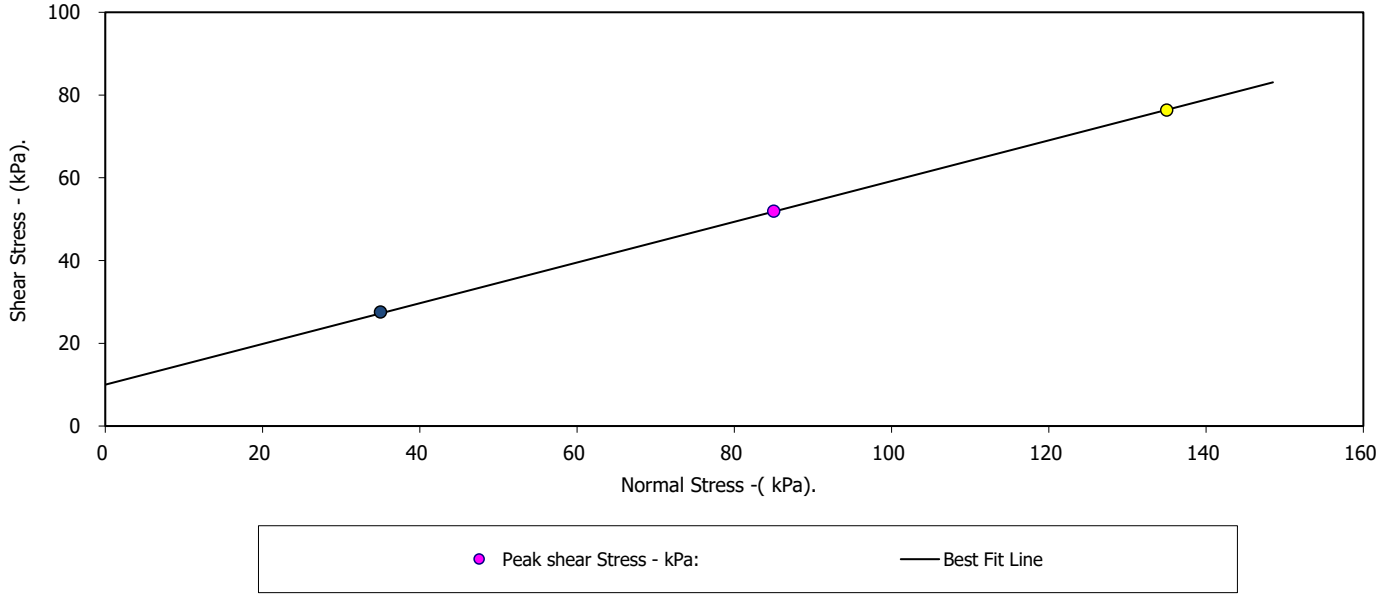
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	57	57	57
Bulk Density - Mg/m3:	1.72	1.72	1.72
Dry Density - Mg/m3:	1.10	1.10	1.10
Voids Ratio:	1.4158	1.4142	1.4150
Normal Pressure- kPa	35	85	135
Consolidation			
Consolidated Height - mm:	22.83	21.74	20.41
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	9.20	7.20	6.38
Peak shear Stress - kPa:	28	52	76

PEAK	
Angle of Shearing Resistance:(θ)	**26.2**
Effective Cohesion - kPa:	**10**

FAILURE CONDITIONS



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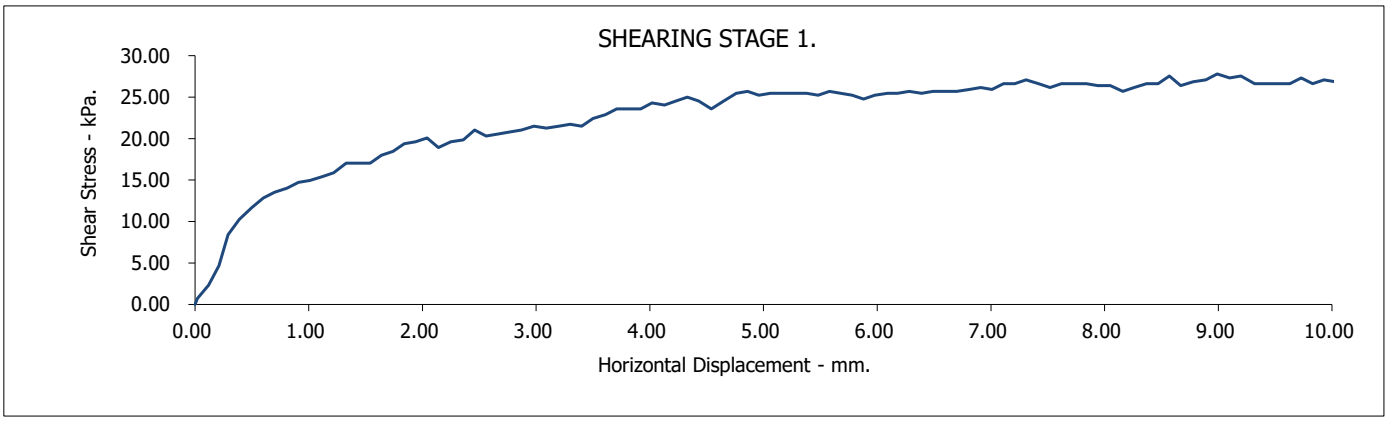
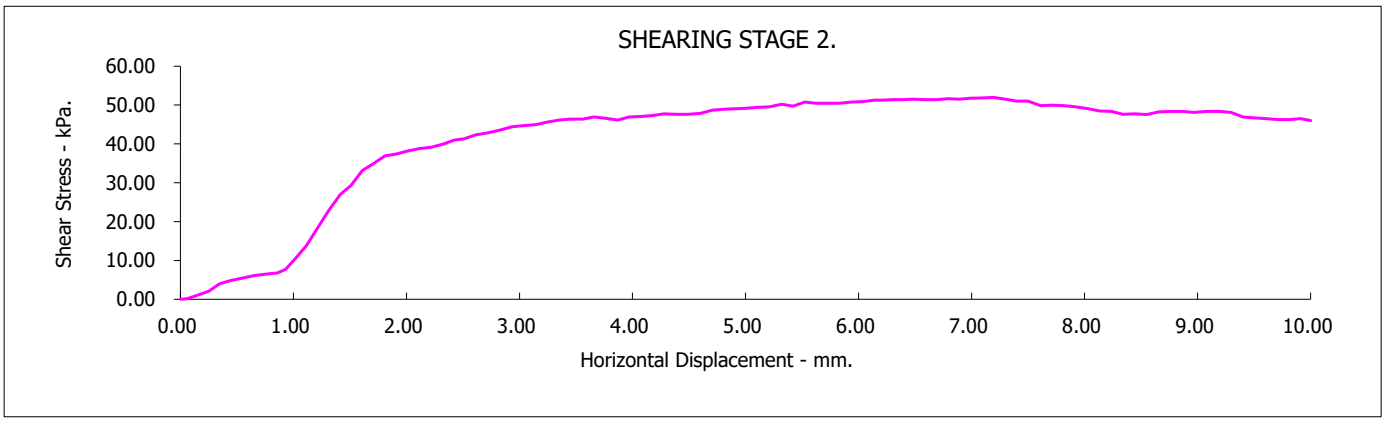
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M04	Depth (m):	3.50





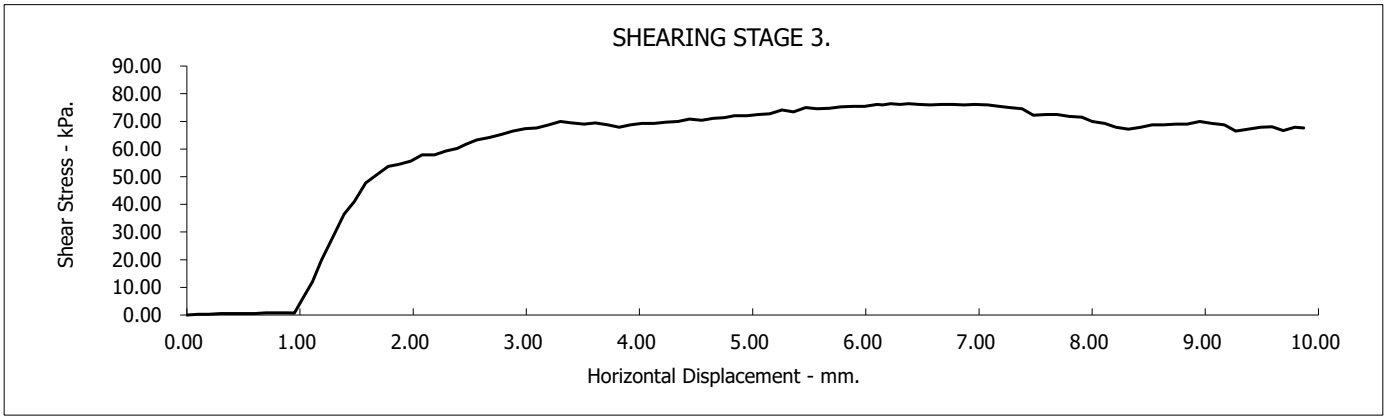


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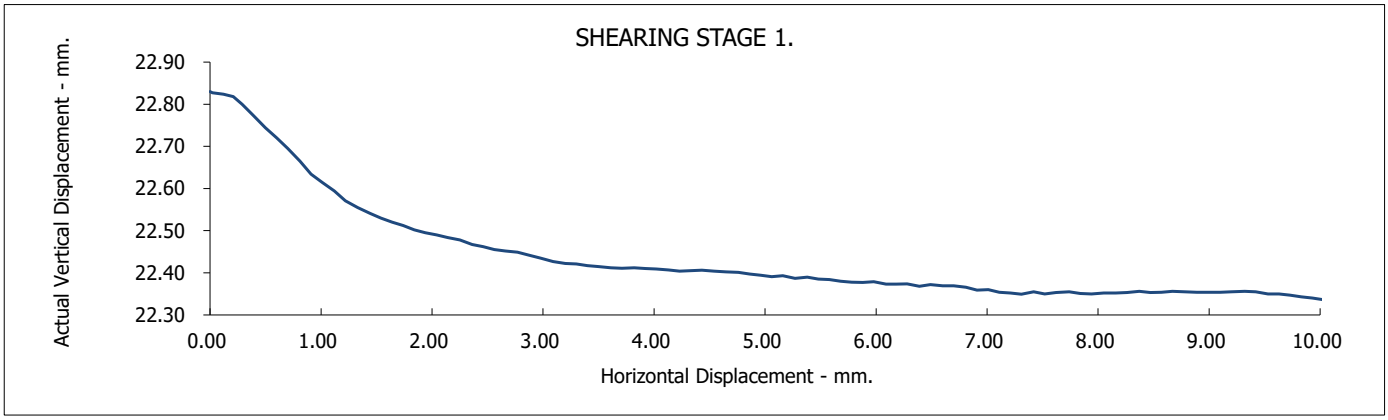
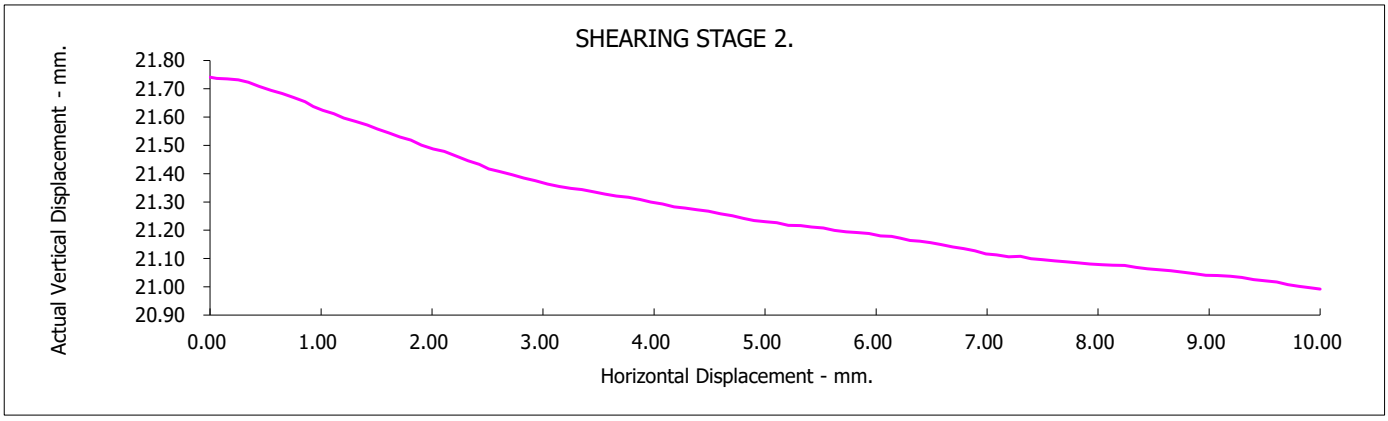
Figure.

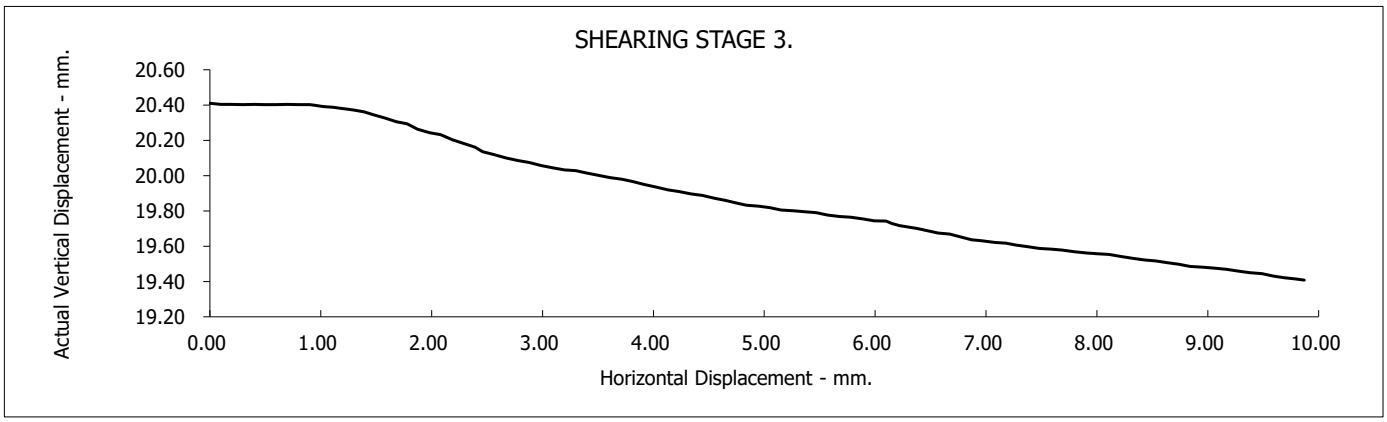
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M04	Depth (m):	3.50







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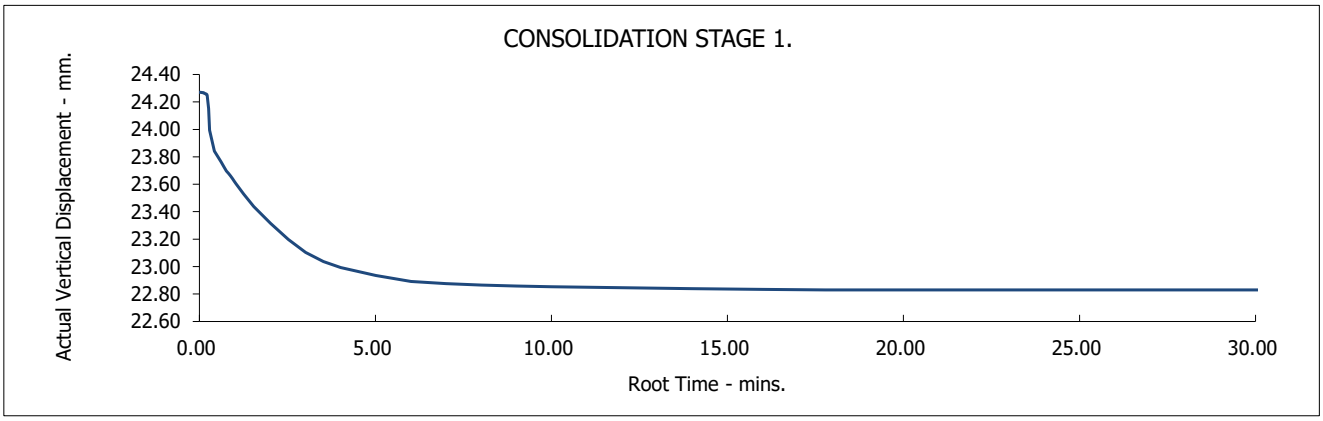
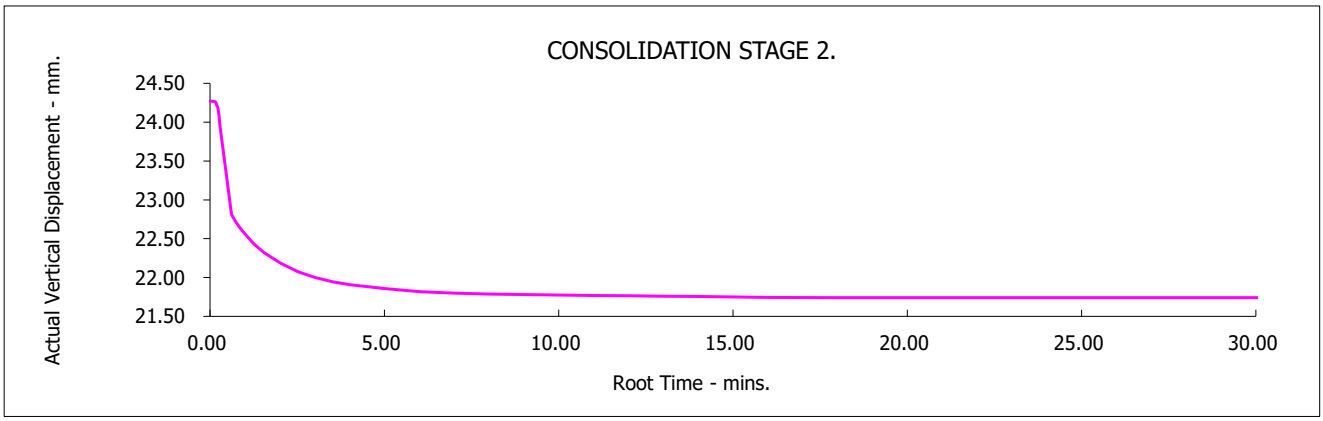
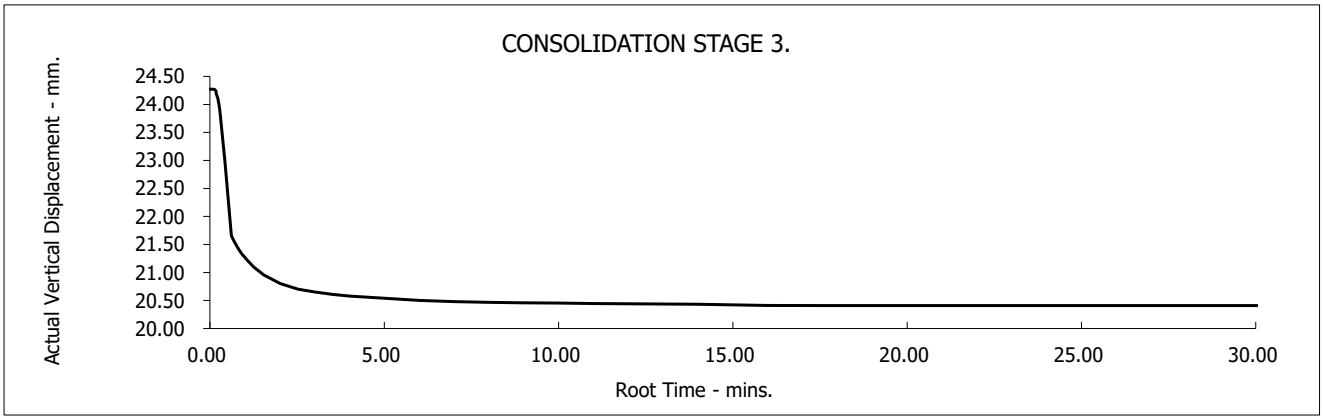
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M04	Depth (m):	3.50







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M04	Depth from (m):	6.50
Sample Number :		Depth to (m):	

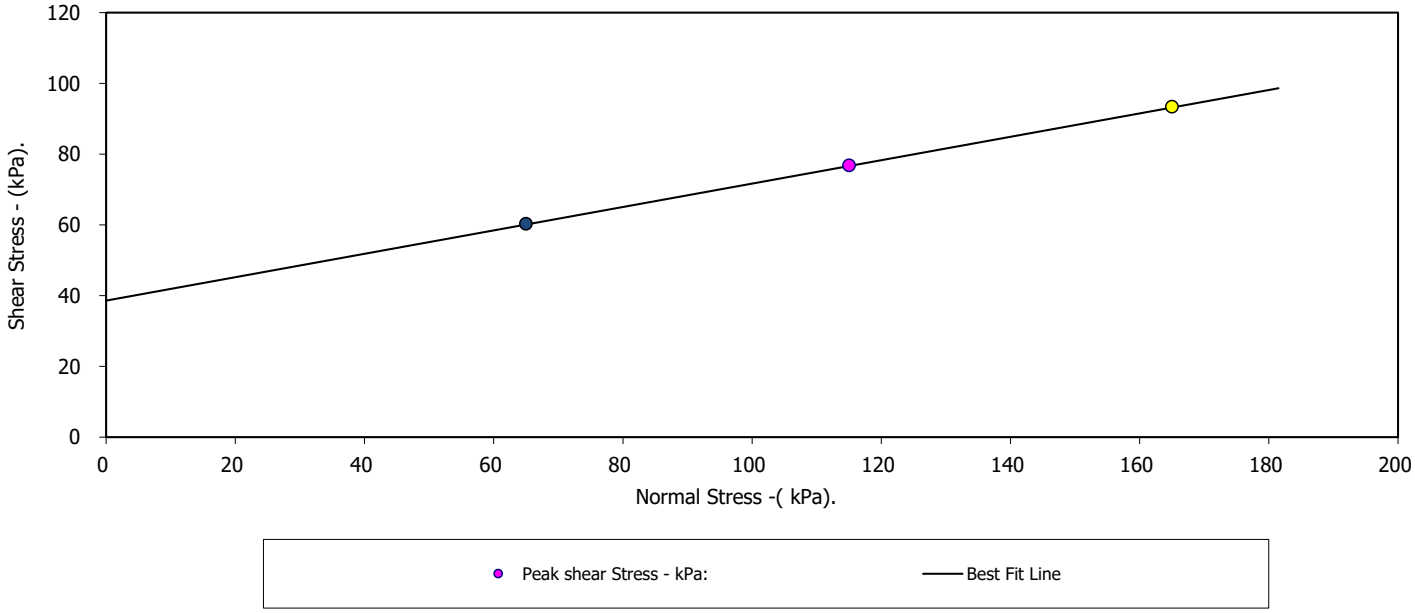
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Grey soft slightly clayey sandy SILT

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	29	29	29
Bulk Density - Mg/m3:	1.94	1.95	1.95
Dry Density - Mg/m3:	1.51	1.51	1.51
Voids Ratio:	0.7577	0.7536	0.7557
Normal Pressure- kPa	65	115	165
Consolidation			
Consolidated Height - mm:	23.38	23.05	22.72
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	3.97	3.96	3.95
Peak shear Stress - kPa:	60	77	93

PEAK	
Angle of Shearing Resistance:(θ)	**18.3**
Effective Cohesion - kPa:	**39**

FAILURE CONDITIONS



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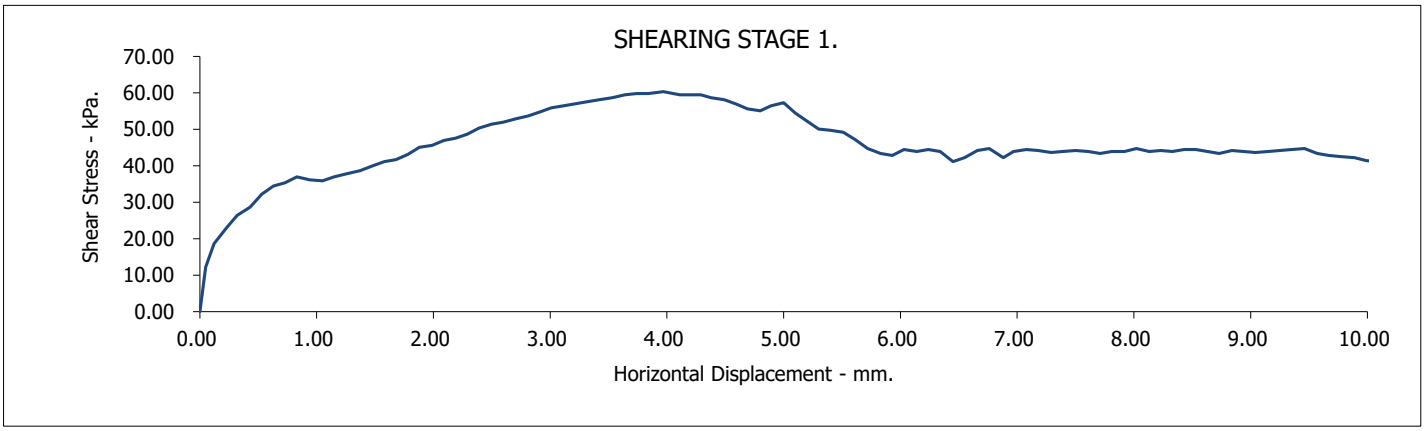
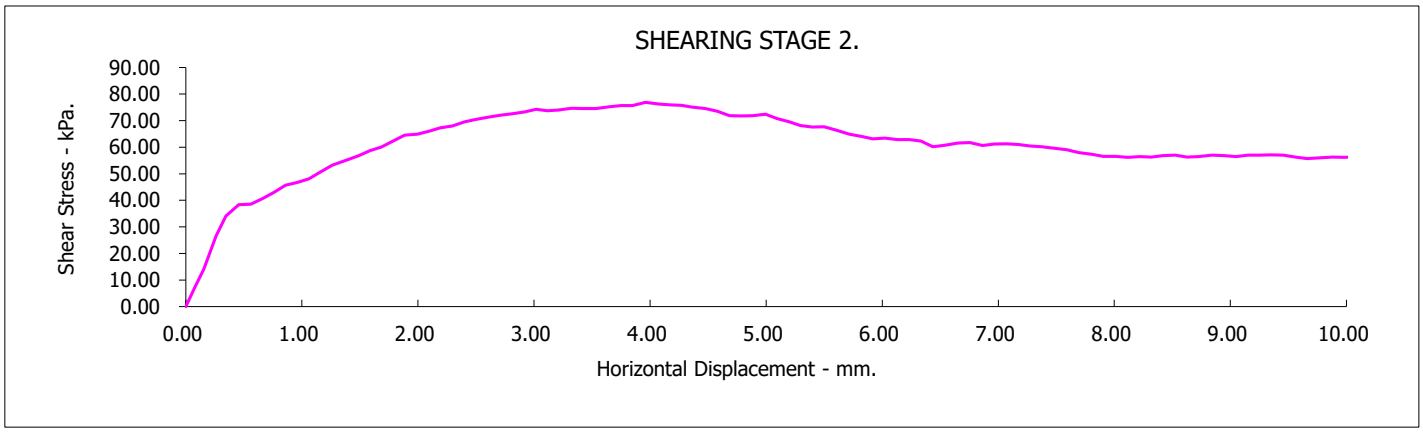
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M04	Depth from (m):	6.50
Sample Number :		Depth to (m):	





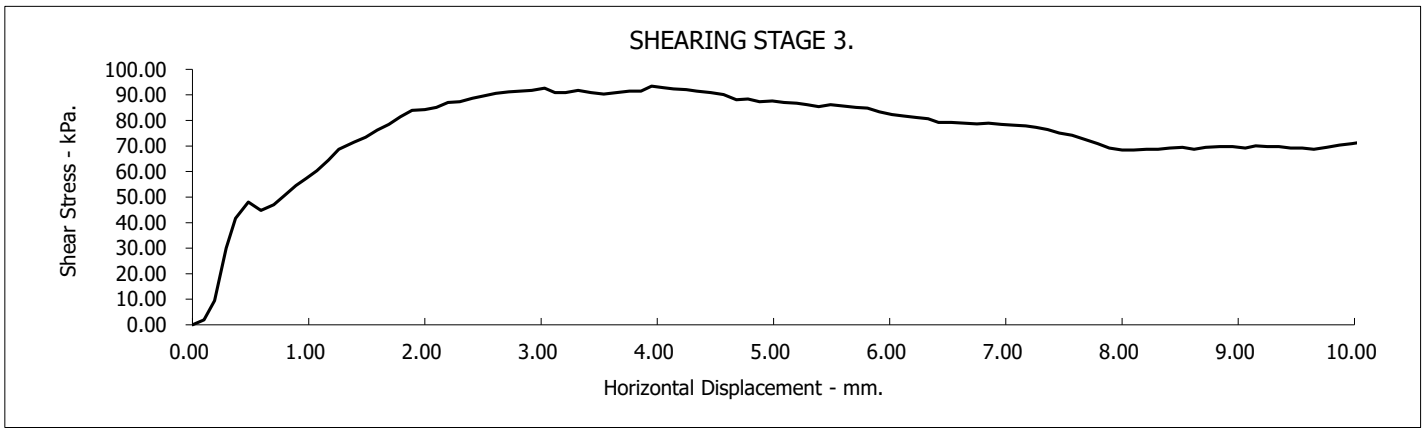


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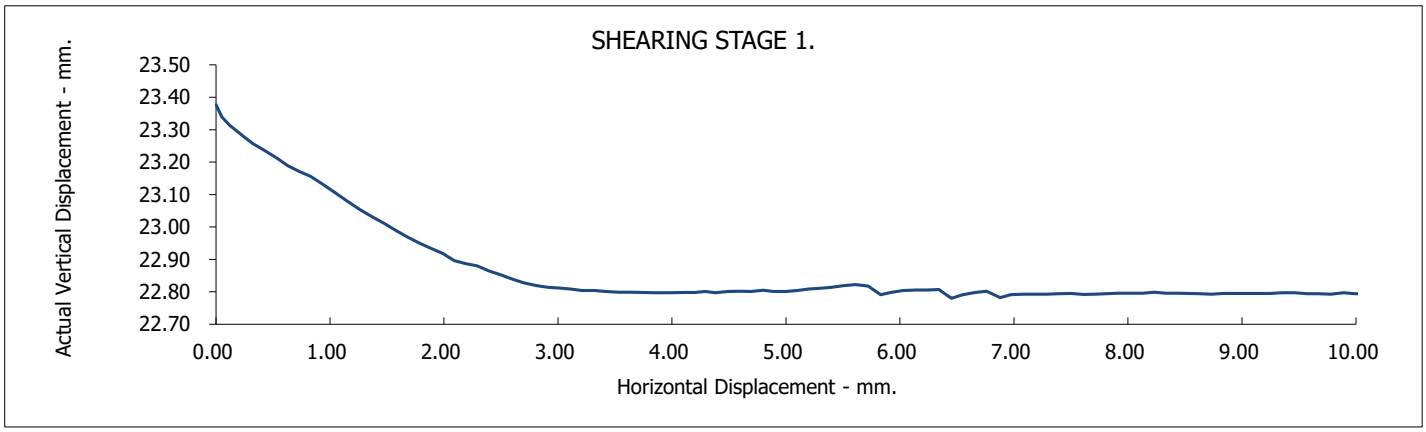
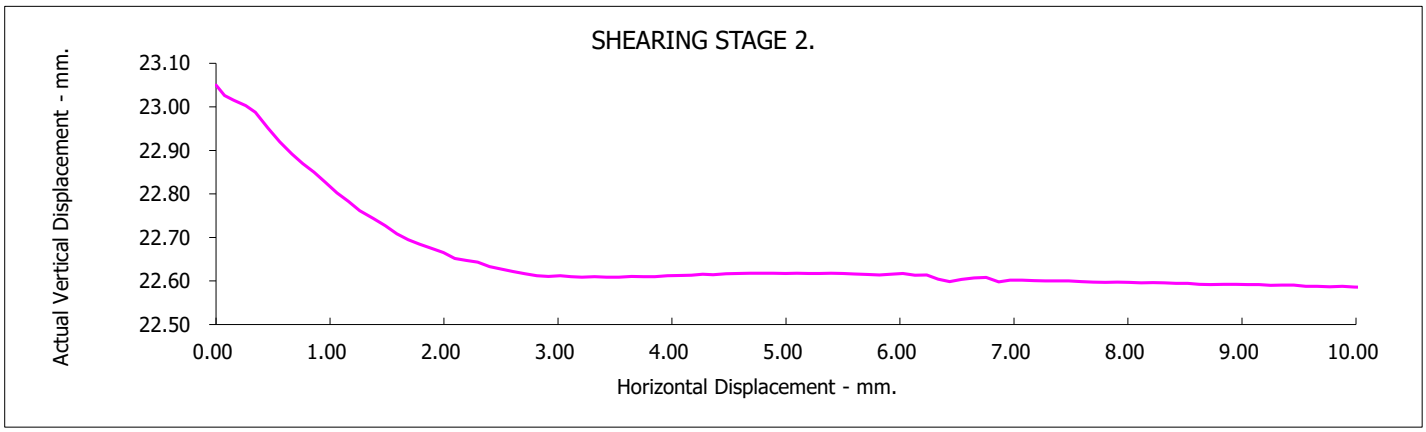
Figure.

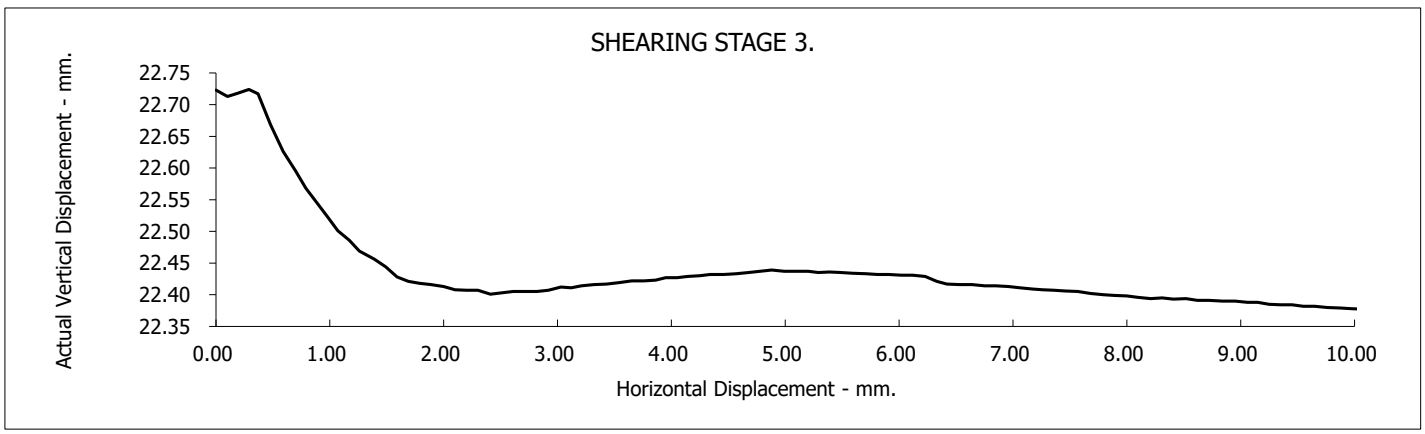
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M04	Depth from (m):	6.50
Sample Number :		Depth to (m):	







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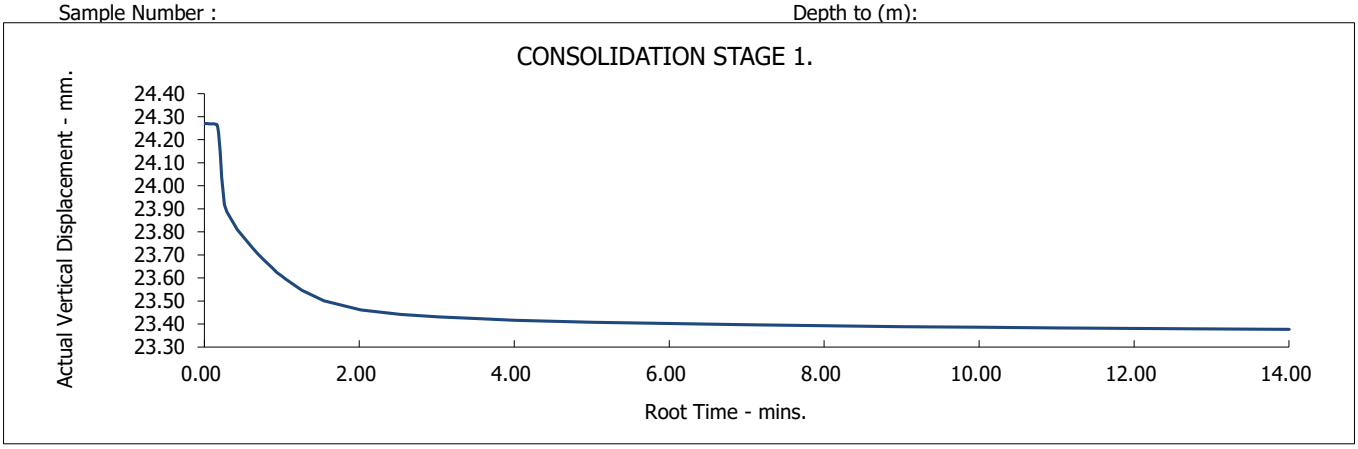
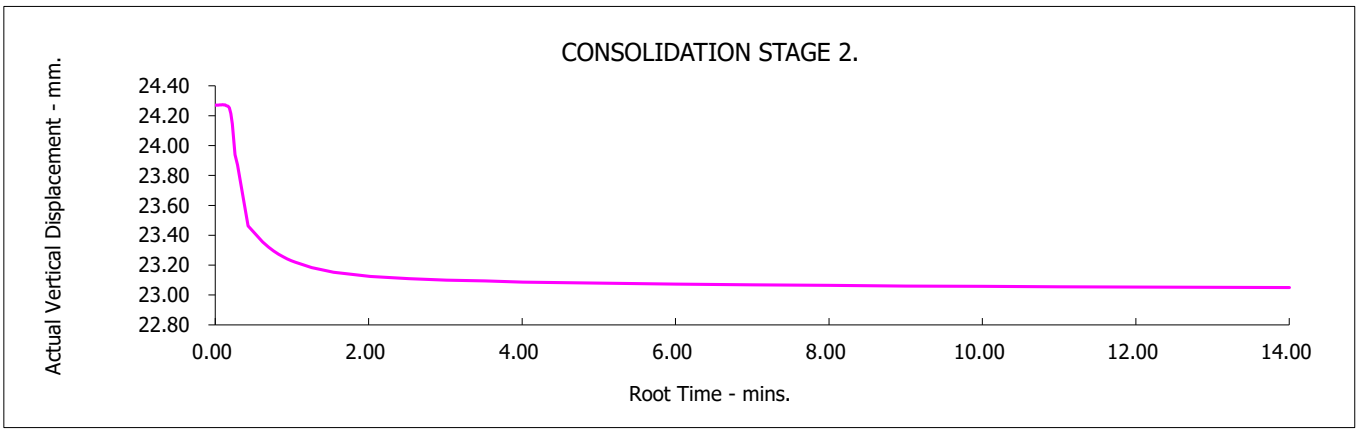
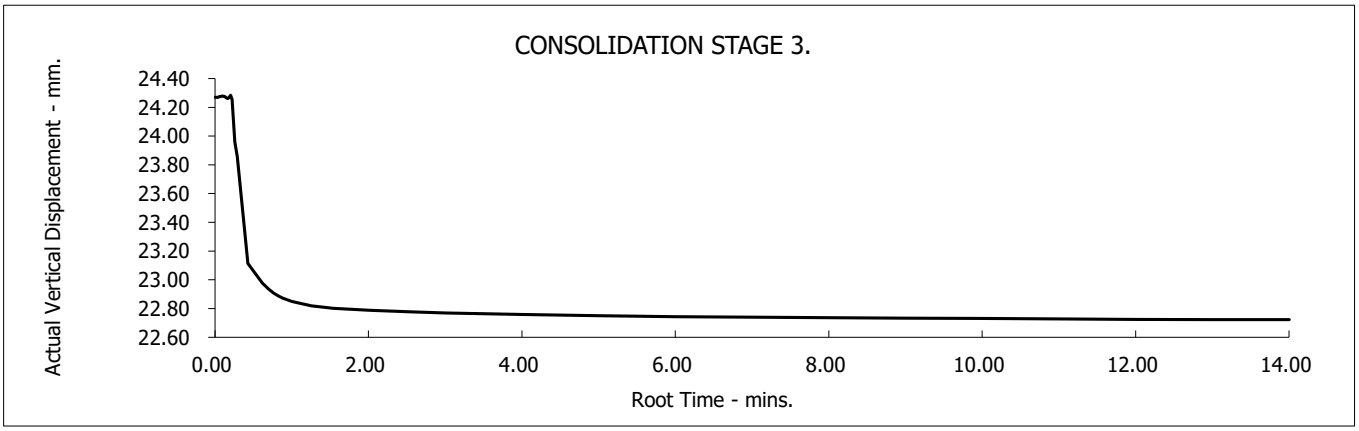
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M04	Depth from (m):	6.50
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50

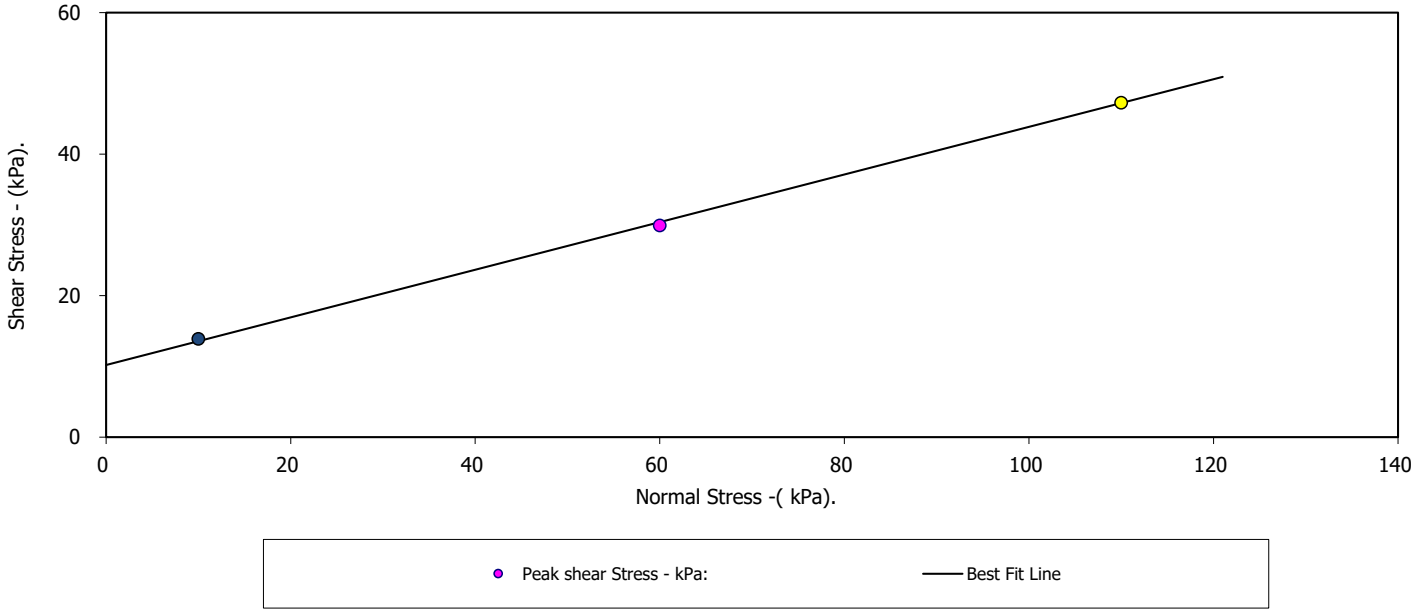
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown grey very soft clayey SILT

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	69	69	69
Bulk Density - Mg/m3:	1.66	1.67	1.68
Dry Density - Mg/m3:	0.99	0.99	0.99
Voids Ratio:	1.6874	1.6723	1.6635
Normal Pressure- kPa	10	60	110
Consolidation			
Consolidated Height - mm:	23.61	22.51	21.41
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.44	4.15	2.85
Peak shear Stress - kPa:	14	30	47

PEAK	
Angle of Shearing Resistance:(θ)	**18.6**
Effective Cohesion - kPa:	**10**

FAILURE CONDITIONS



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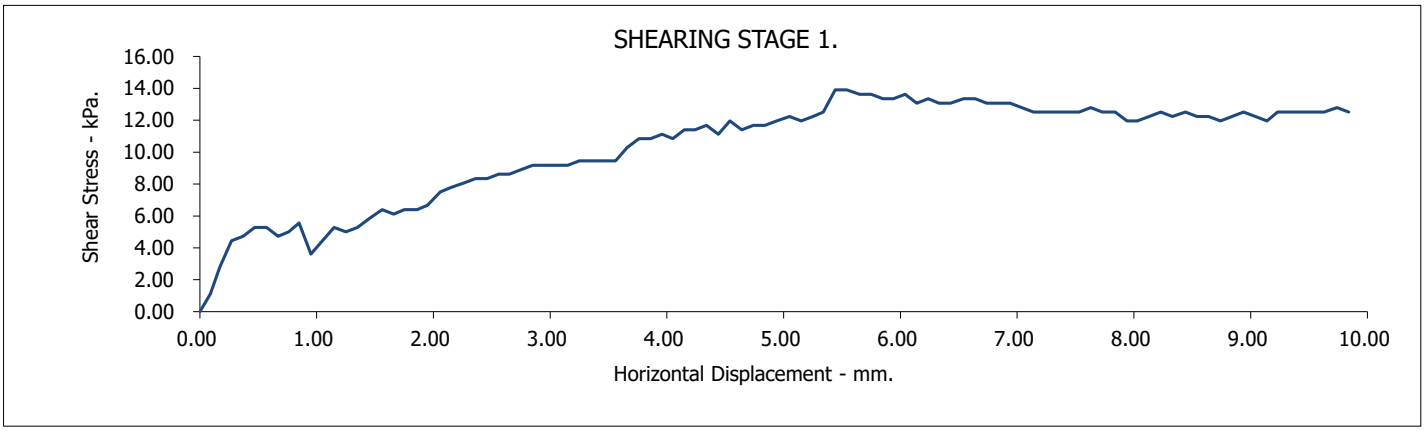
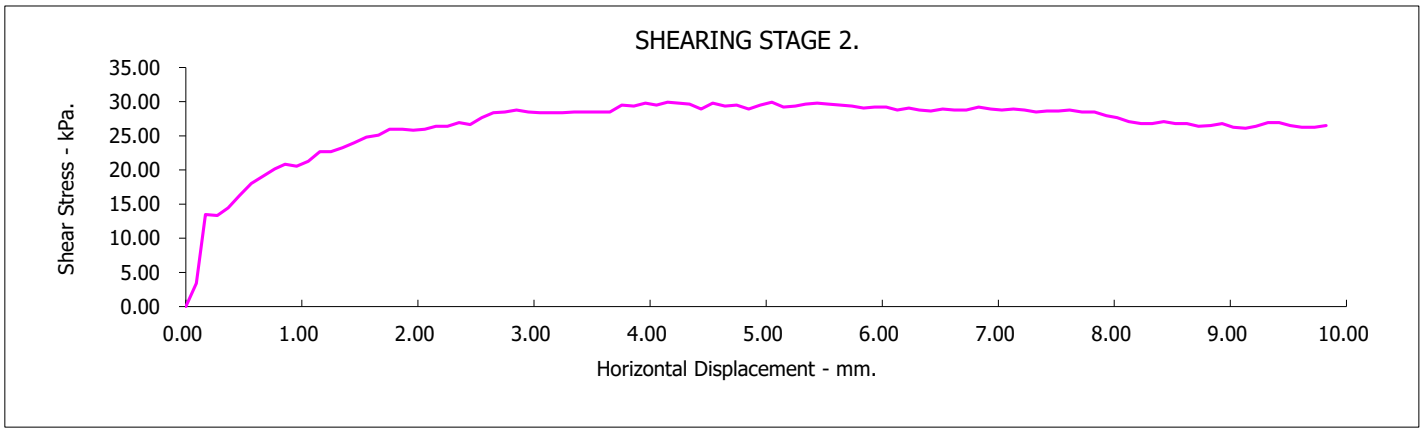
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50





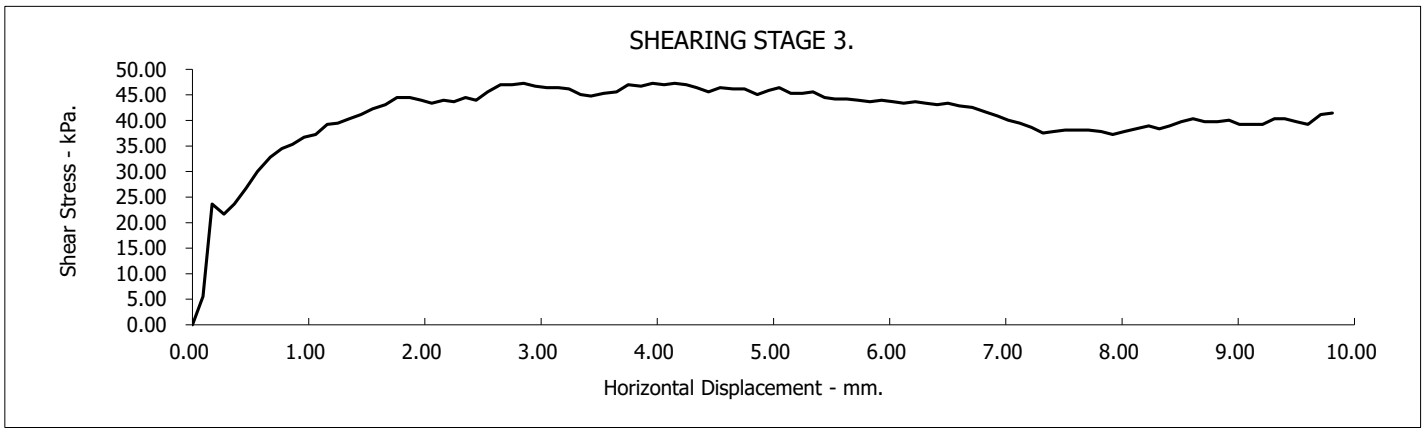


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Figure.

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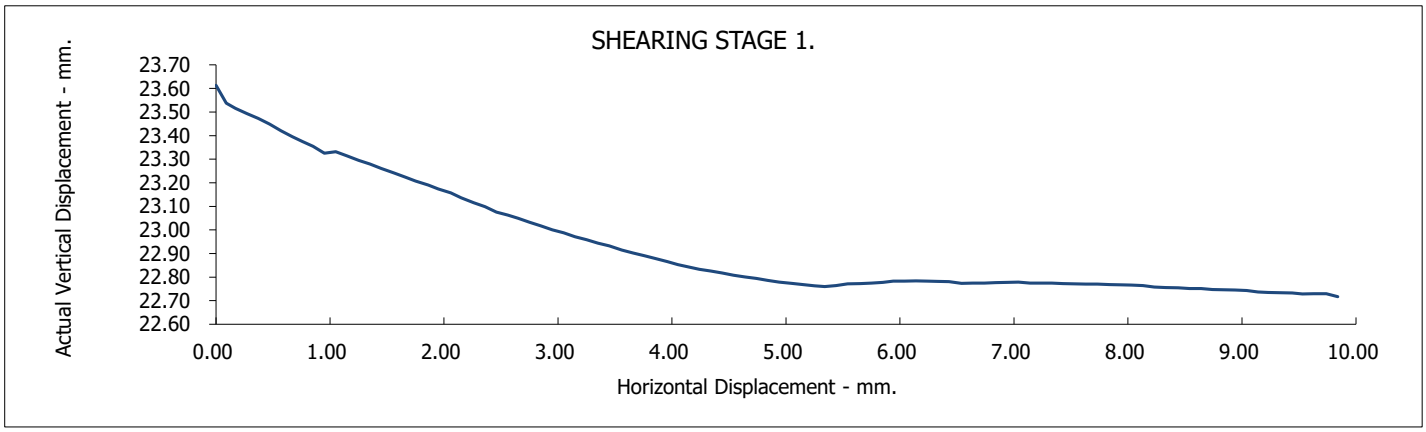
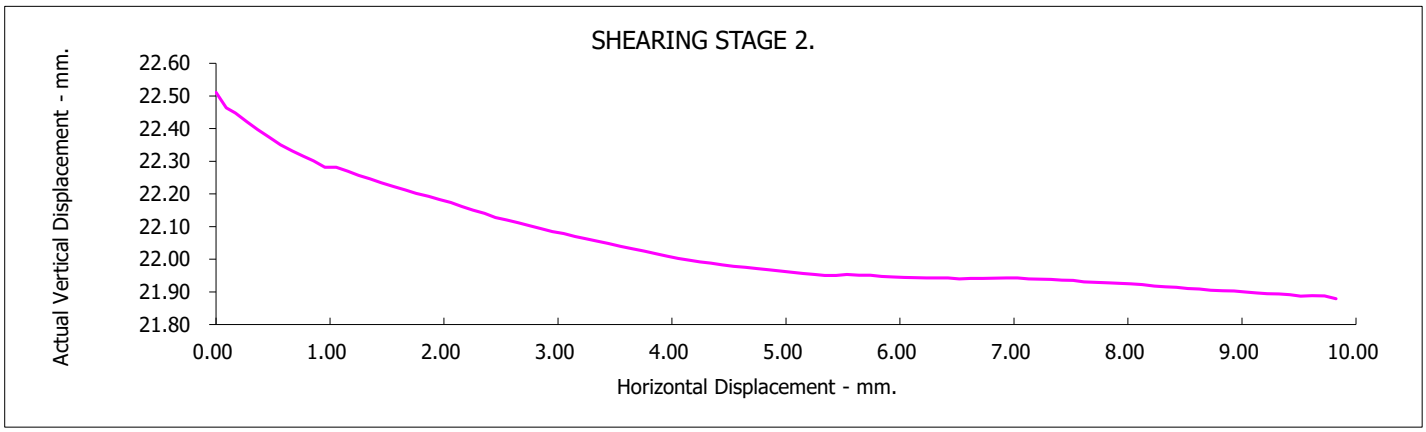
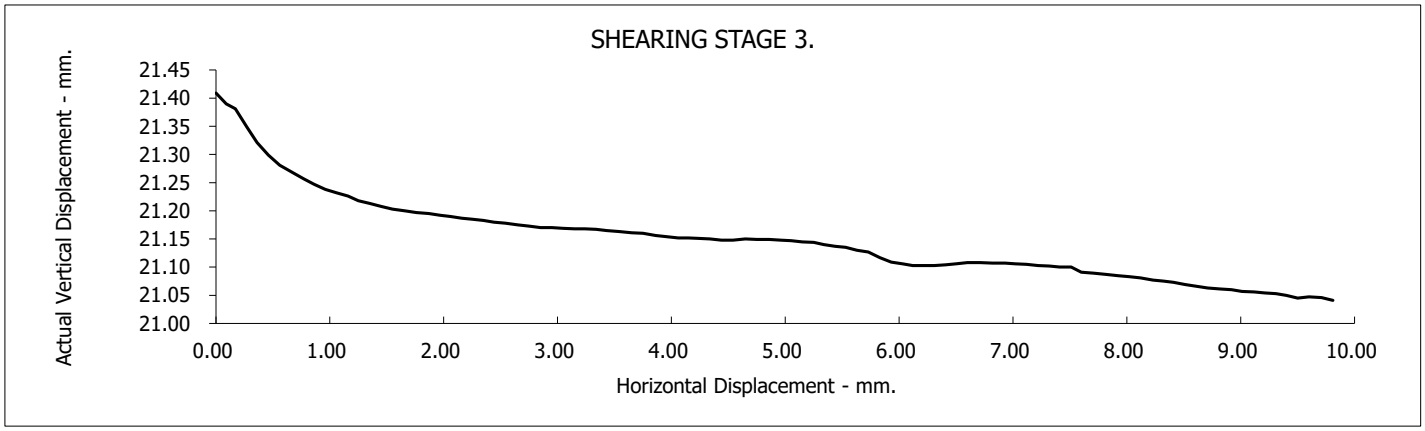
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50







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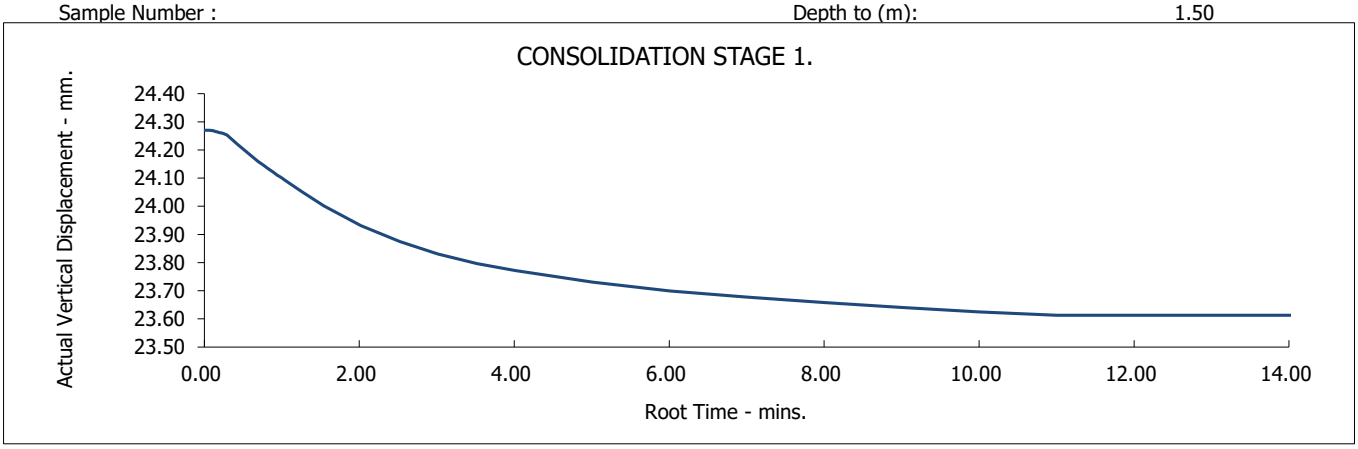
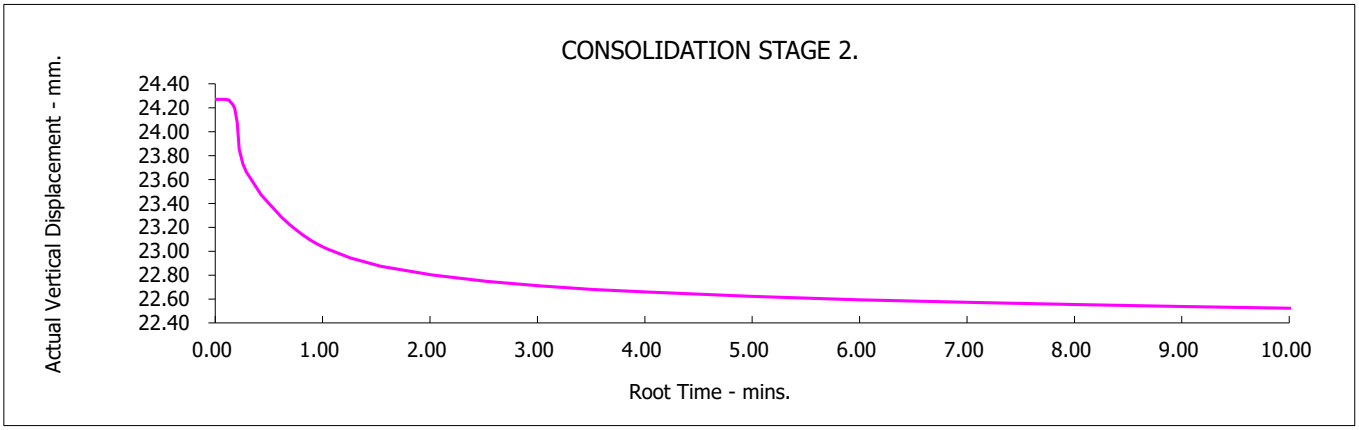
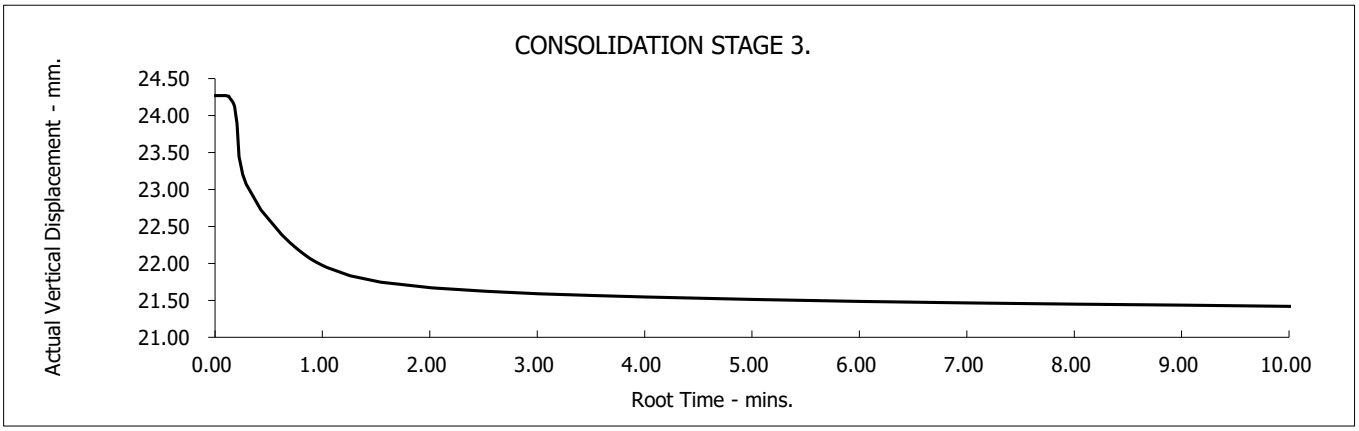
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	5.00
Sample Number :		Depth to (m):	

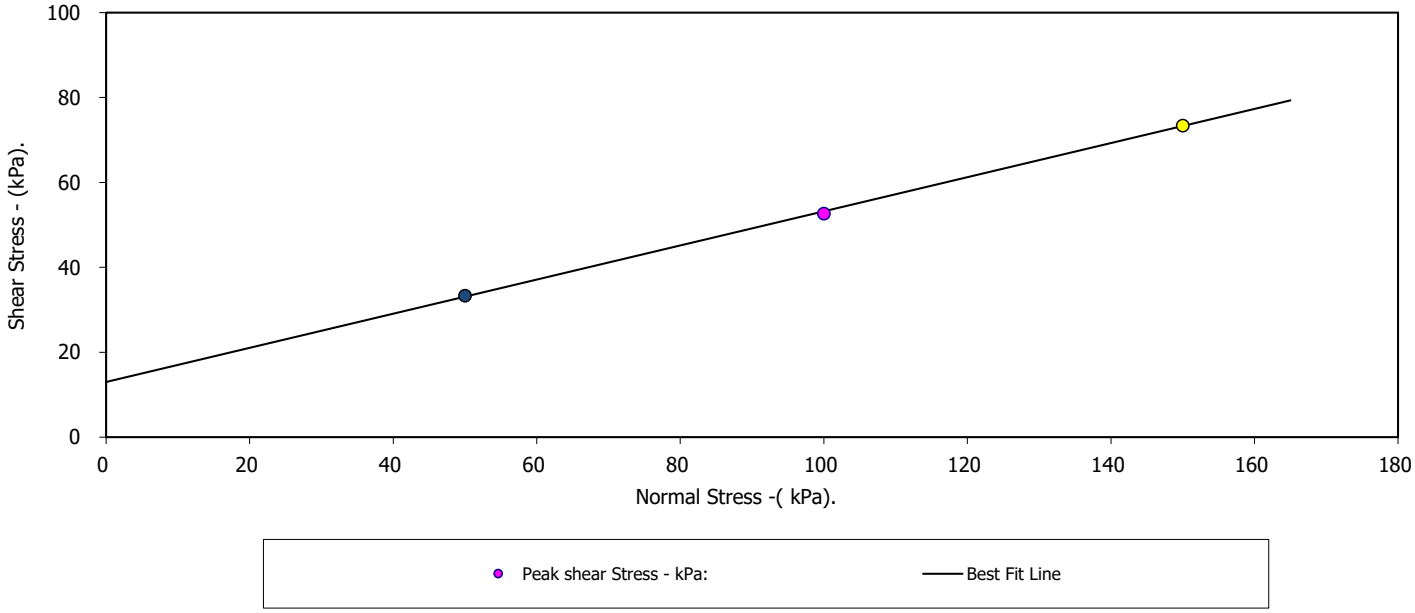
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown grey very soft slightly sandy silty organic CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	53	53	53
Bulk Density - Mg/m3:	1.63	1.63	1.63
Dry Density - Mg/m3:	1.06	1.07	1.07
Voids Ratio:	1.4903	1.4871	1.4833
Normal Pressure- kPa	50	100	150
Consolidation			
Consolidated Height - mm:	22.45	21.61	20.77
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.50	4.56	5.29
Peak shear Stress - kPa:	33	53	73

PEAK	
Angle of Shearing Resistance:(θ)	**21.9**
Effective Cohesion - kPa:	**13**

FAILURE CONDITIONS



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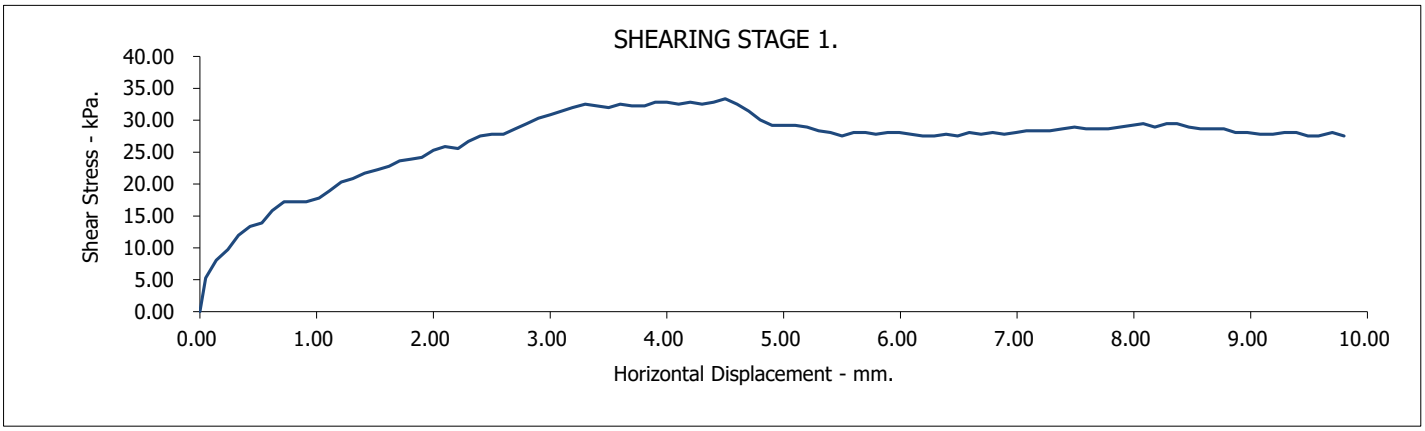
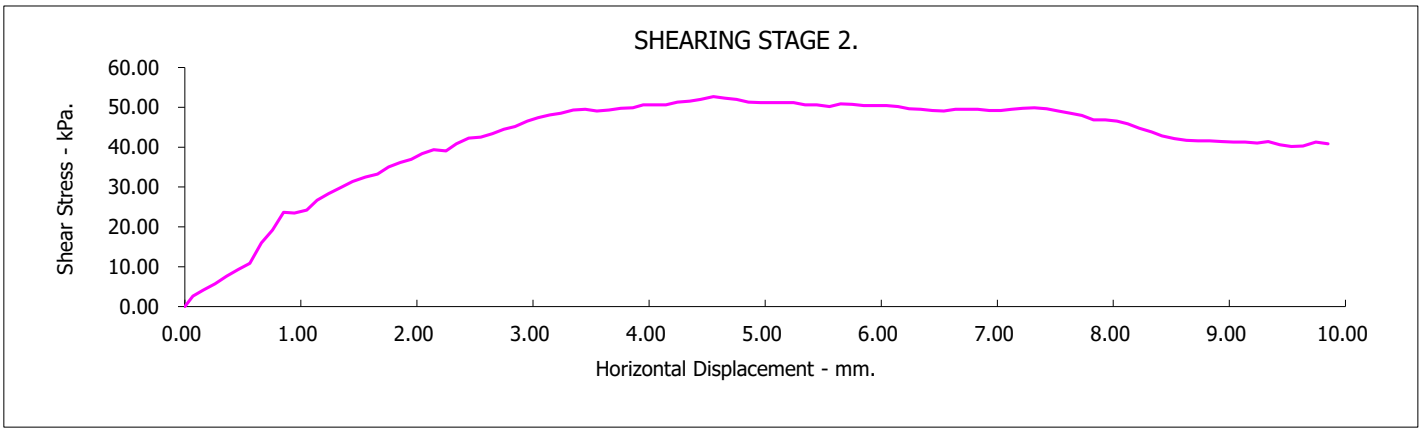
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	5.00
Sample Number :		Depth to (m):	





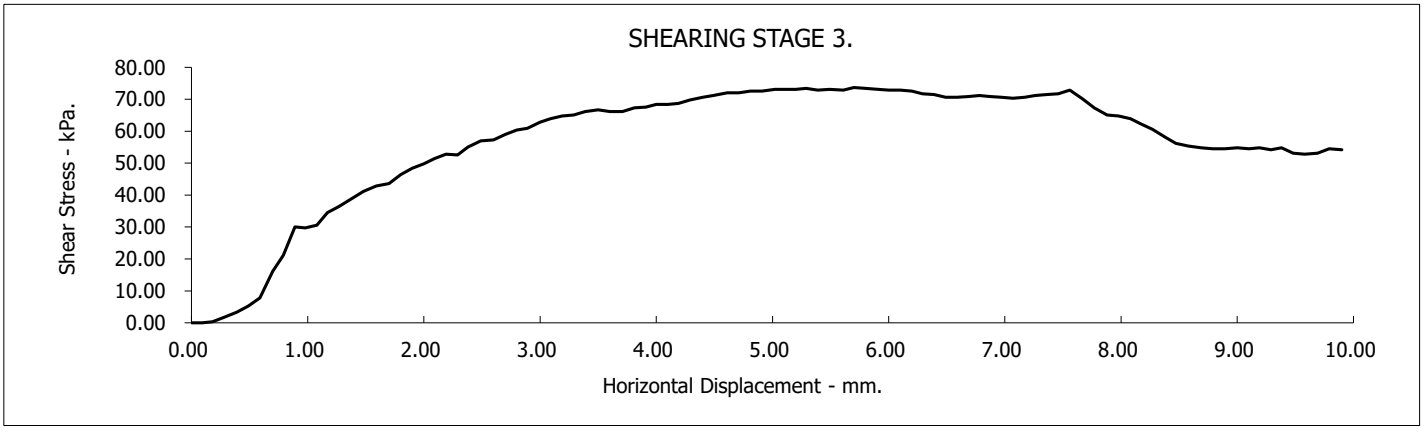


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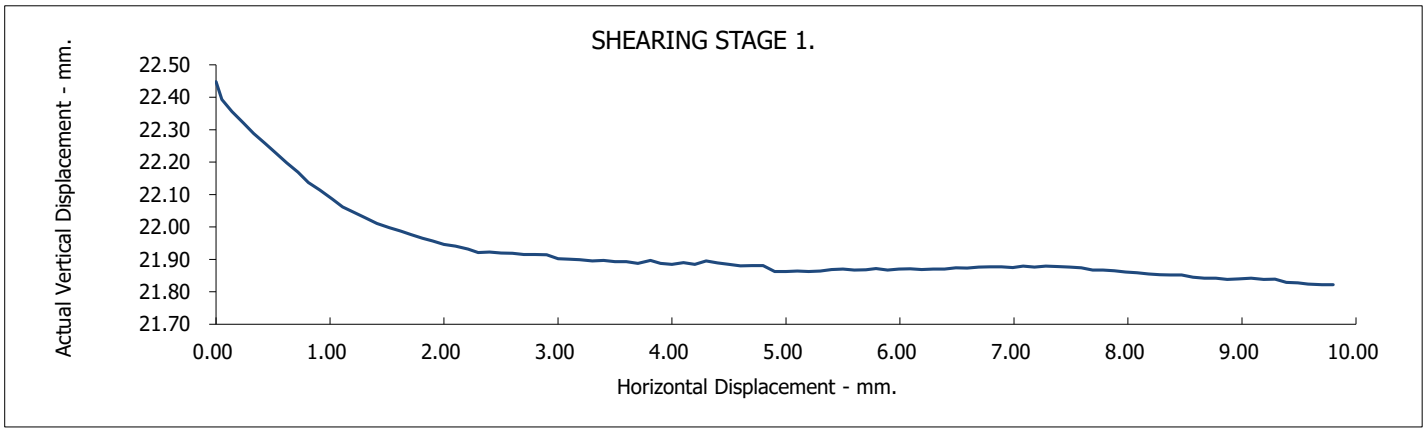
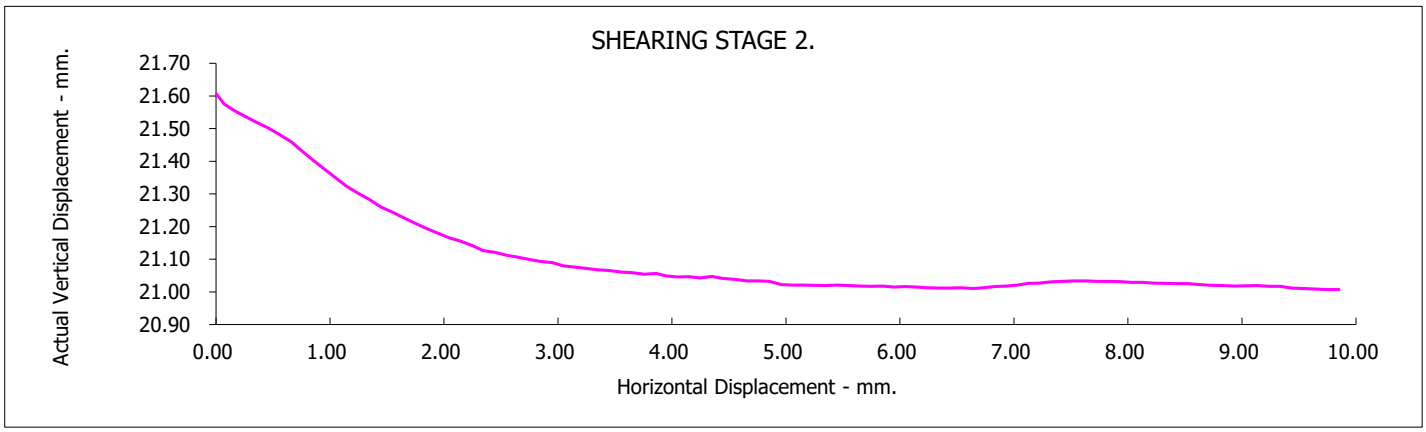
Figure.

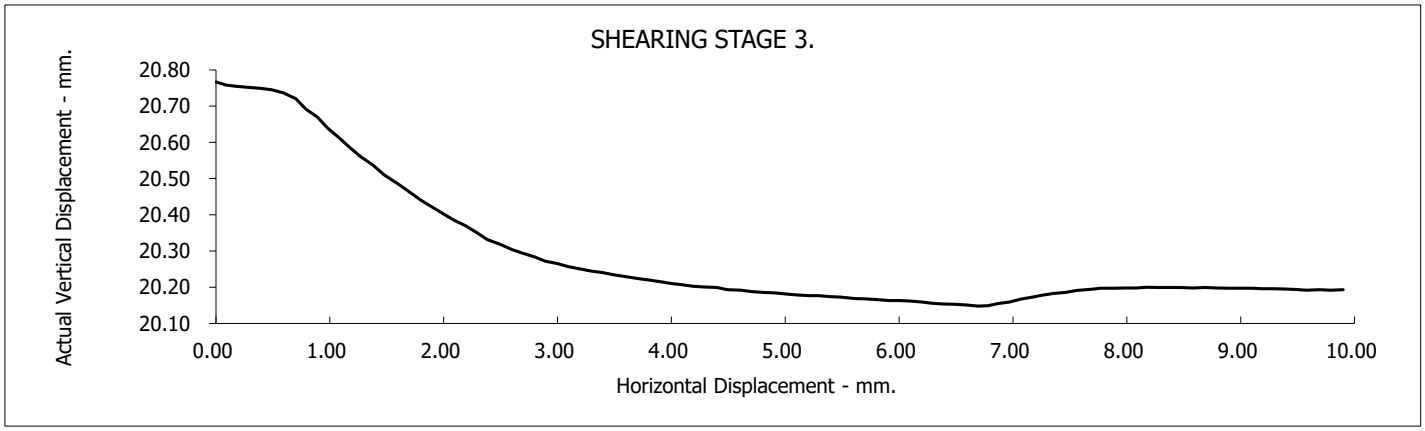
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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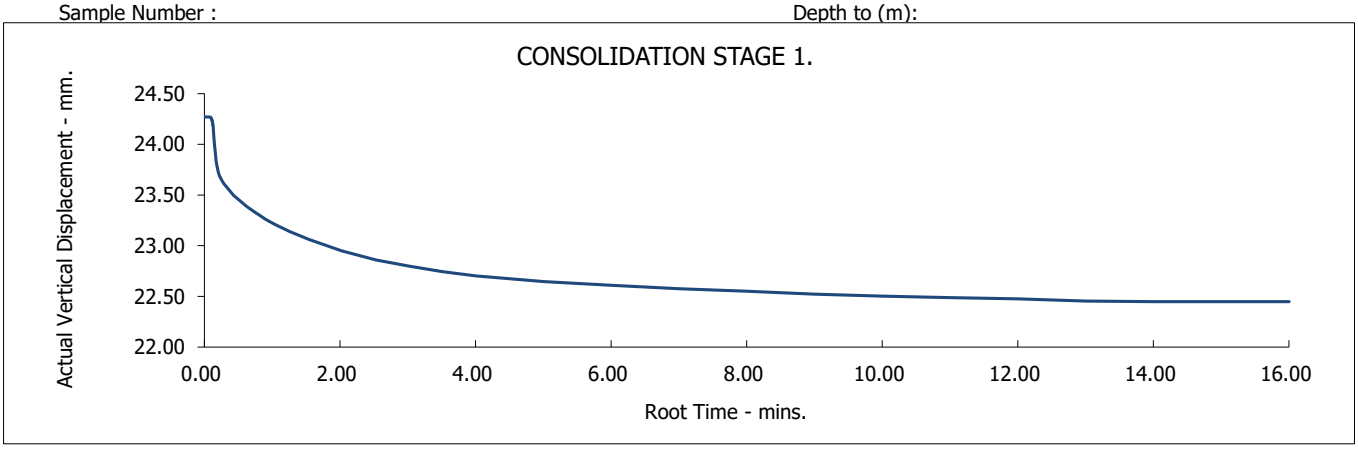
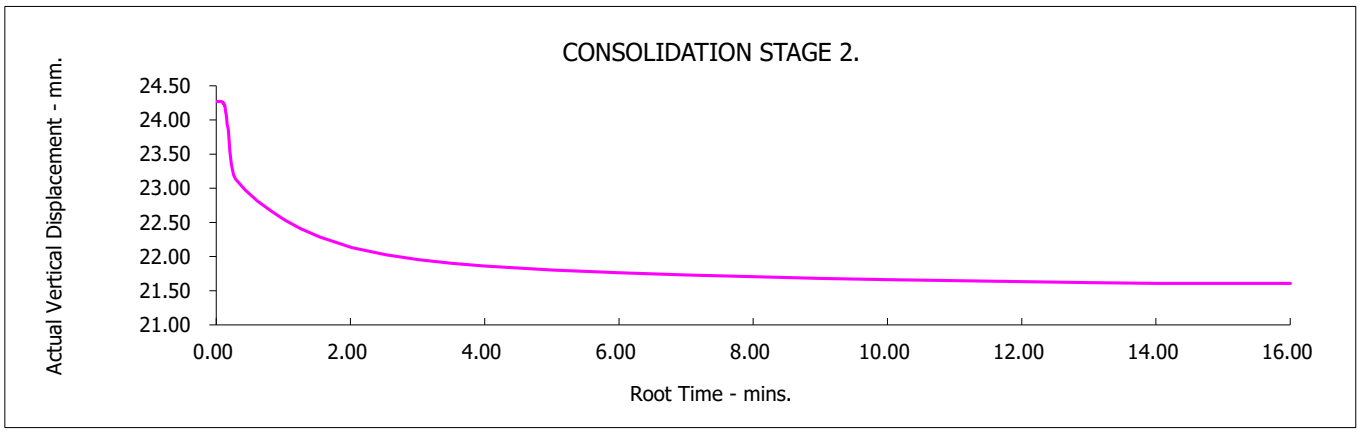
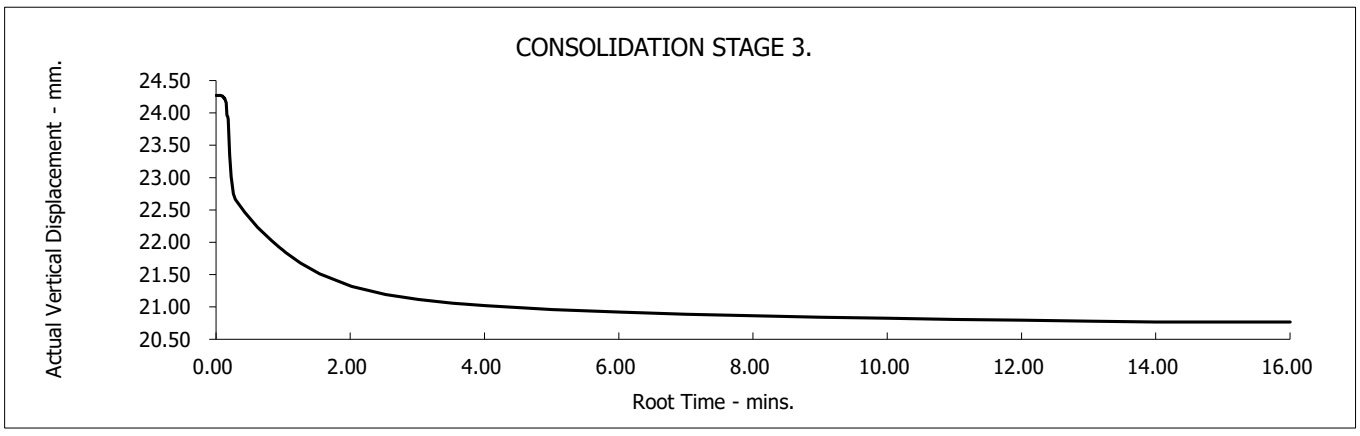
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	7.00
Sample Number:		Depth to (m):	

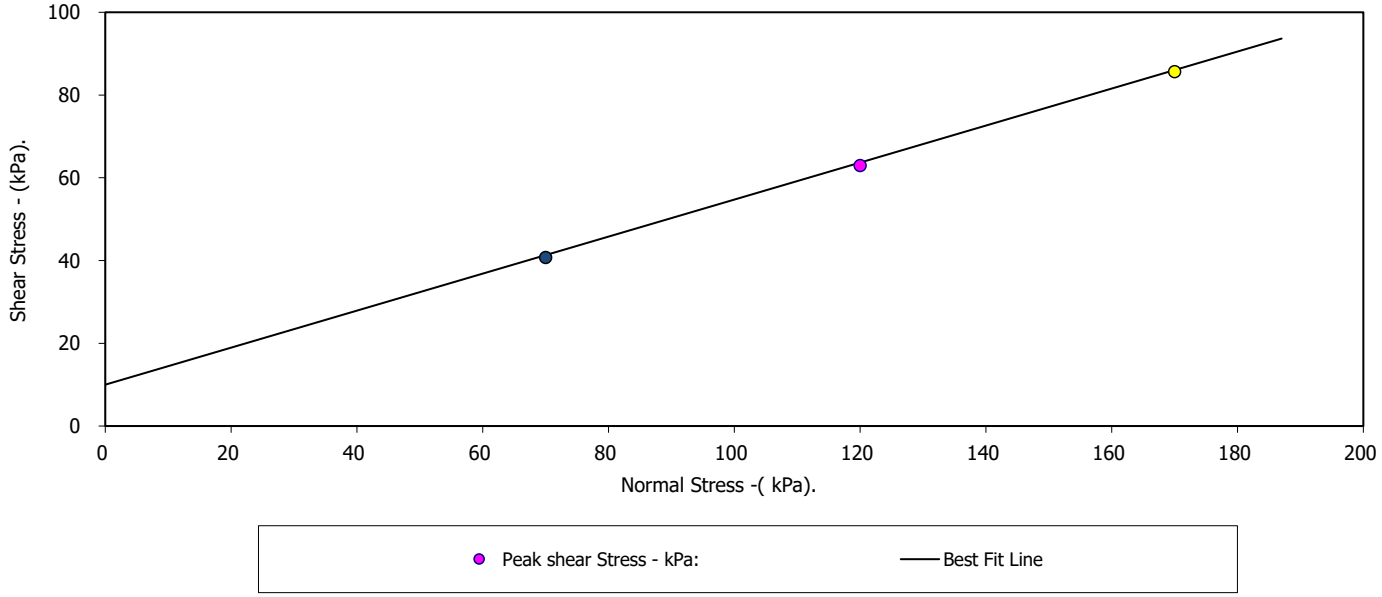
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey soft sandy silty organic CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	44	44	44
Bulk Density - Mg/m3:	1.86	1.86	1.86
Dry Density - Mg/m3:	1.29	1.29	1.29
Voids Ratio:	1.0467	1.0505	1.0479
Normal Pressure- kPa	70	120	170
Consolidation			
Consolidated Height - mm:	23.68	22.21	20.73
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	7.73	5.78	5.22
Peak shear Stress - kPa:	41	63	86

PEAK	
Angle of Shearing Resistance:(θ)	**24.1**
Effective Cohesion - kPa:	**10**

FAILURE CONDITIONS



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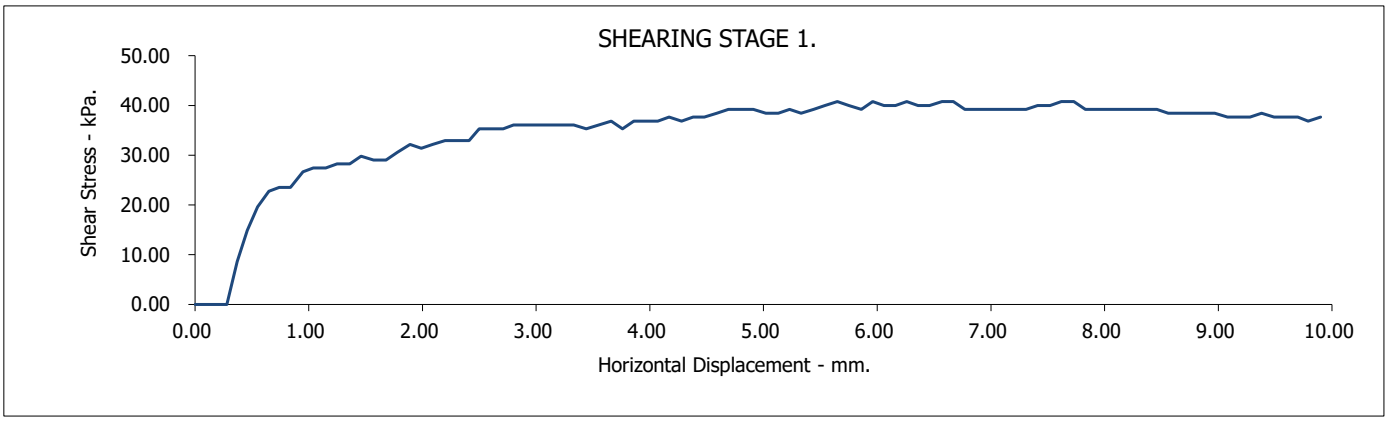
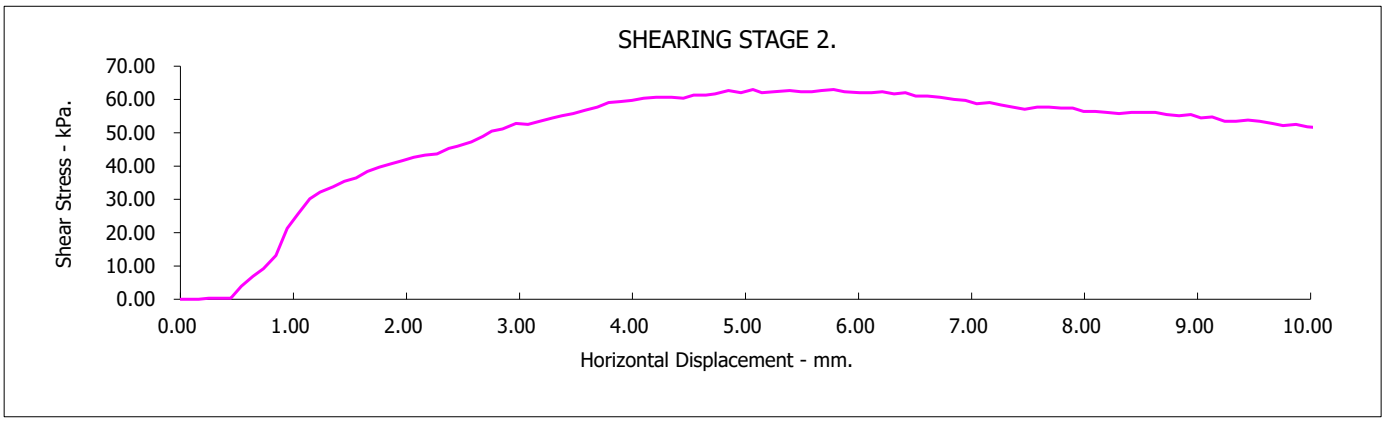
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M05	Depth (m):	7.00





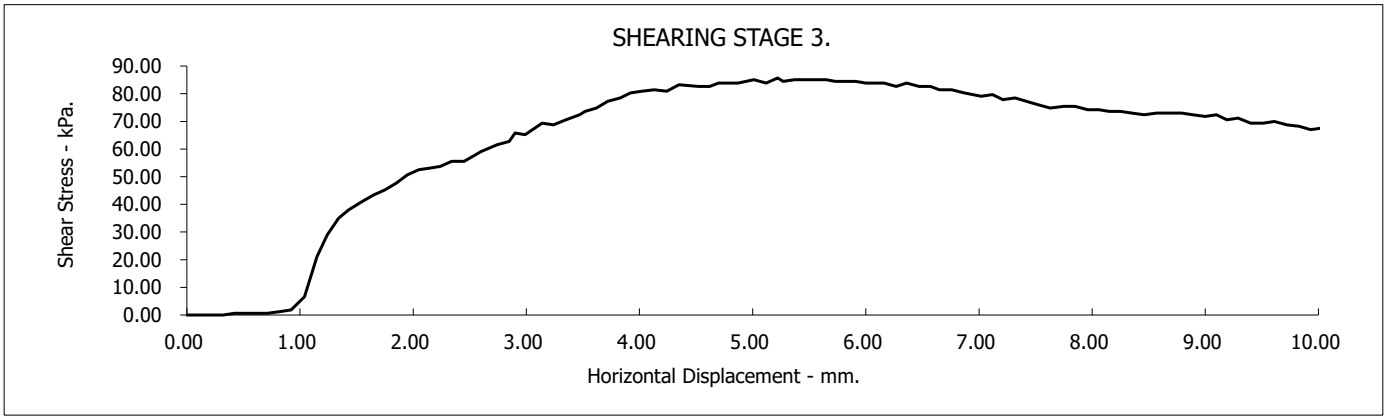


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Figure.

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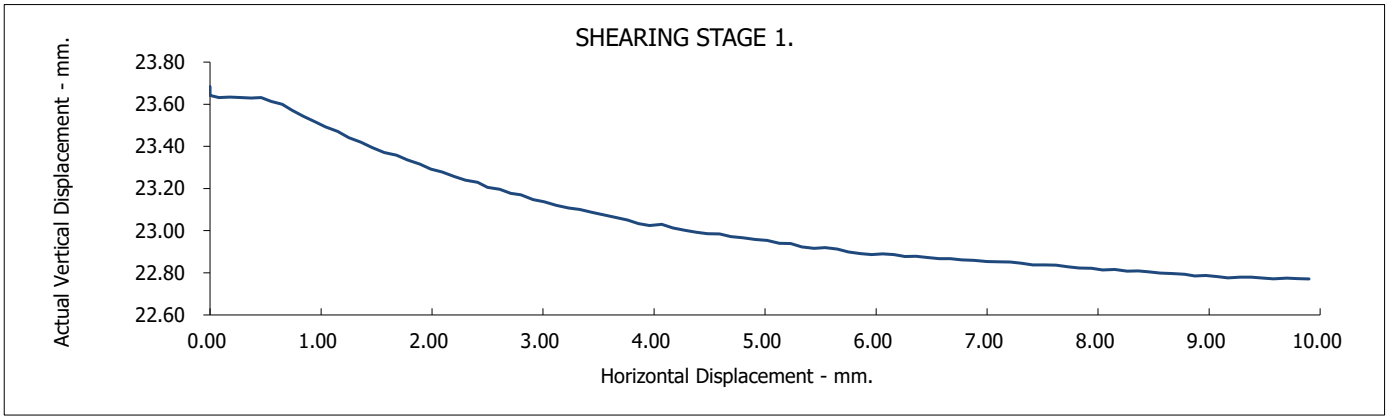
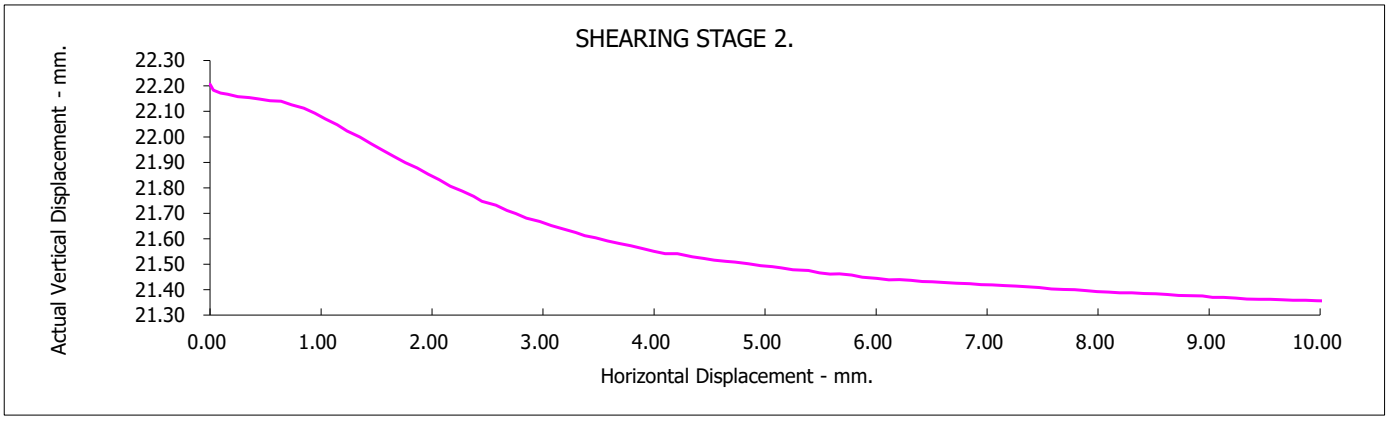
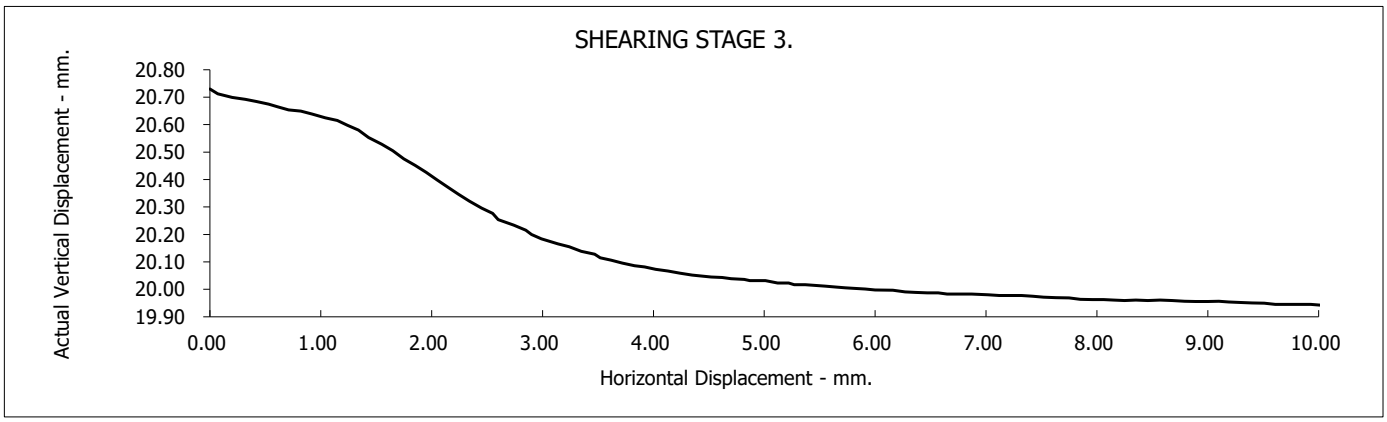
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number: M05 Depth (m): 7.00







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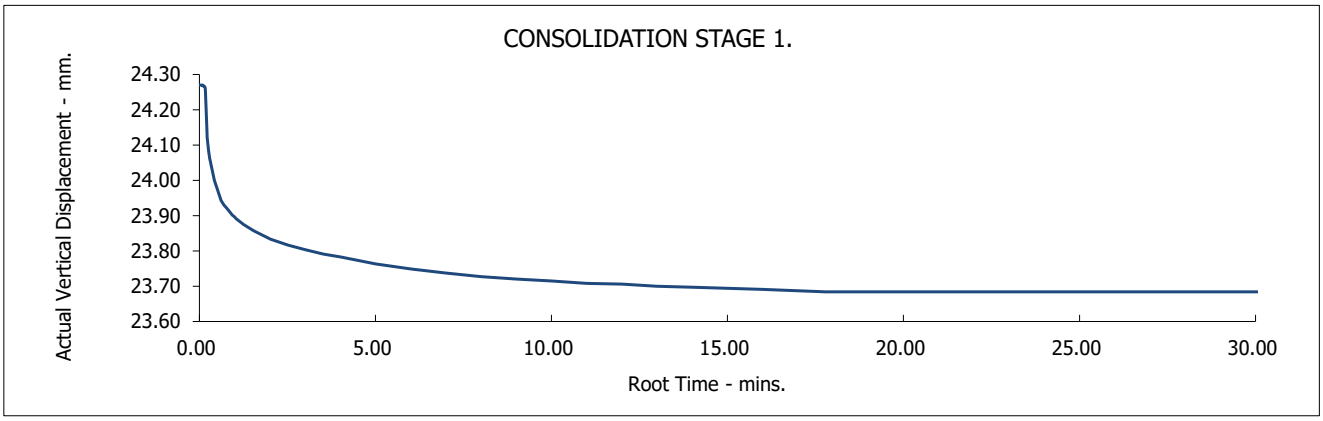
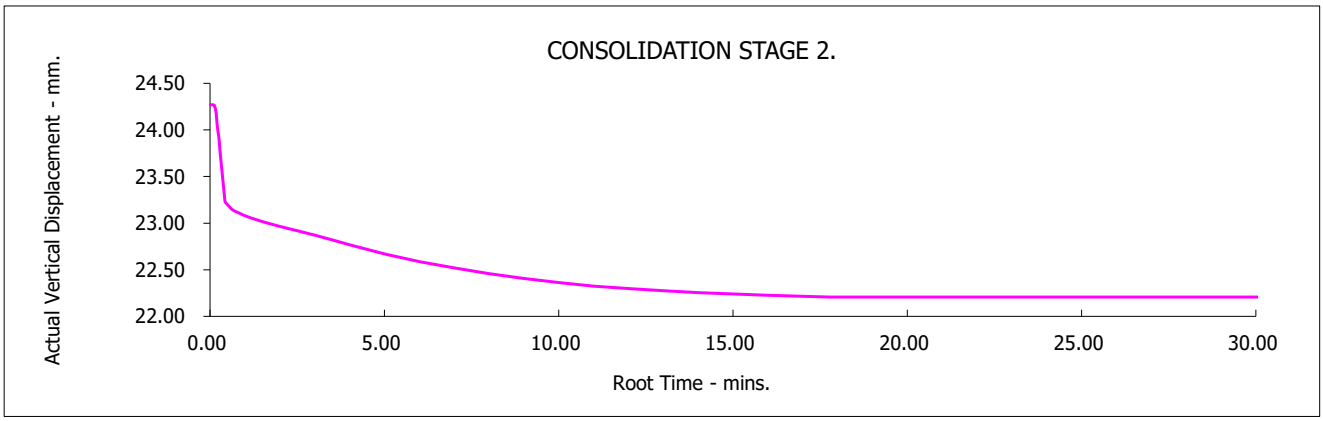
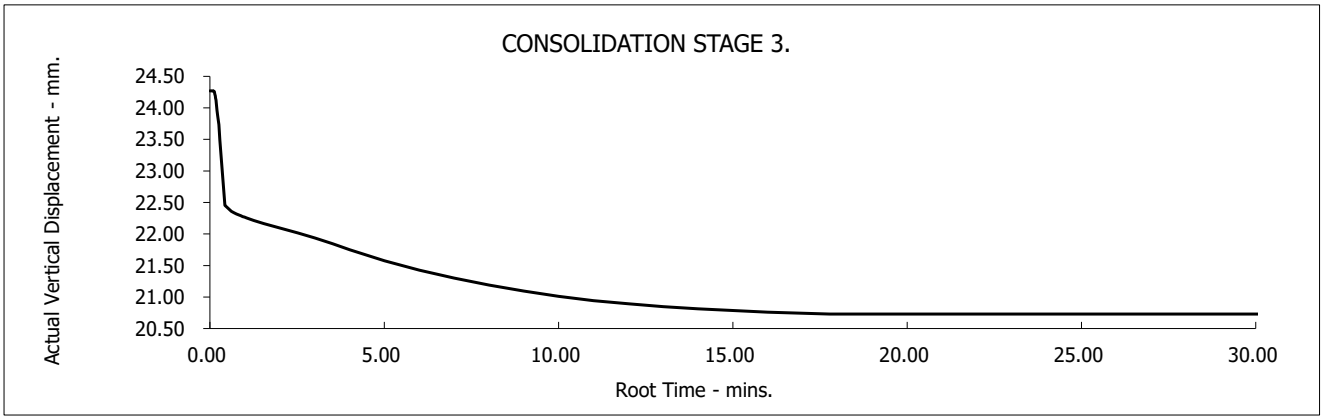
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M05	Depth (m):	7.00







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M05	Depth from (m):	9.50
Sample Number:		Depth to (m):	

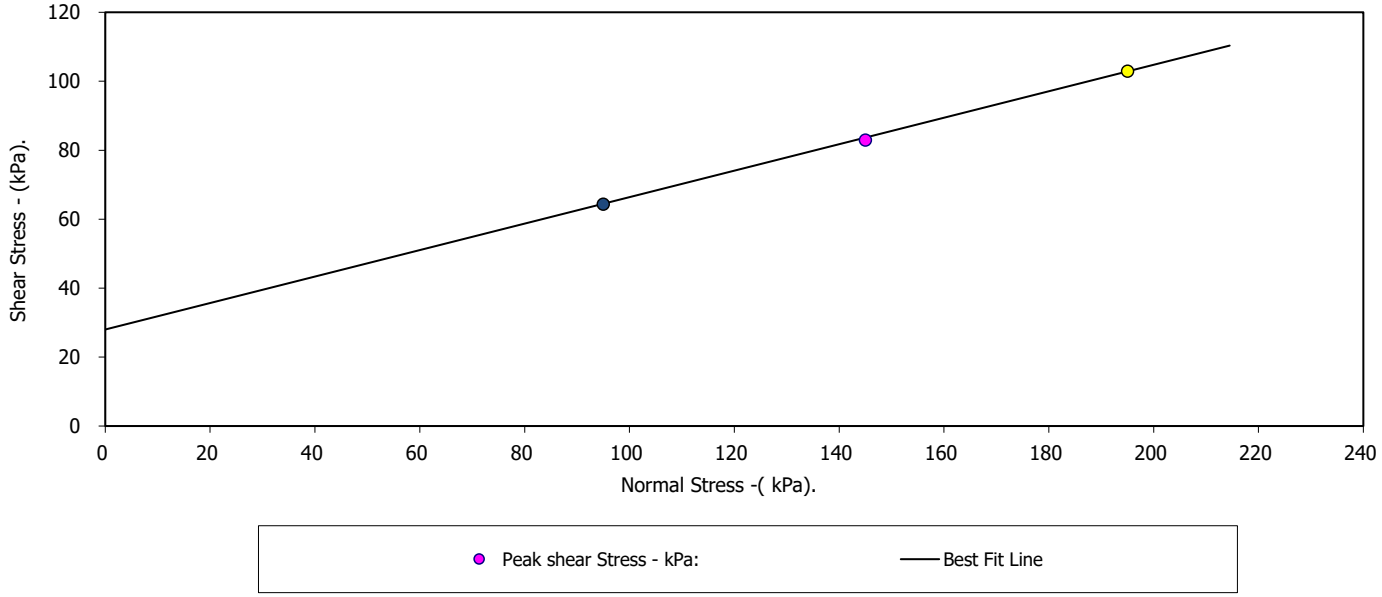
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey soft sandy silty organic CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	51	51	51
Bulk Density - Mg/m3:	1.89	1.90	1.89
Dry Density - Mg/m3:	1.25	1.26	1.25
Voids Ratio:	1.1127	1.1100	1.1124
Normal Pressure- kPa	95	145	195
Consolidation			
Consolidated Height - mm:	22.73	22.21	21.87
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.28	5.21	5.04
Peak shear Stress - kPa:	64	83	103

PEAK	
Angle of Shearing Resistance:(θ)	**21.0**
Effective Cohesion - kPa:	**28**

FAILURE CONDITIONS



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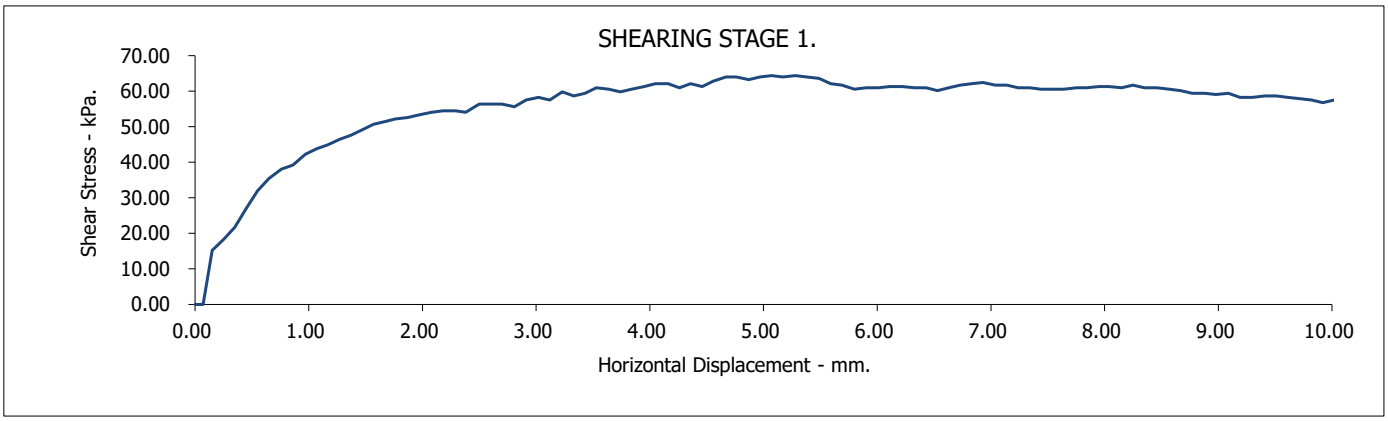
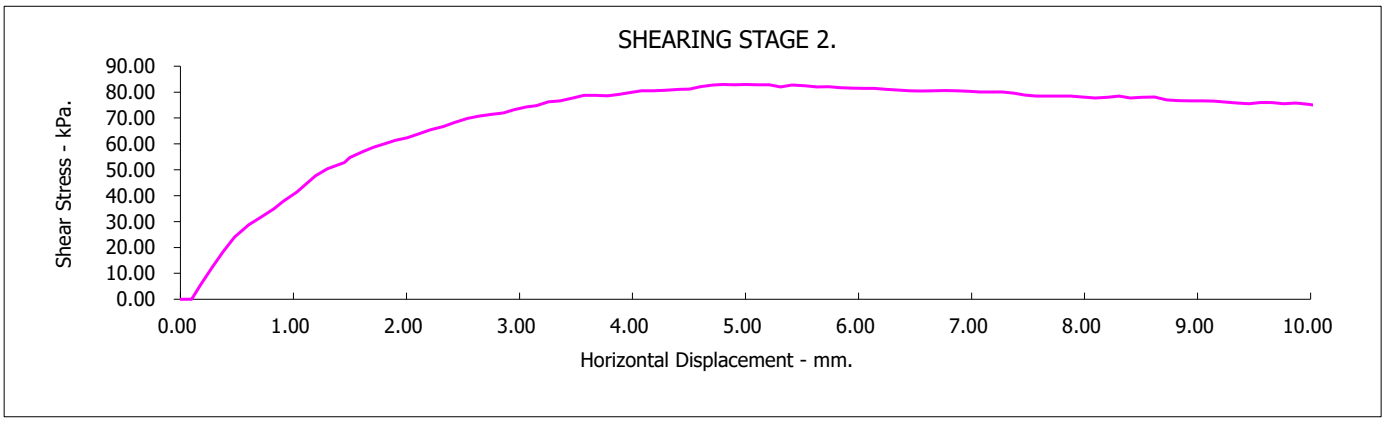
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M05	Depth (m):	9.50





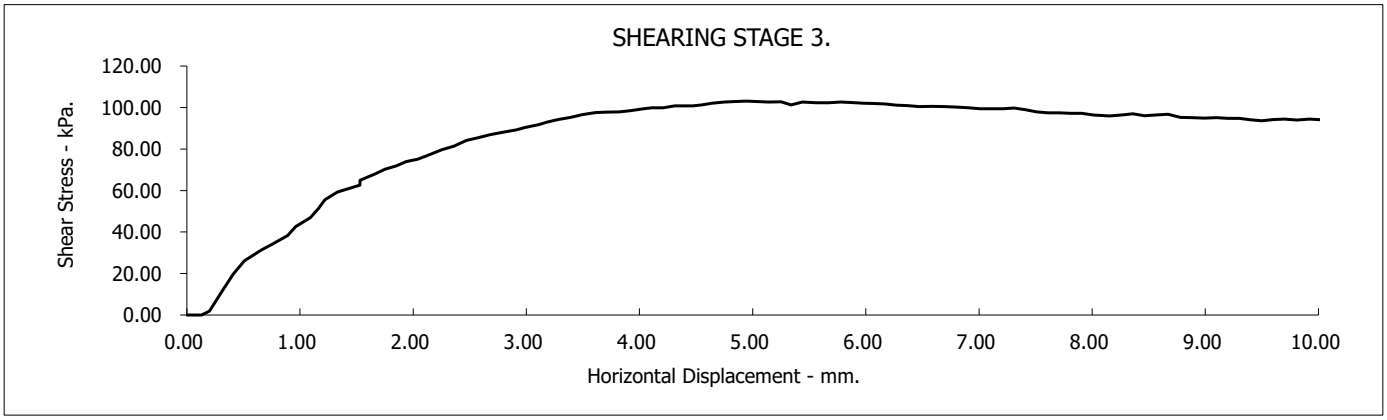


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Figure.

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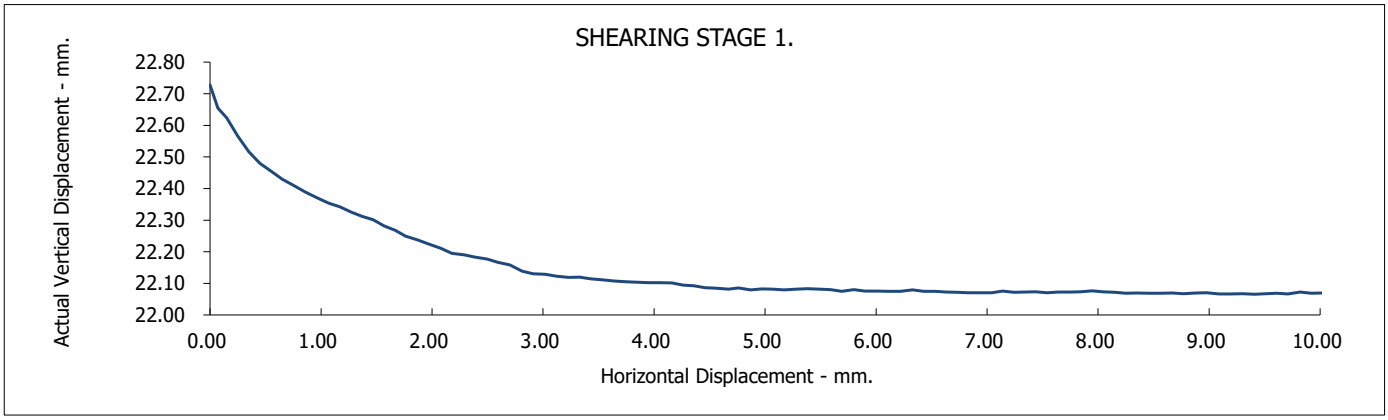
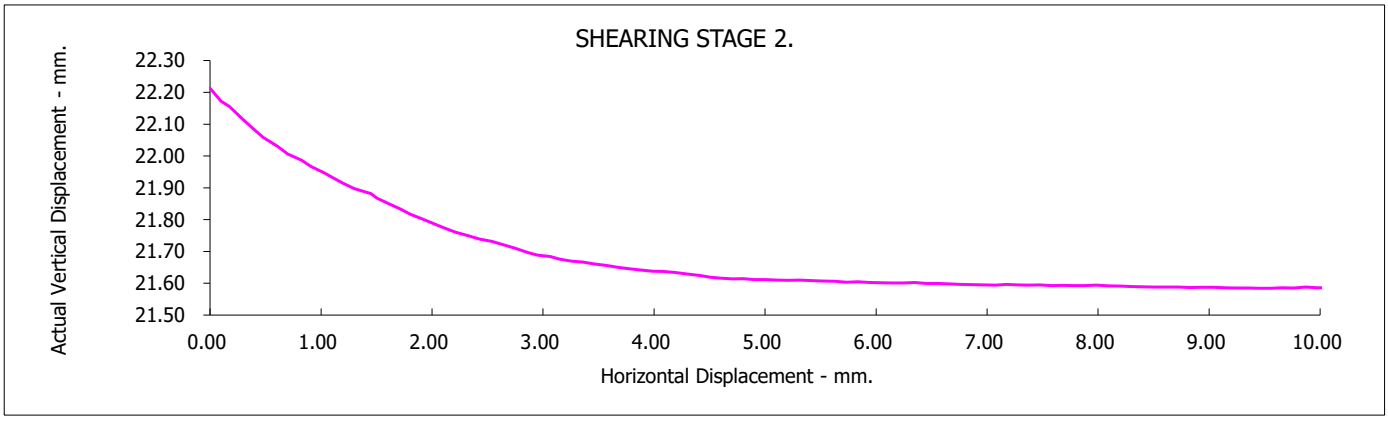
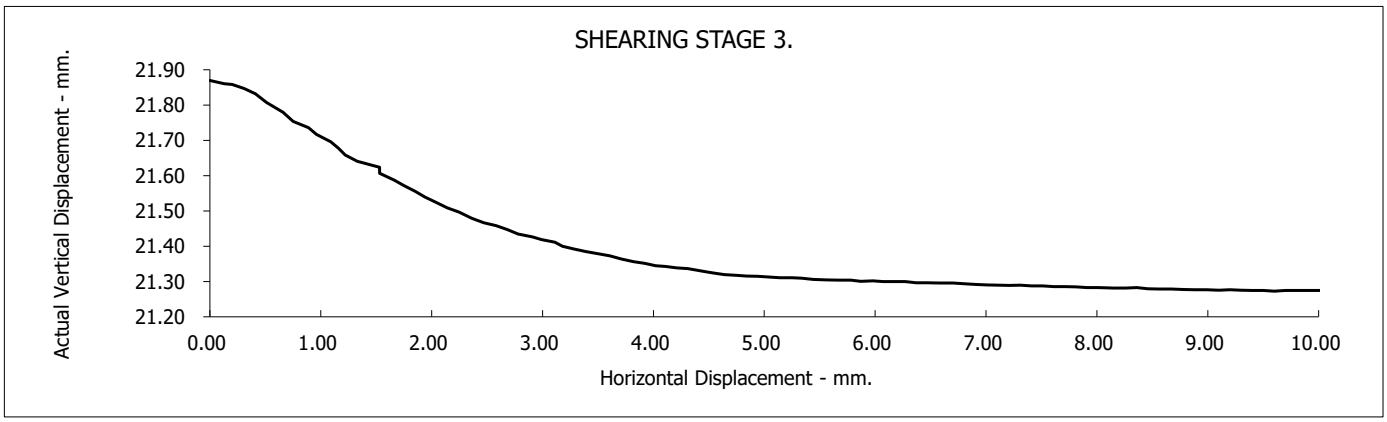
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M05	Depth (m):	9.50







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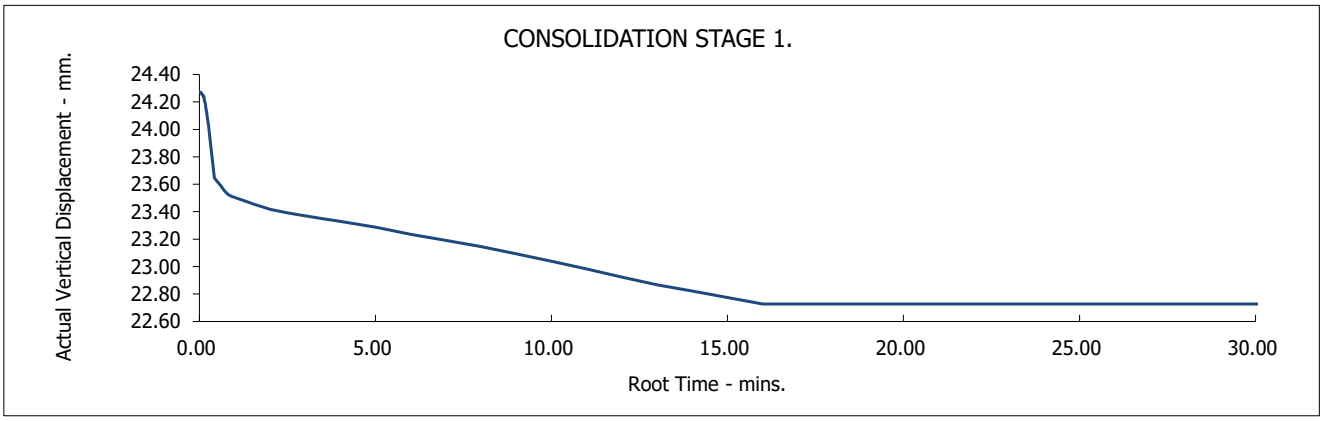
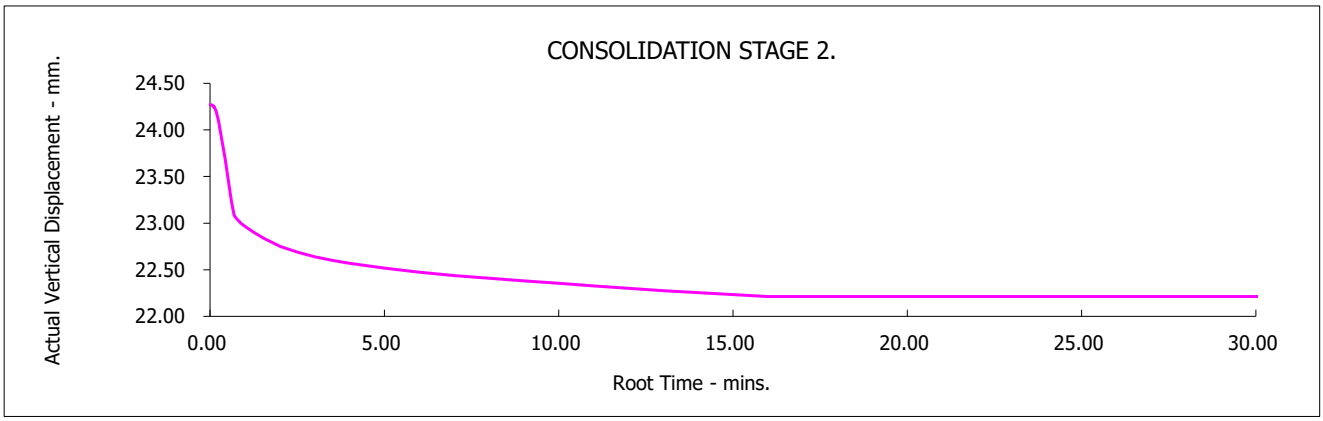
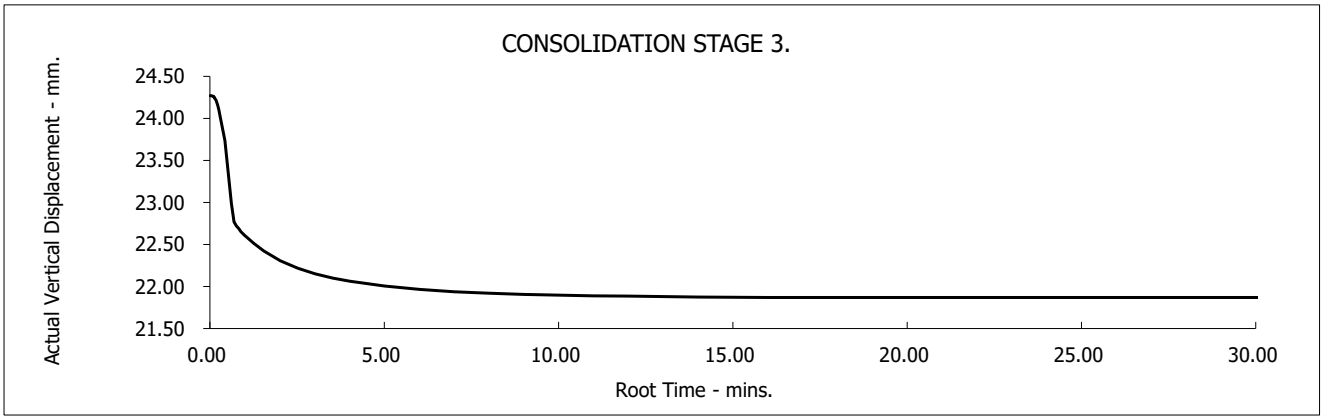
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M05	Depth (m):	9.50







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	7.50
Sample Number :		Depth to (m):	8.00

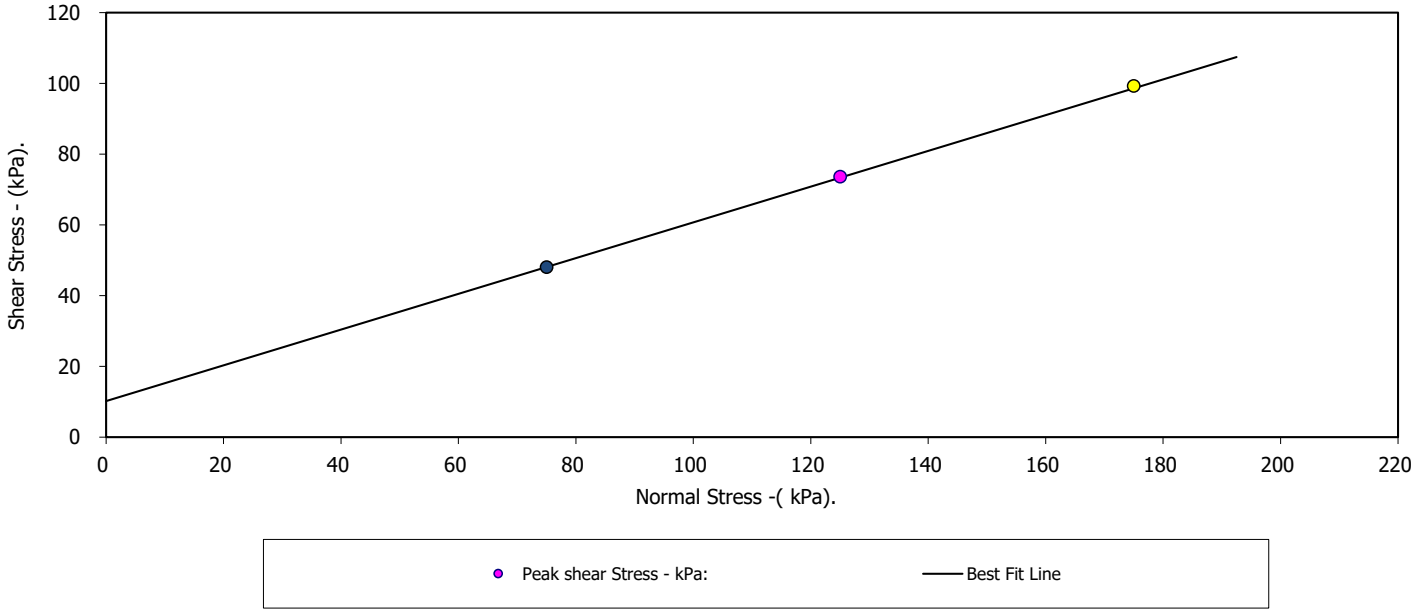
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	39	39	39
Bulk Density - Mg/m3:	1.80	1.81	1.82
Dry Density - Mg/m3:	1.29	1.30	1.30
Voids Ratio:	1.0464	1.0389	1.0348
Normal Pressure- kPa	75	125	175
Consolidation			
Consolidated Height - mm:	22.40	22.17	21.95
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.09	4.89	5.08
Peak shear Stress - kPa:	48	74	99

PEAK	
Angle of Shearing Resistance:(θ)	**26.8**
Effective Cohesion - kPa:	**10**

FAILURE CONDITIONS



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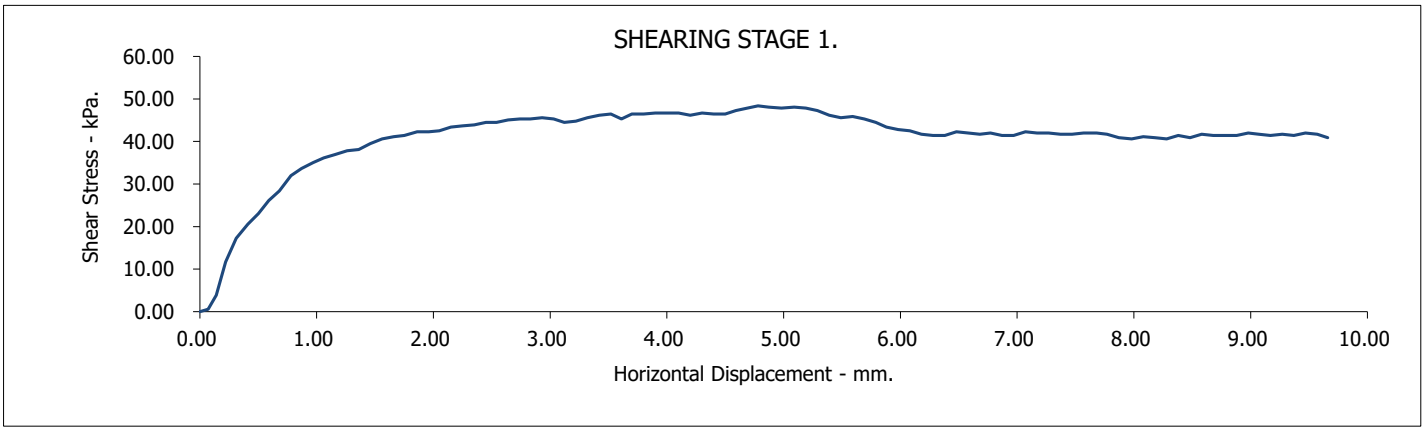
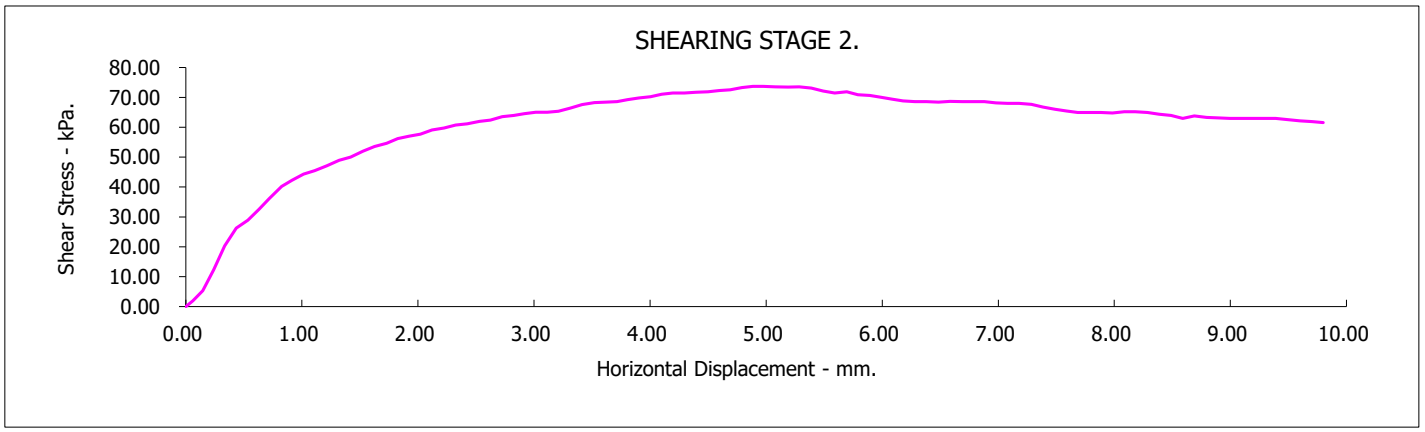
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	7.50
Sample Number :		Depth to (m):	8.00





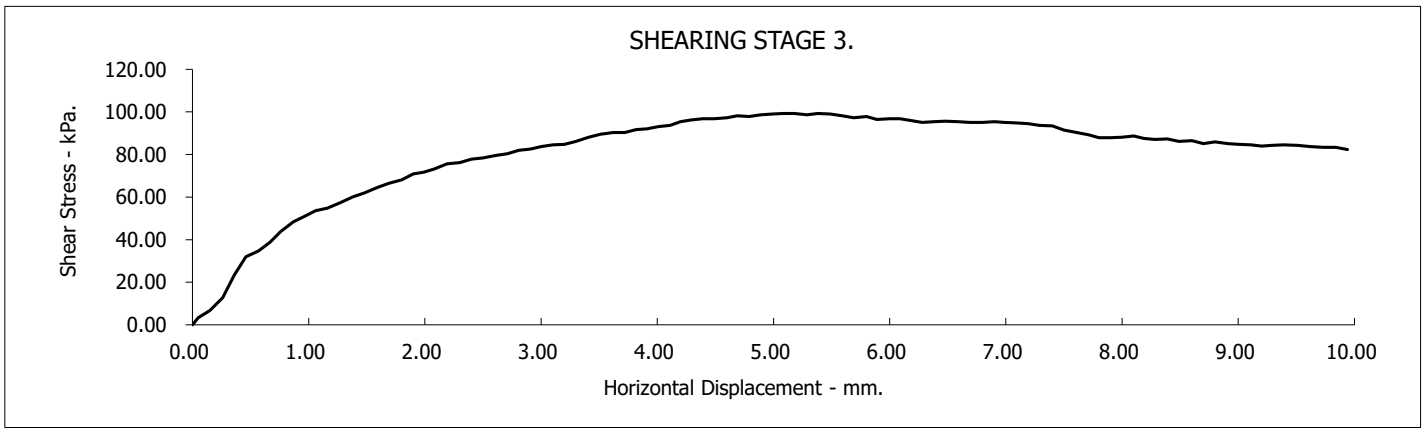


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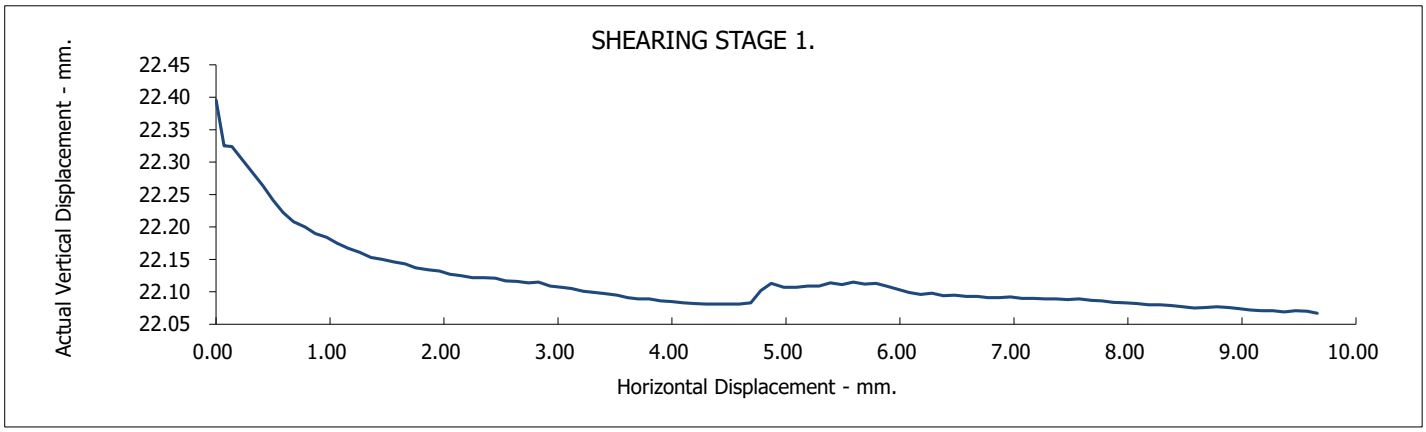
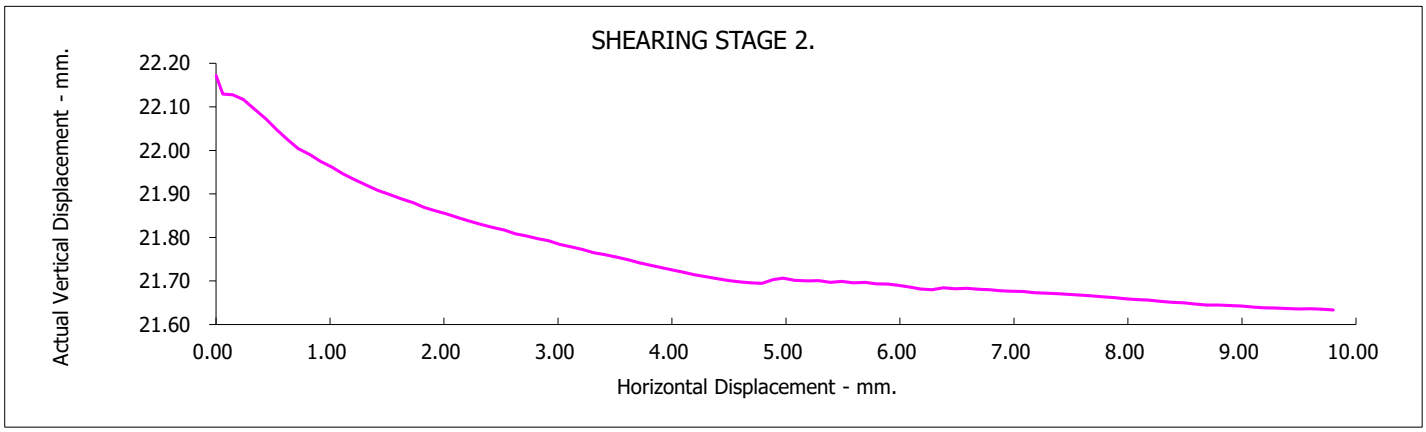
Figure.

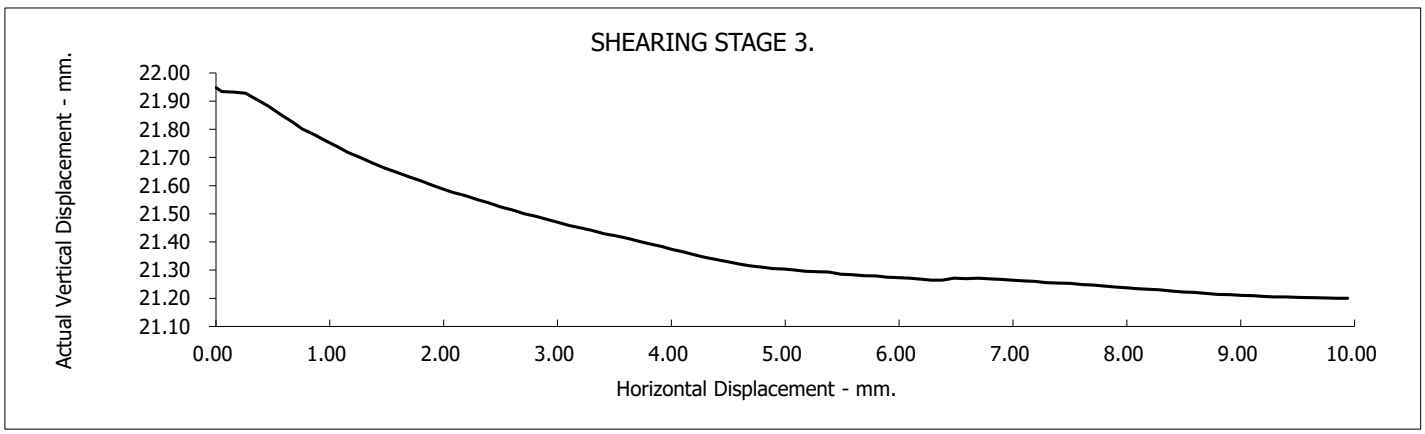
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	7.50
Sample Number :		Depth to (m):	8.00







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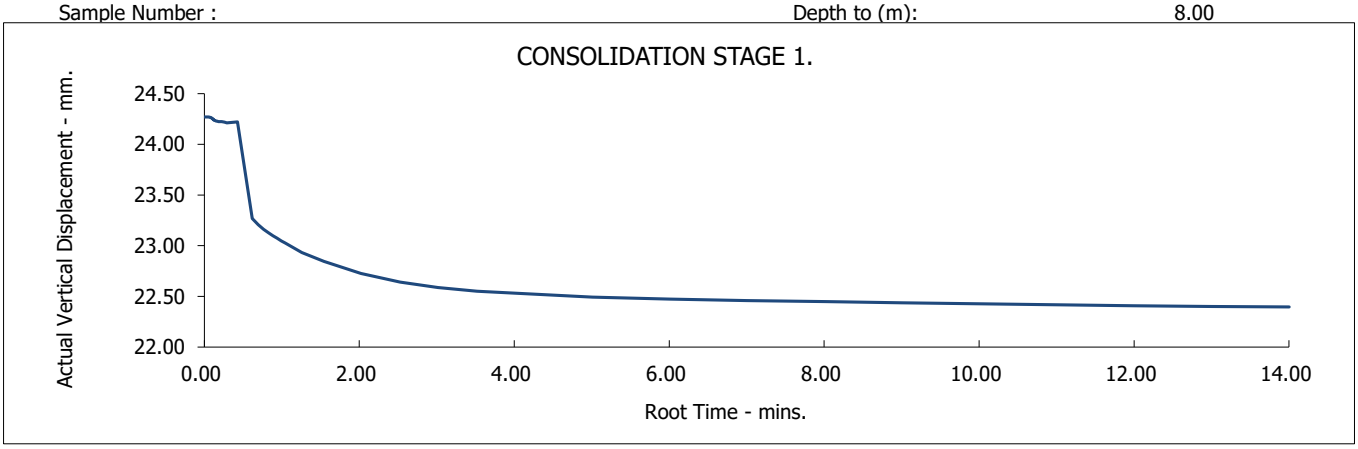
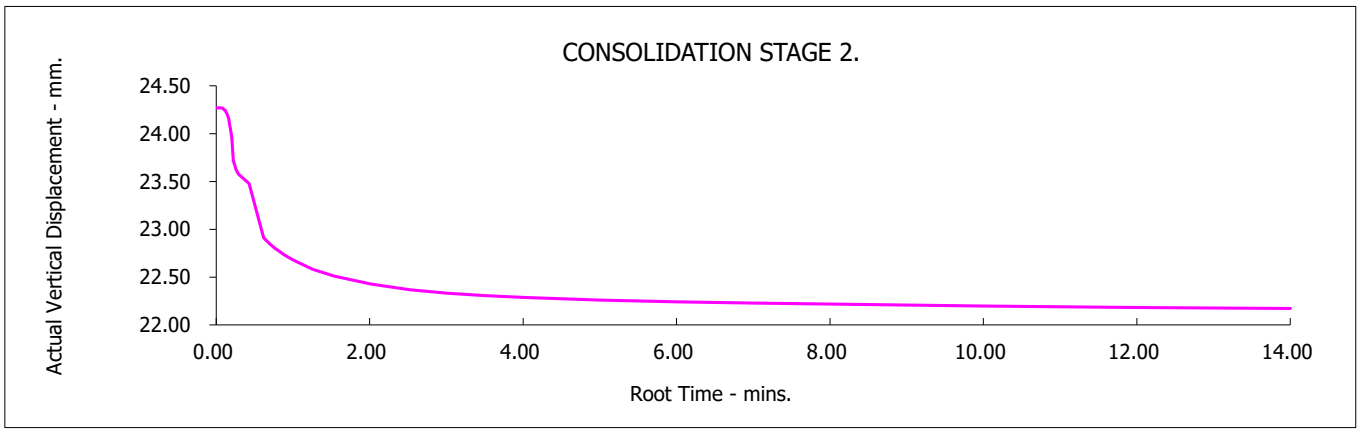
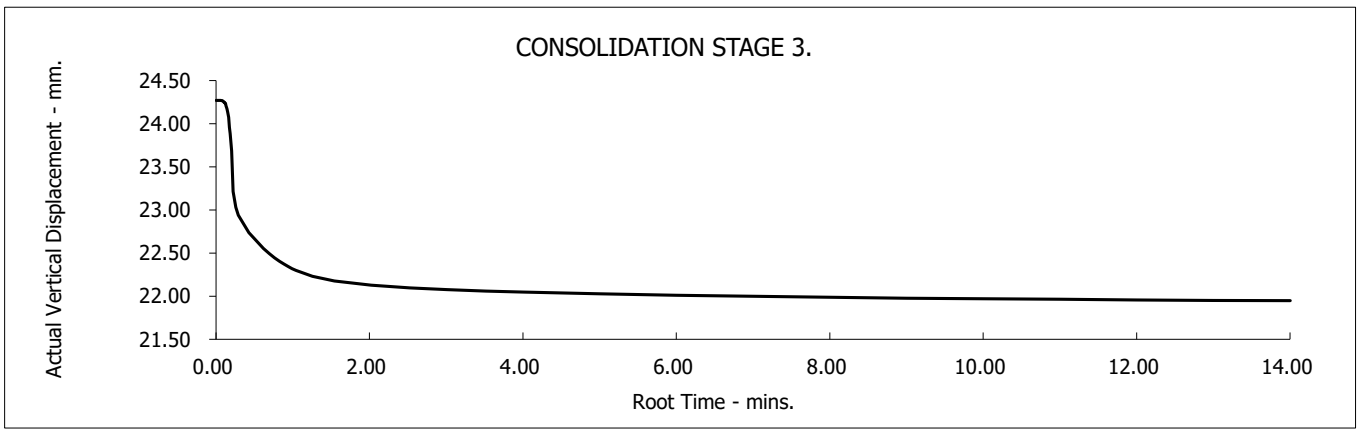
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	7.50
Sample Number :		Depth to (m):	8.00







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	8.50
Sample Number :		Depth to (m):	

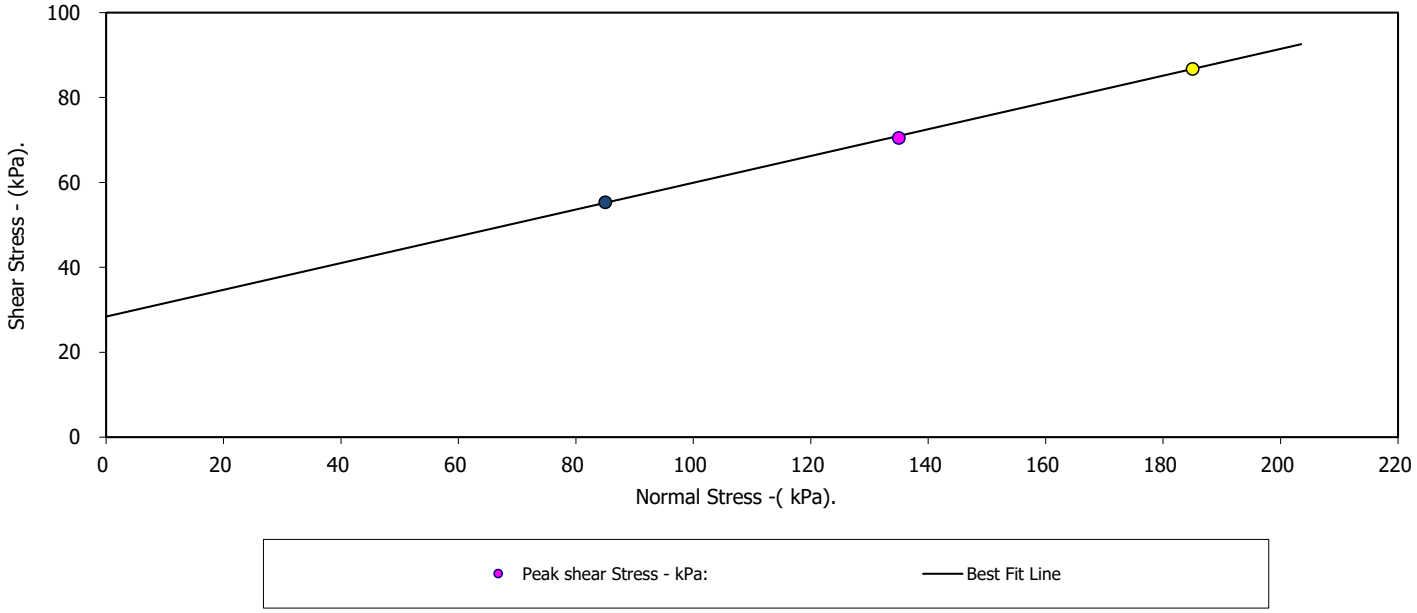
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Grey soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	37	37	37
Bulk Density - Mg/m3:	1.81	1.82	1.83
Dry Density - Mg/m3:	1.33	1.33	1.34
Voids Ratio:	0.9982	0.9925	0.9831
Normal Pressure- kPa	85	135	185
Consolidation			
Consolidated Height - mm:	22.50	22.00	21.51
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.03	5.07	5.33
Peak shear Stress - kPa:	55	70	87

PEAK	
Angle of Shearing Resistance:(θ)	**17.5**
Effective Cohesion - kPa:	**28**

FAILURE CONDITIONS



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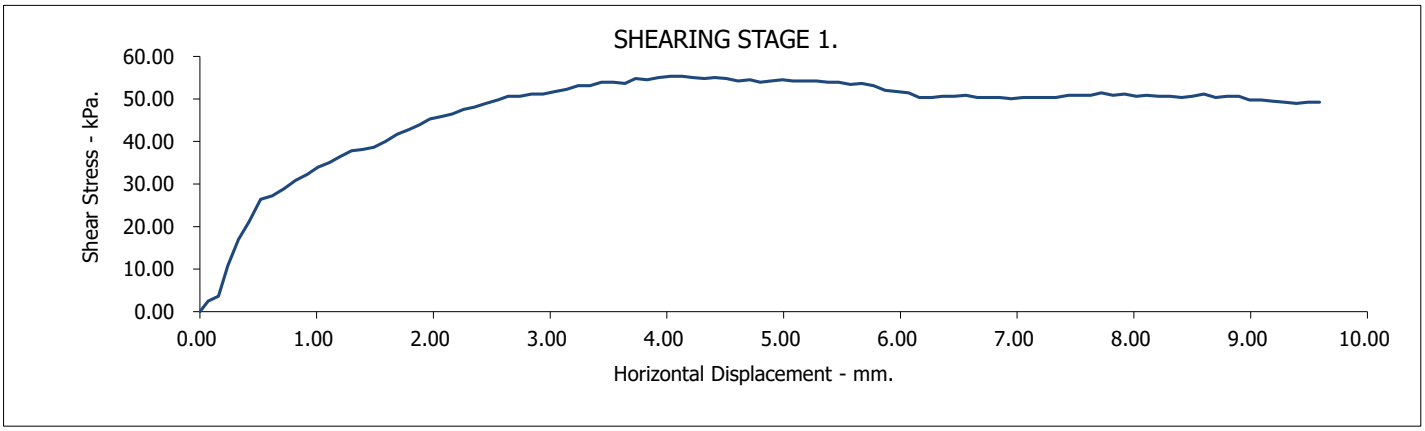
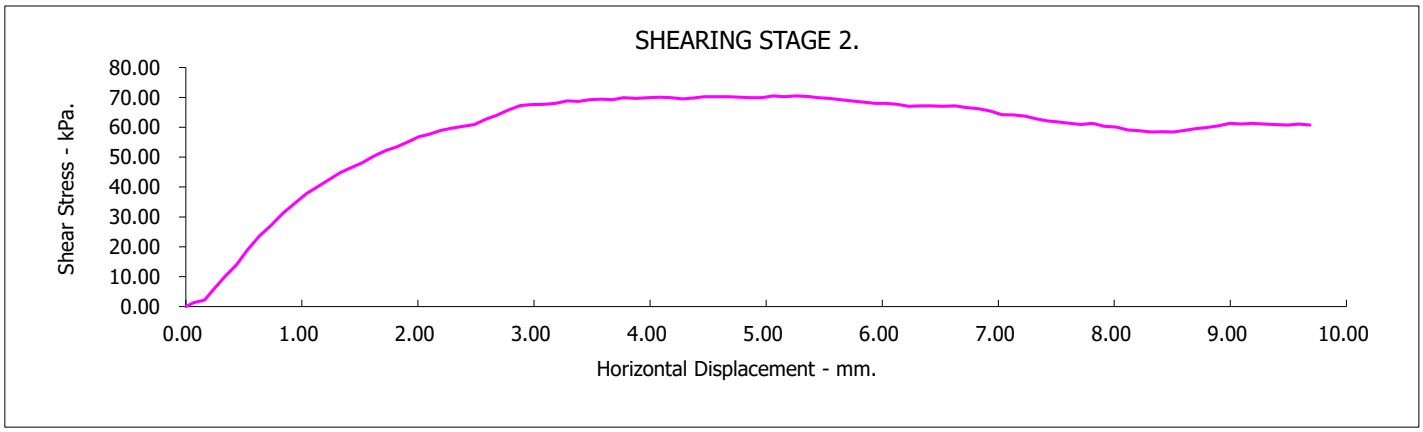
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	8.50
Sample Number :		Depth to (m):	





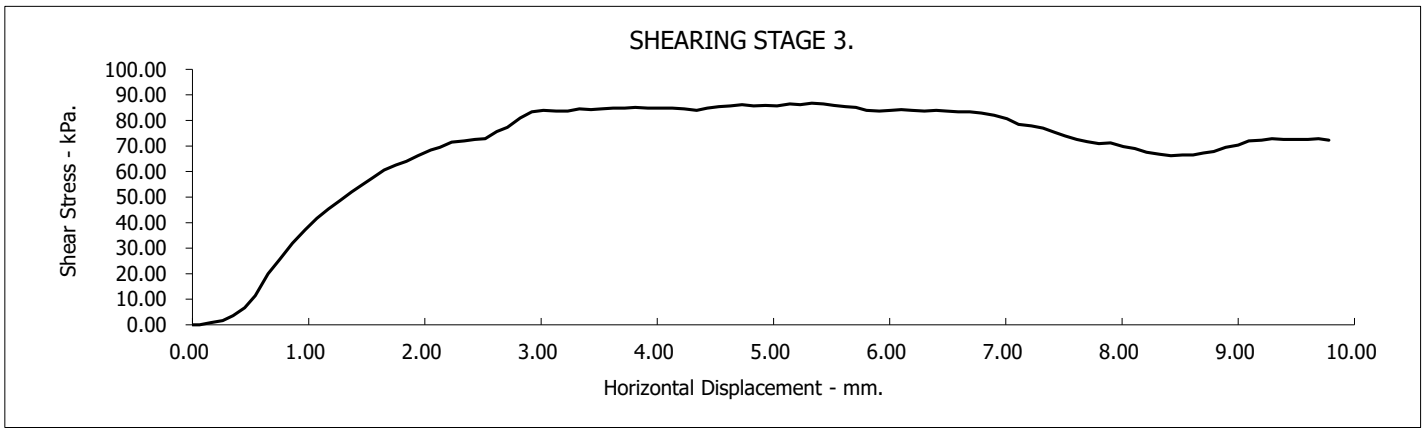


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Figure.

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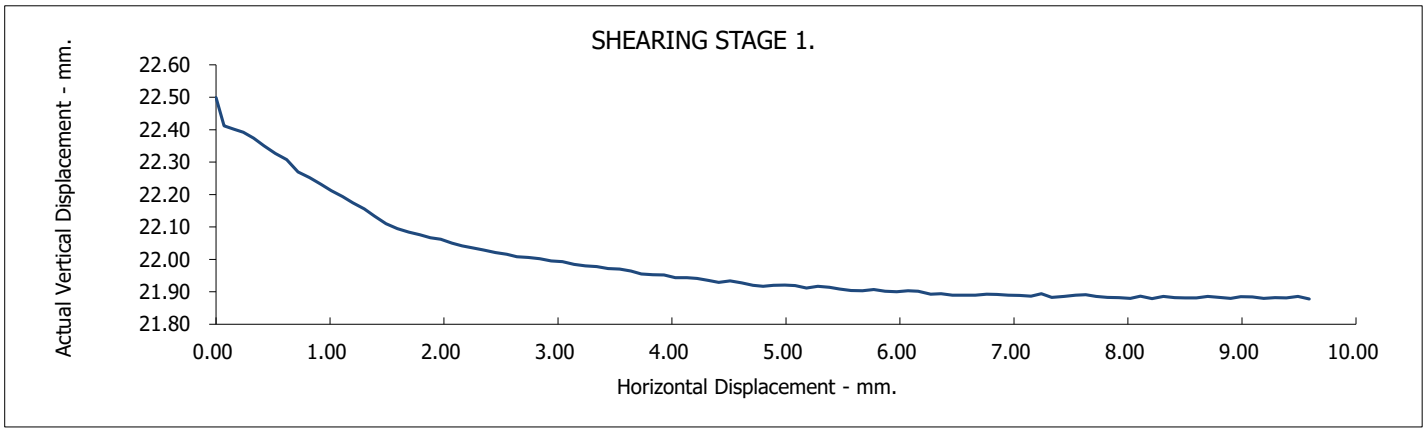
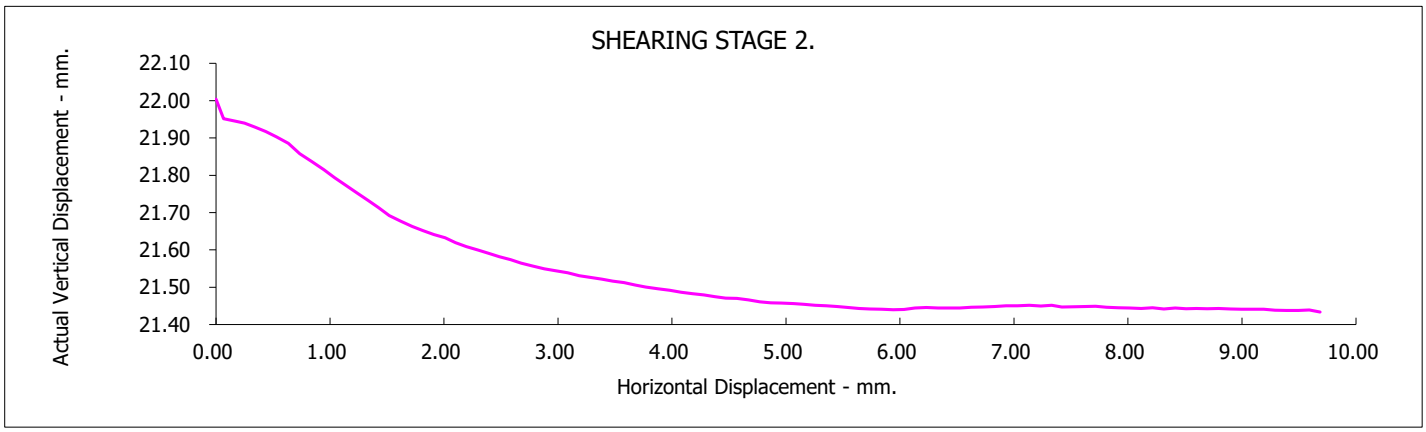
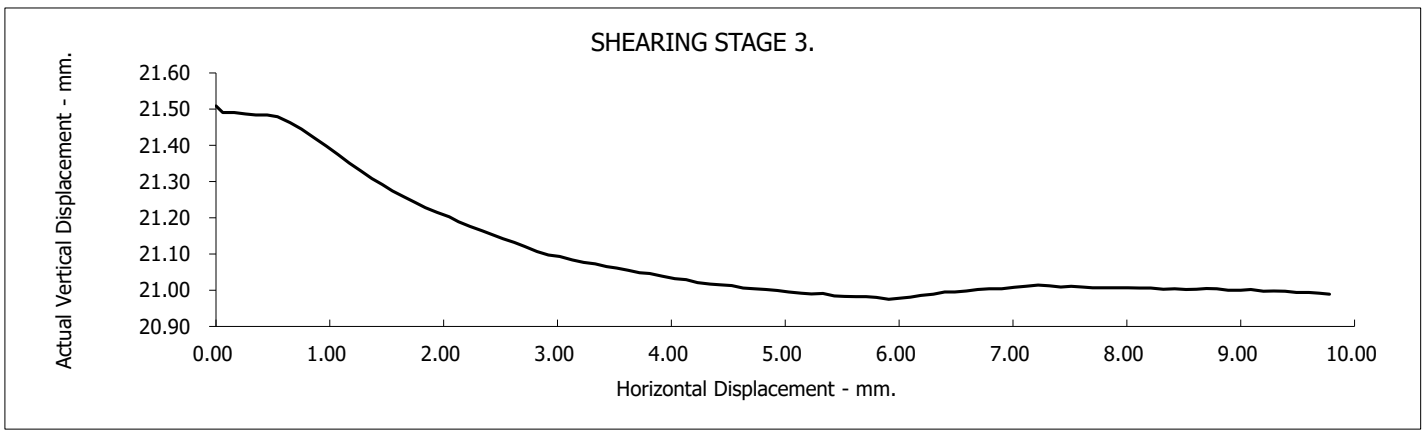
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	8.50
Sample Number :		Depth to (m):	







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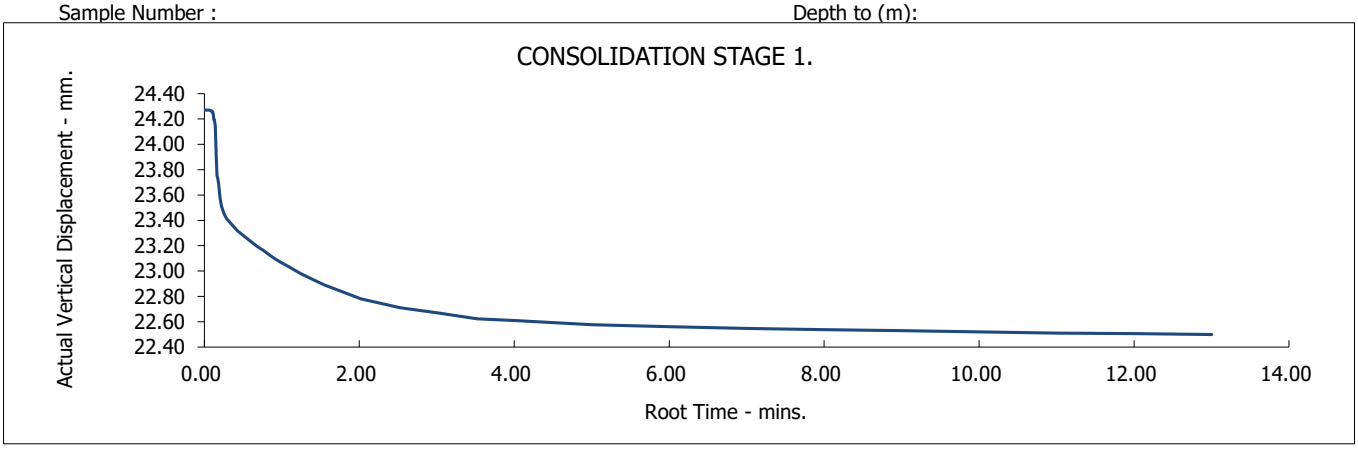
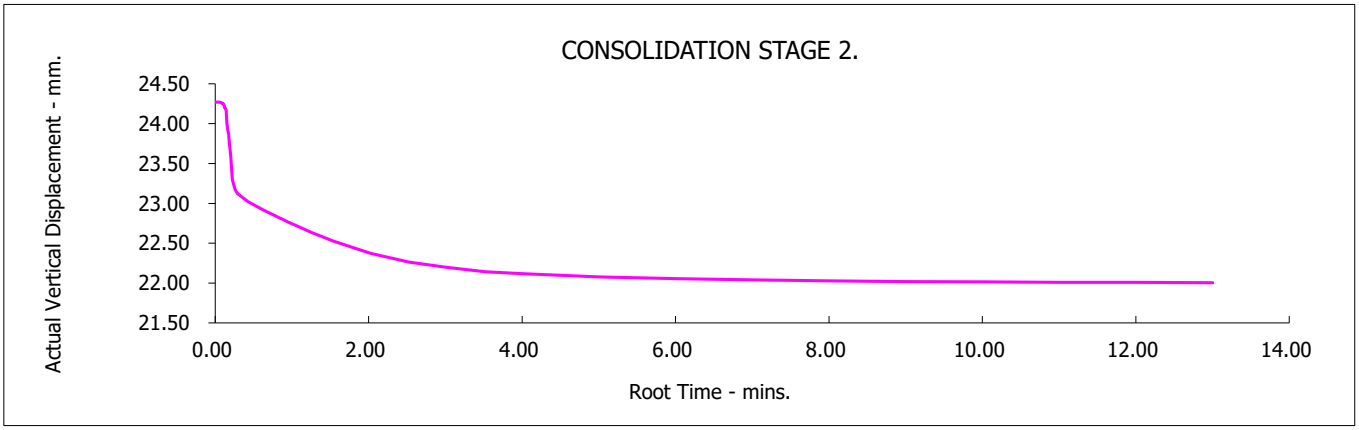
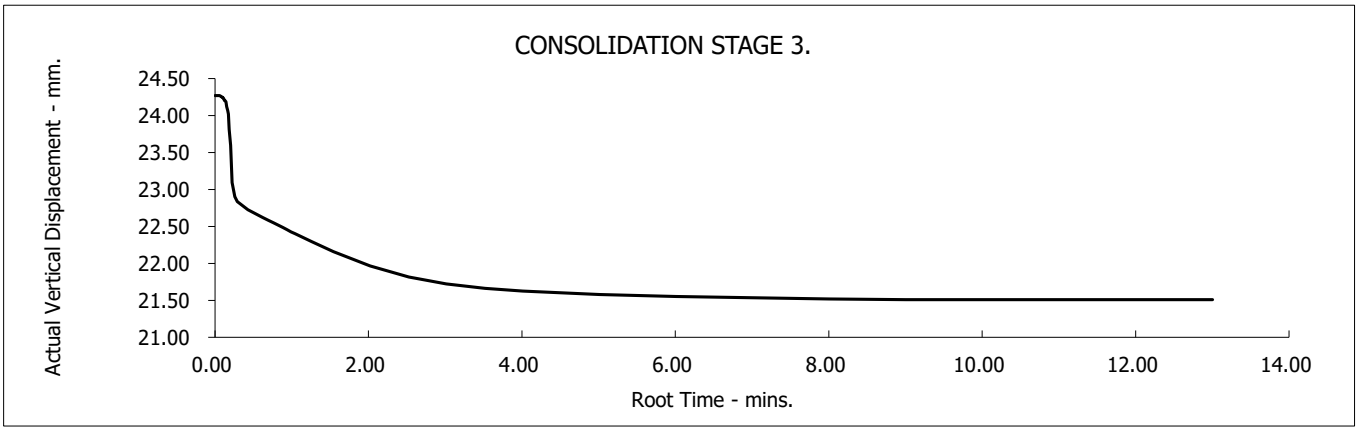
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	8.50
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	10.50
Sample Number :		Depth to (m):	11.00

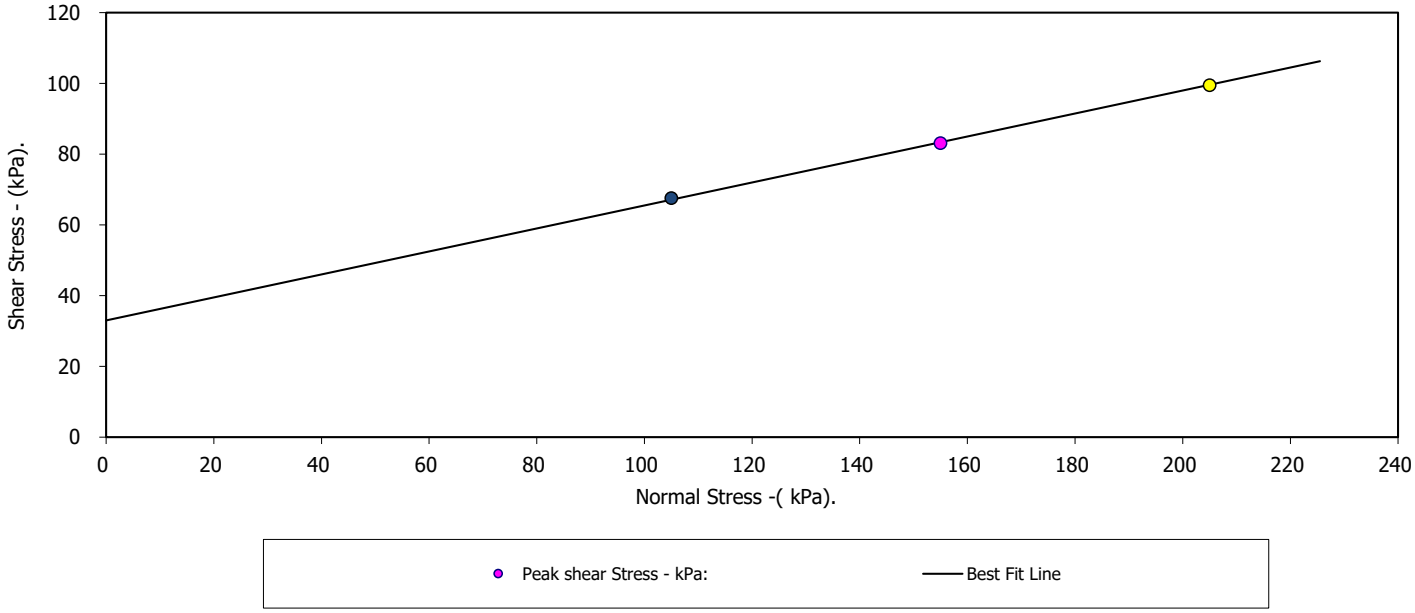
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	43	43	43
Bulk Density - Mg/m3:	1.76	1.76	1.76
Dry Density - Mg/m3:	1.24	1.24	1.23
Voids Ratio:	1.1455	1.1433	1.1525
Normal Pressure- kPa	105	155	205
Consolidation			
Consolidated Height - mm:	21.88	21.77	21.14
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.05	5.68	5.72
Peak shear Stress - kPa:	68	83	100

PEAK	
Angle of Shearing Resistance:(θ)	**18.0**
Effective Cohesion - kPa:	**33**

FAILURE CONDITIONS



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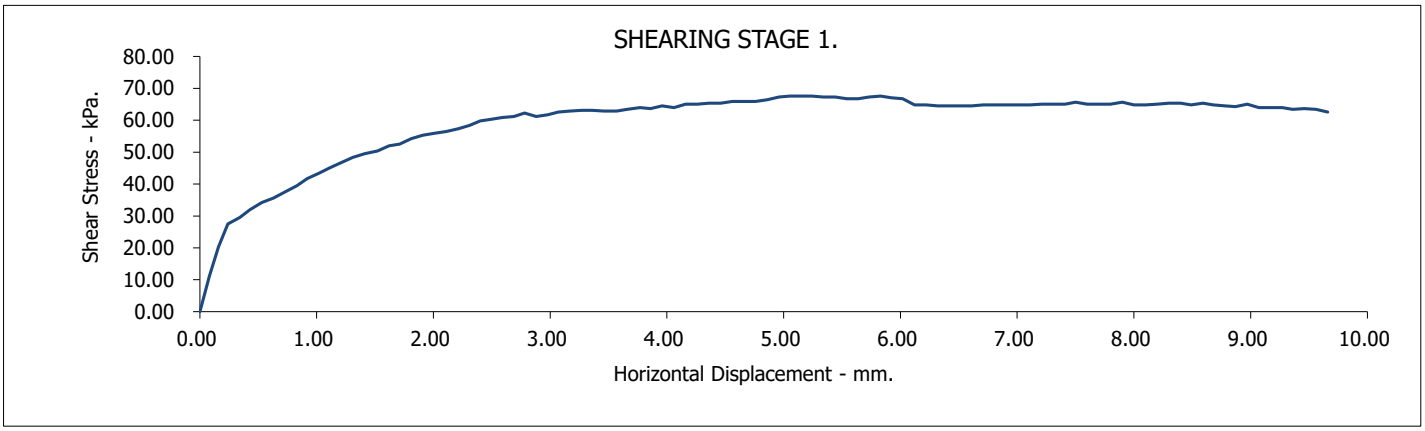
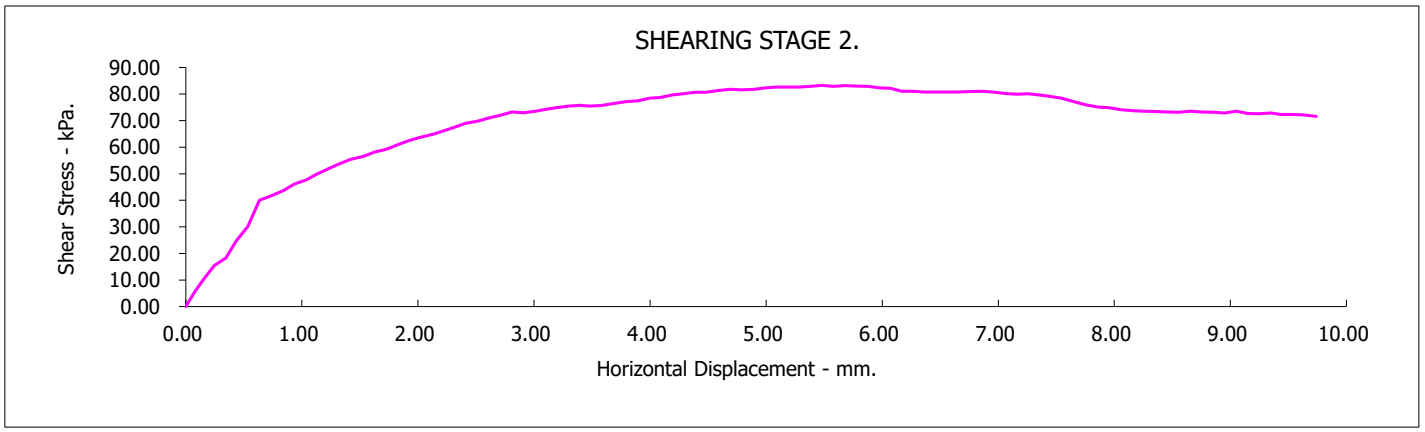
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	10.50
Sample Number :		Depth to (m):	11.00





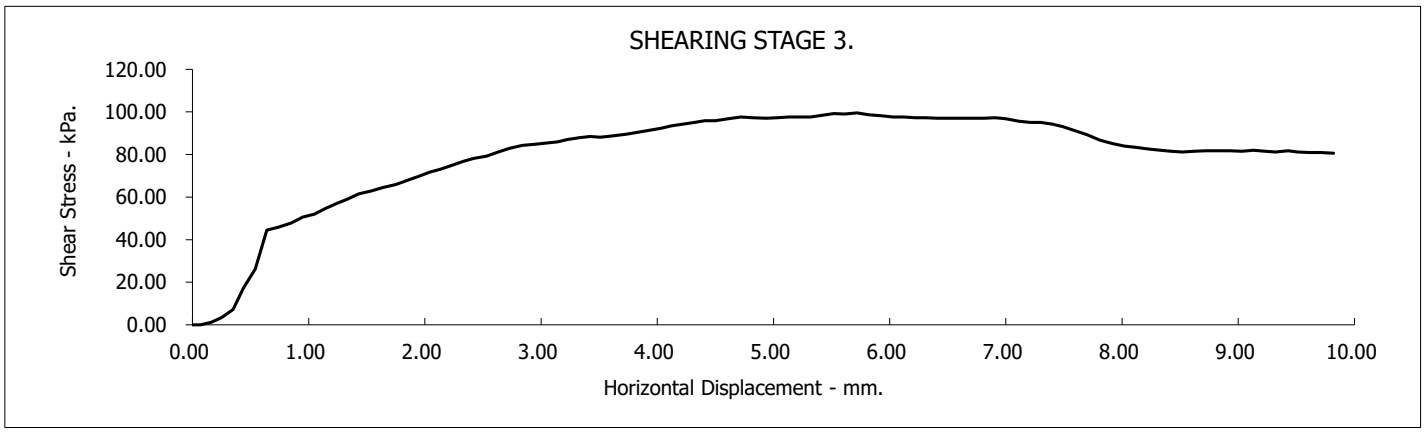


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Figure.

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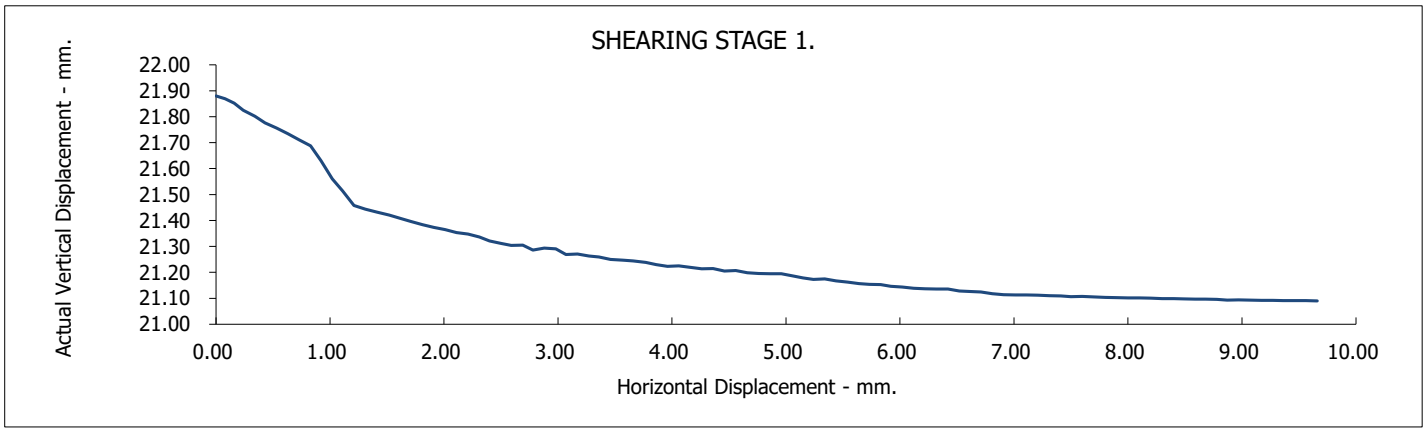
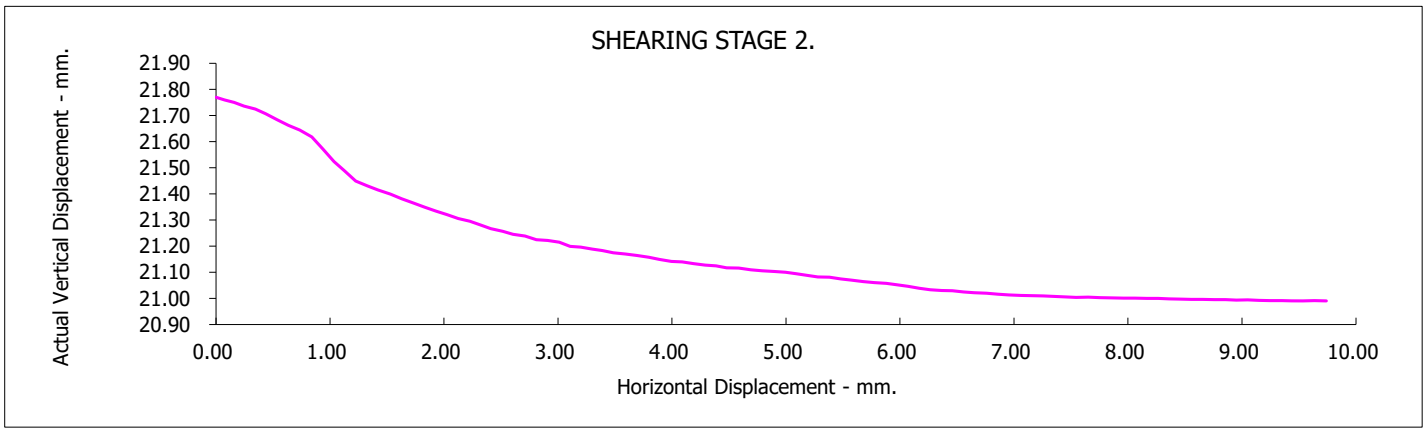
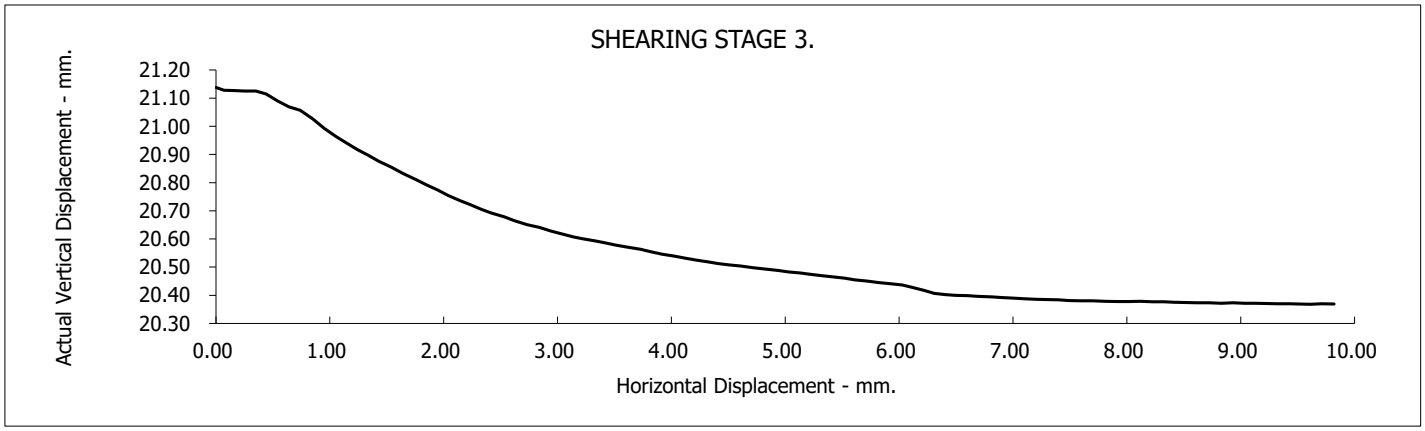
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	10.50
Sample Number :		Depth to (m):	11.00







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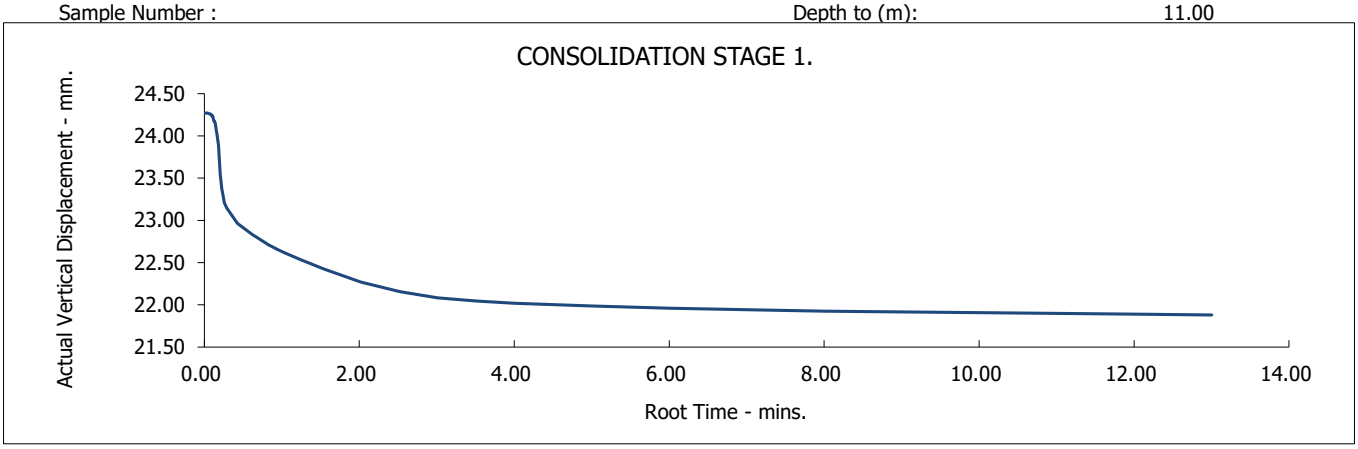
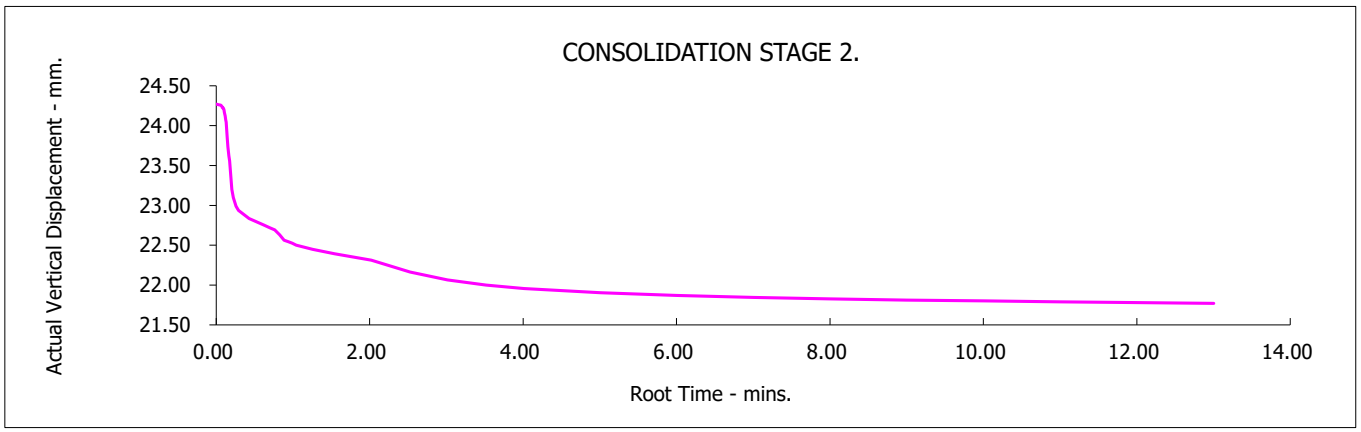
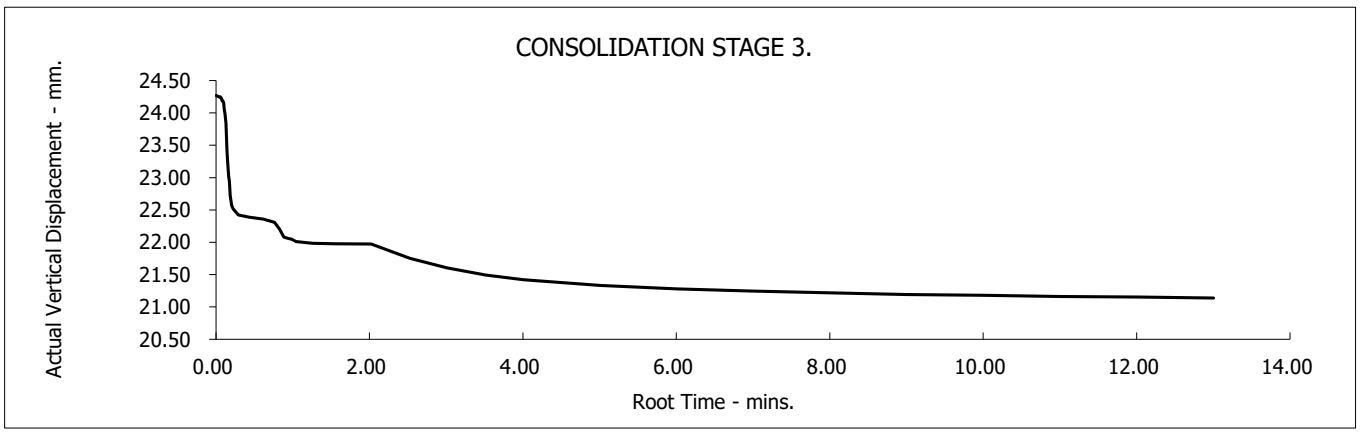
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M06	Depth from (m):	10.50
Sample Number :		Depth to (m):	11.00







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M08	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50

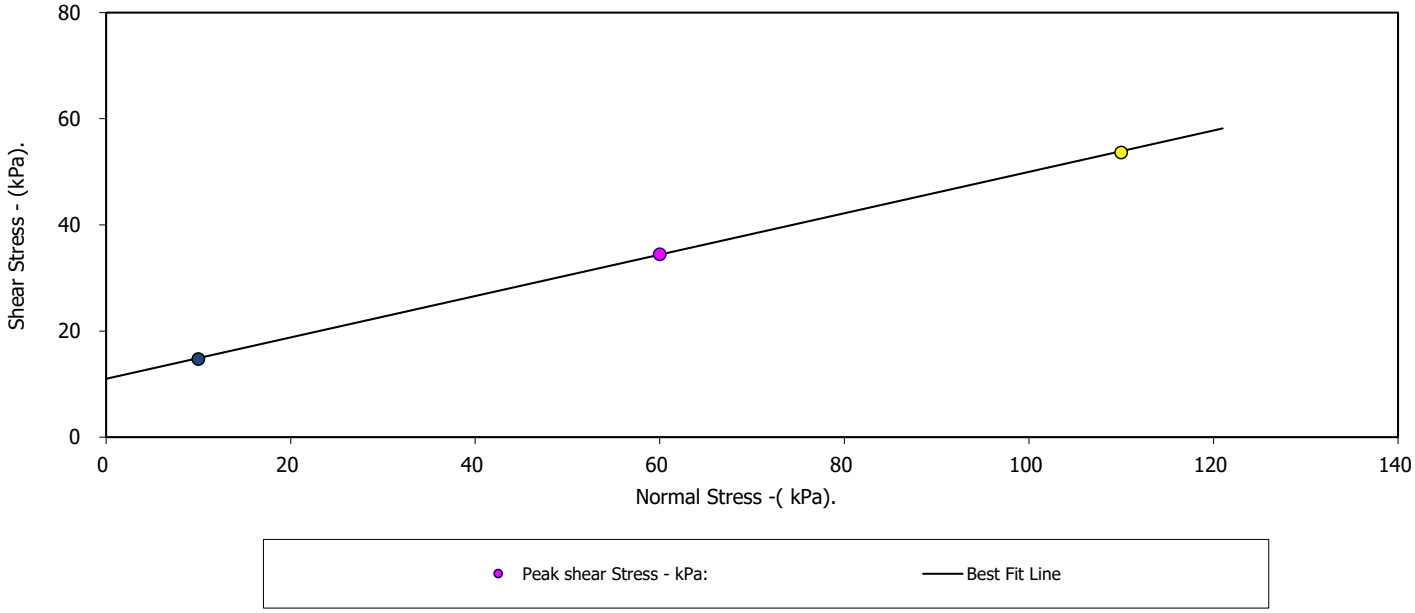
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Greyish brown very soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	66	66	66
Bulk Density - Mg/m3:	1.78	1.78	1.77
Dry Density - Mg/m3:	1.07	1.07	1.07
Voids Ratio:	1.4751	1.4775	1.4855
Normal Pressure- kPa	10	60	110
Consolidation			
Consolidated Height - mm:	22.56	20.60	18.64
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.86	5.81	5.82
Peak shear Stress - kPa:	15	34	54

PEAK	
Angle of Shearing Resistance:(θ)	**21.3**
Effective Cohesion - kPa:	**11**

FAILURE CONDITIONS



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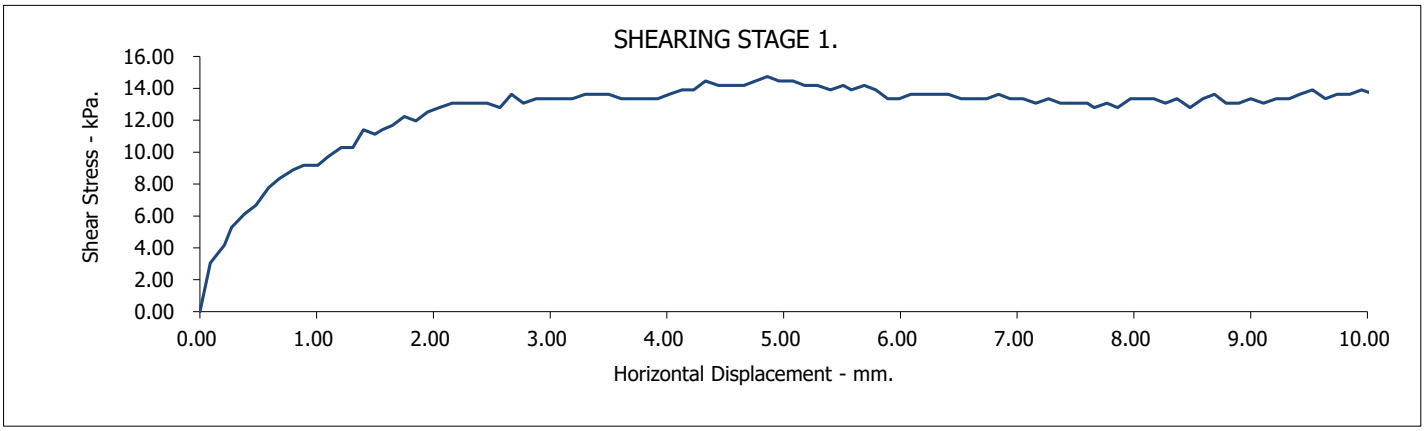
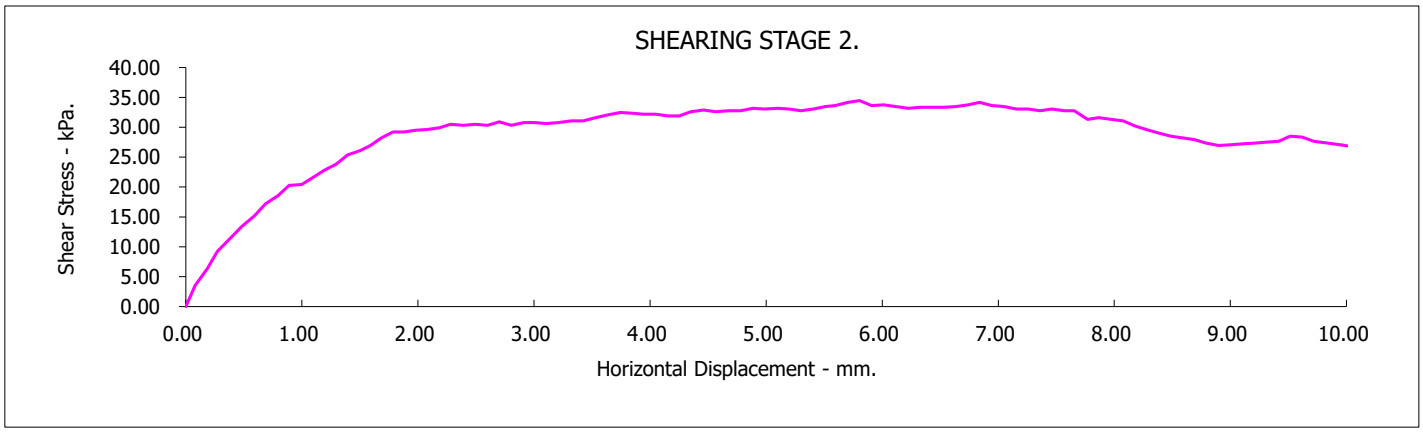
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M08	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50





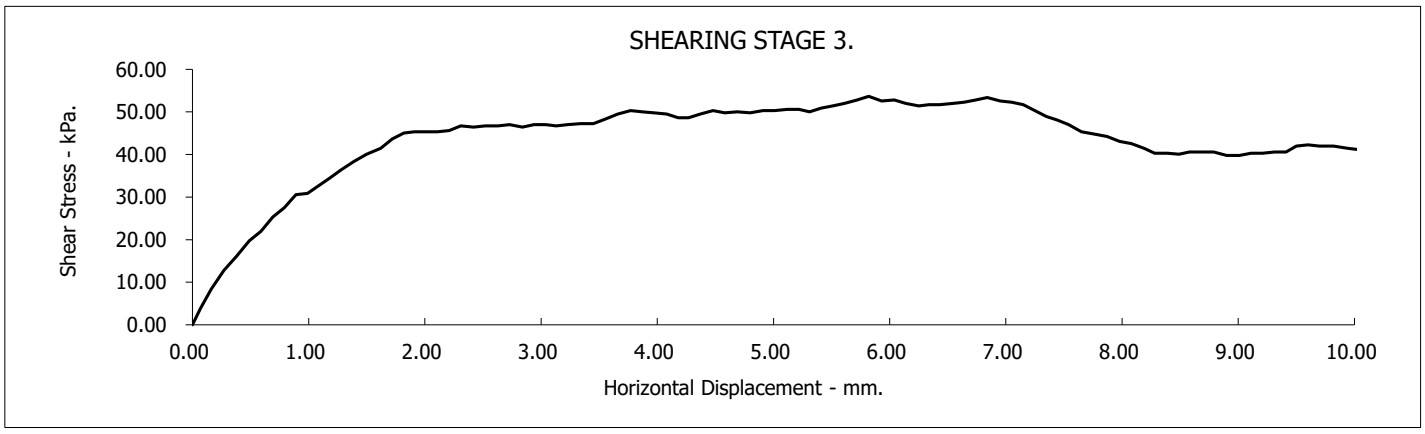


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Figure.

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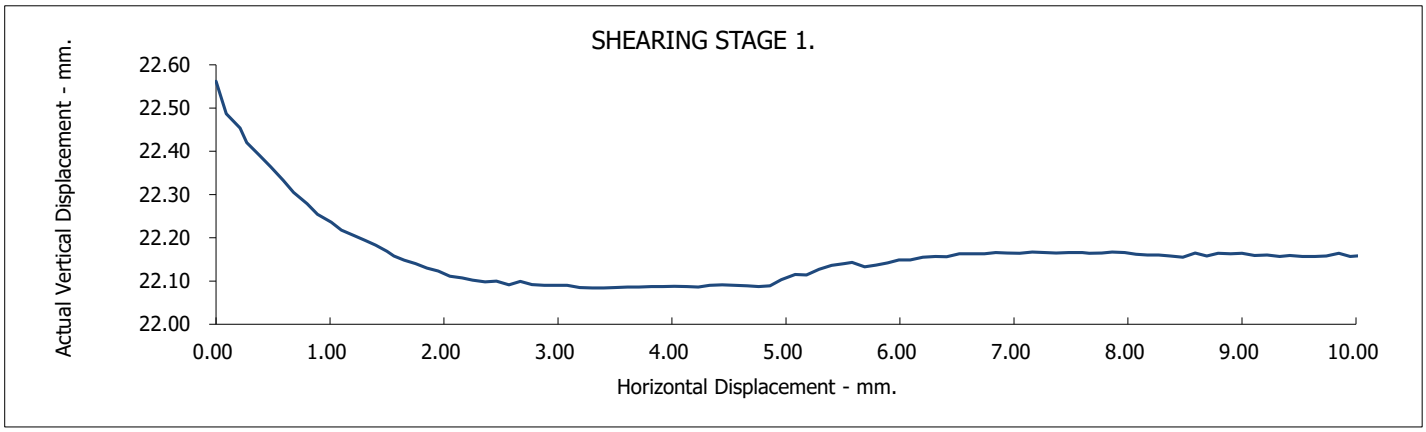
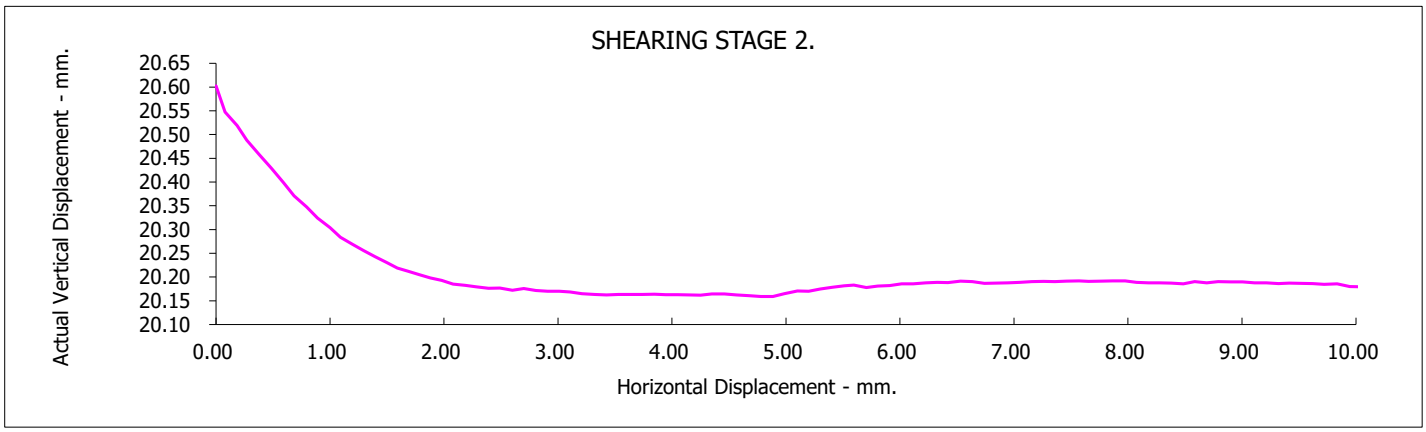
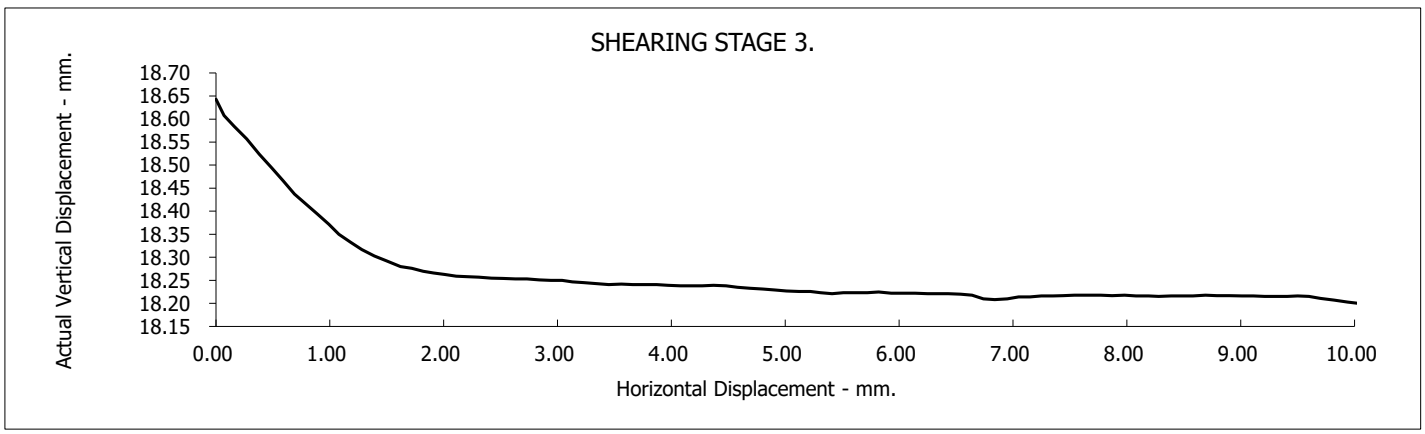
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M08	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50







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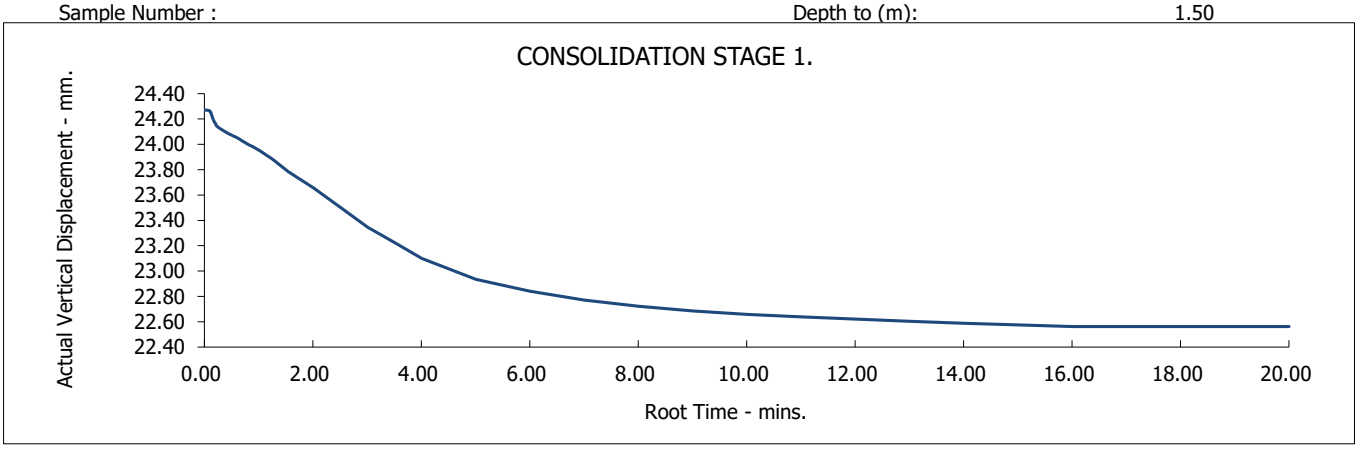
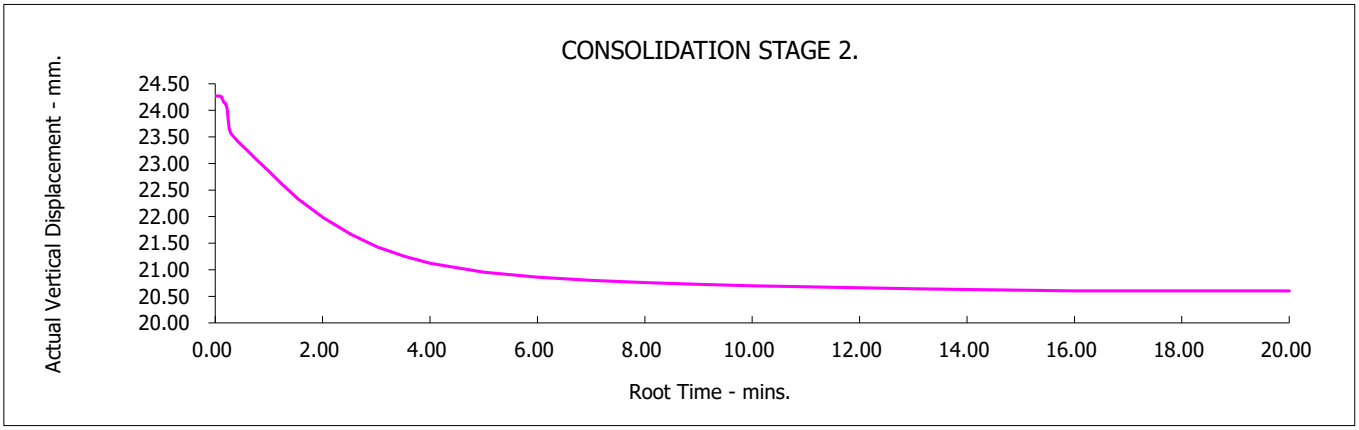
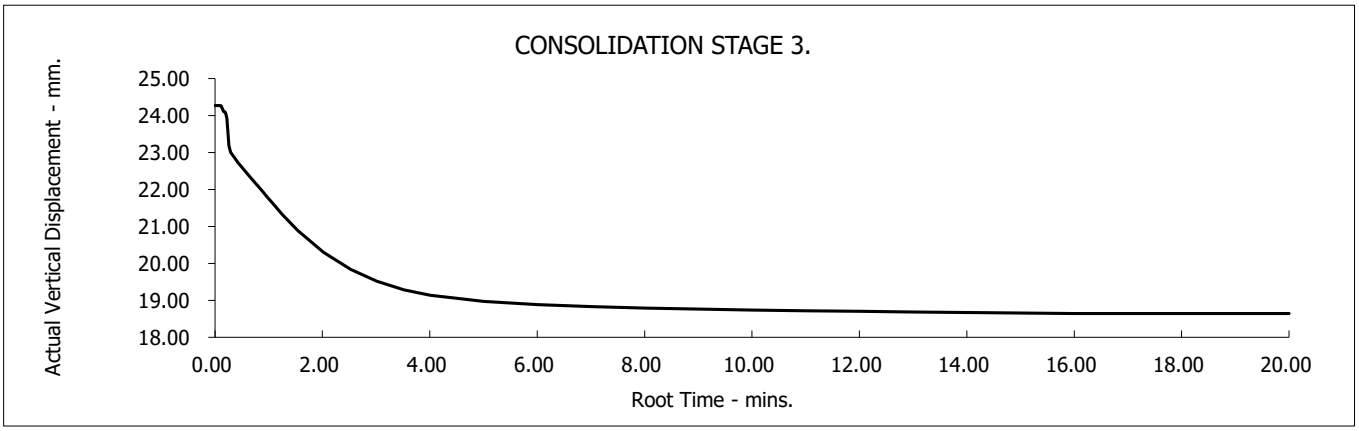
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M08	Depth from (m):	1.00
Sample Number :		Depth to (m):	1.50







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M08	Depth from (m):	3.00
Sample Number:		Depth to (m):	

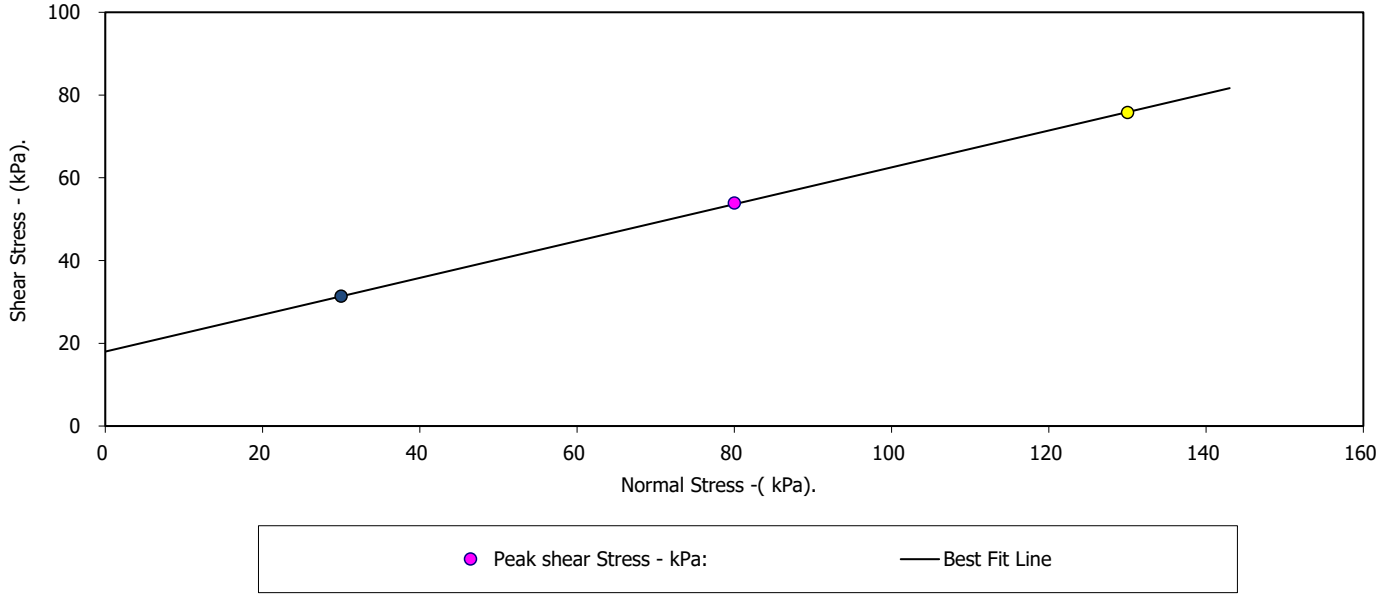
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey soft very silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	51	51	51
Bulk Density - Mg/m3:	1.60	1.60	1.60
Dry Density - Mg/m3:	1.06	1.06	1.06
Voids Ratio:	1.5057	1.5072	1.5055
Normal Pressure- kPa	30	80	130
Consolidation			
Consolidated Height - mm:	23.17	21.85	20.67
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	3.31	7.44	8.12
Peak shear Stress - kPa:	31	54	76

PEAK	
Angle of Shearing Resistance:(θ)	**24.0**
Effective Cohesion - kPa:	**18**

FAILURE CONDITIONS



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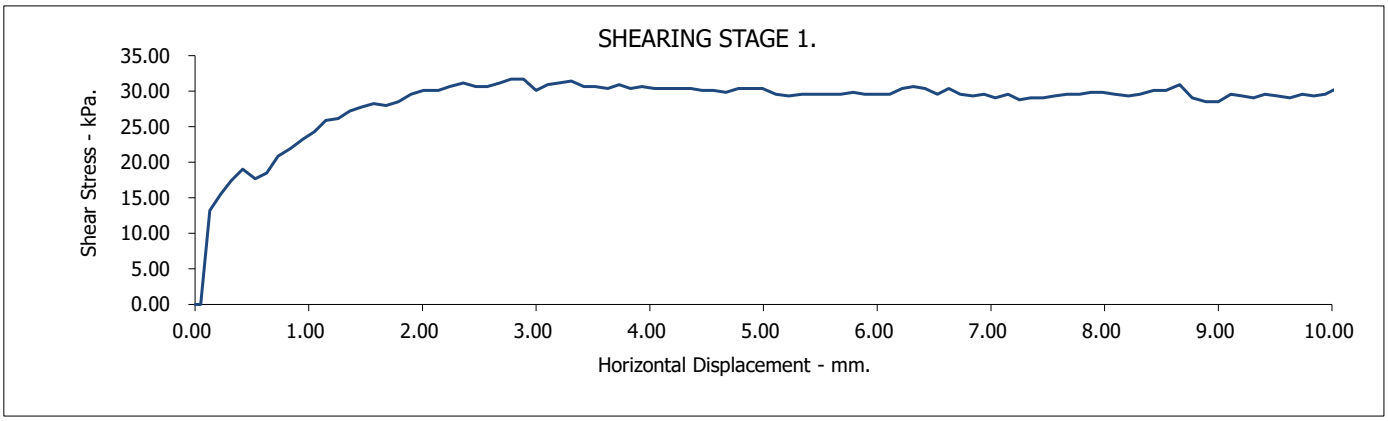
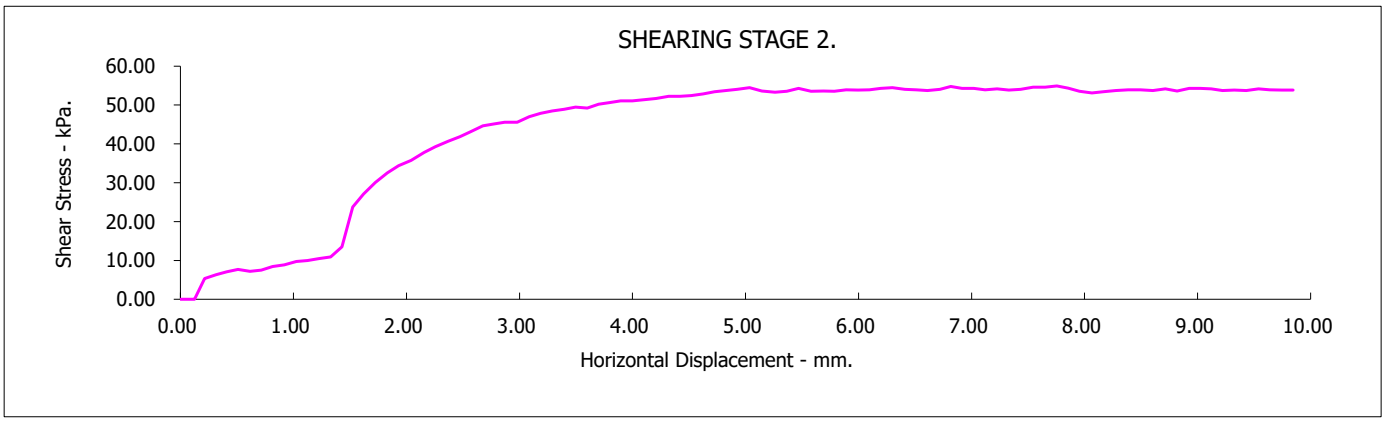
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M08	Depth (m):	3.00





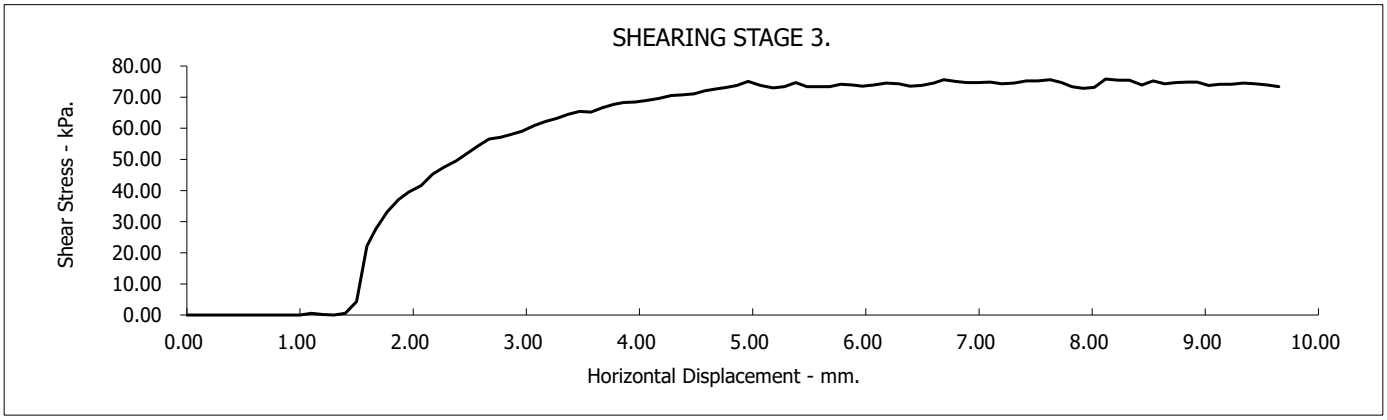


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Figure.

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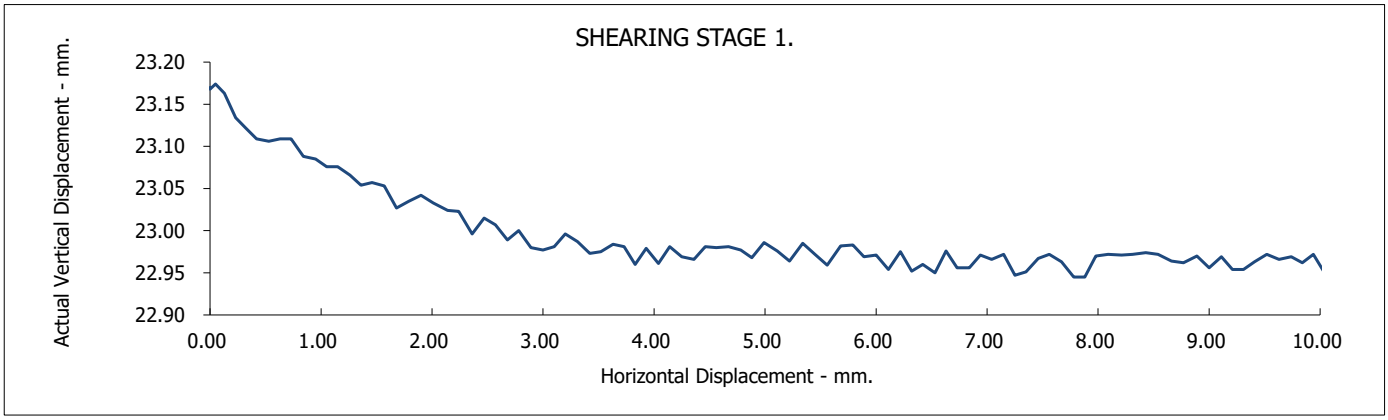
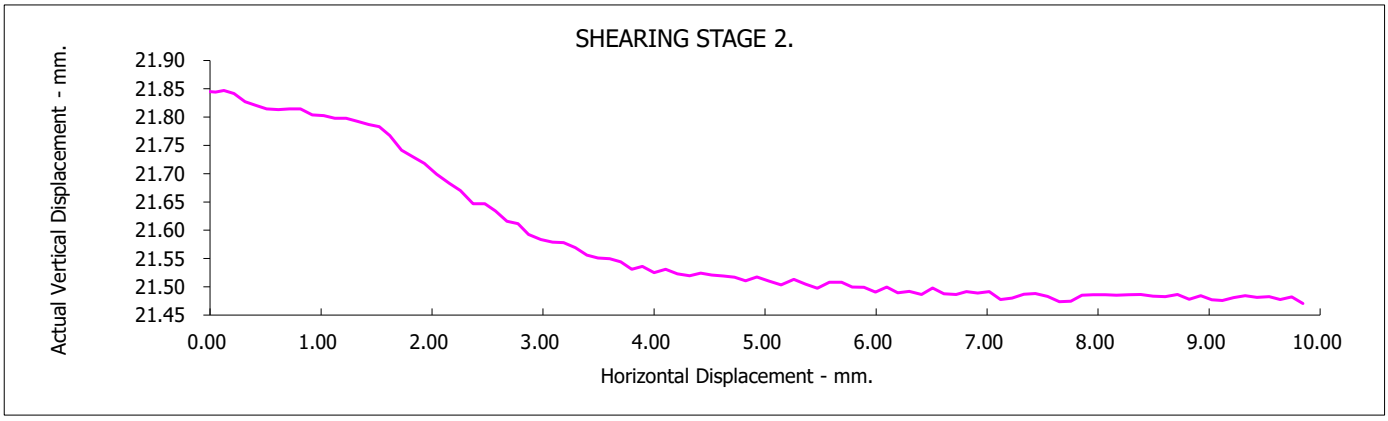
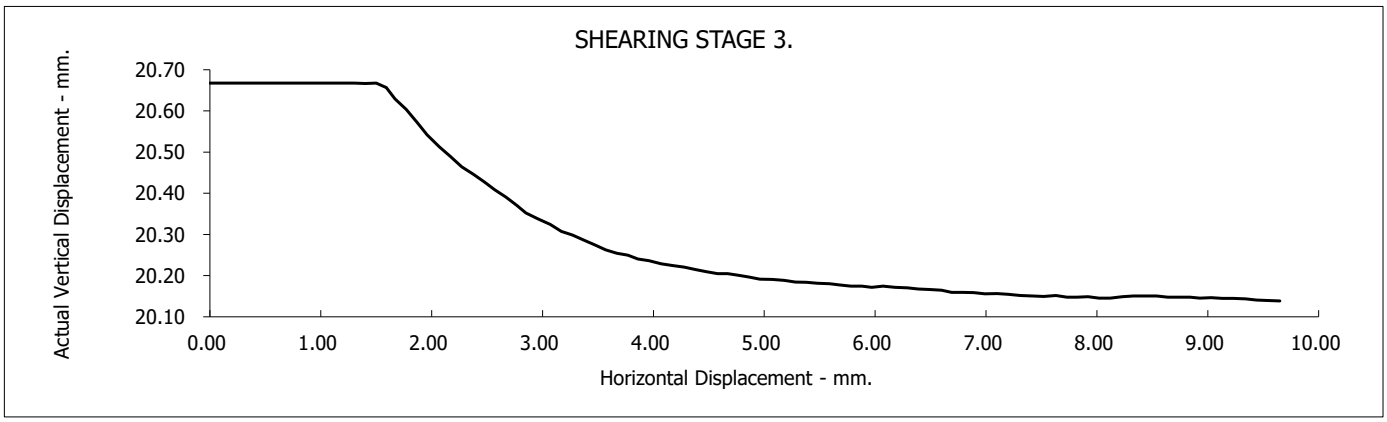
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number:	M08	Depth (m):	3.00







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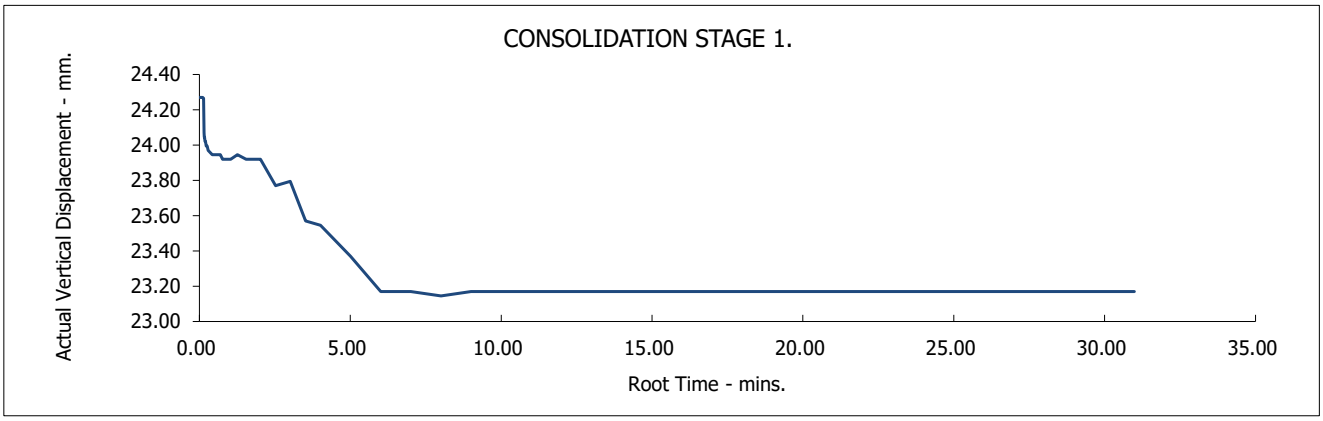
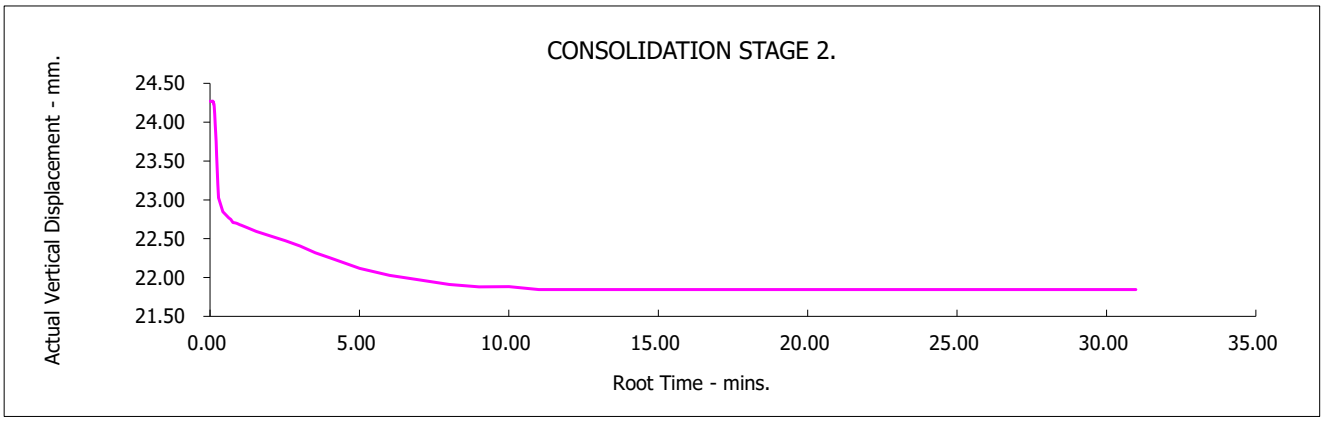
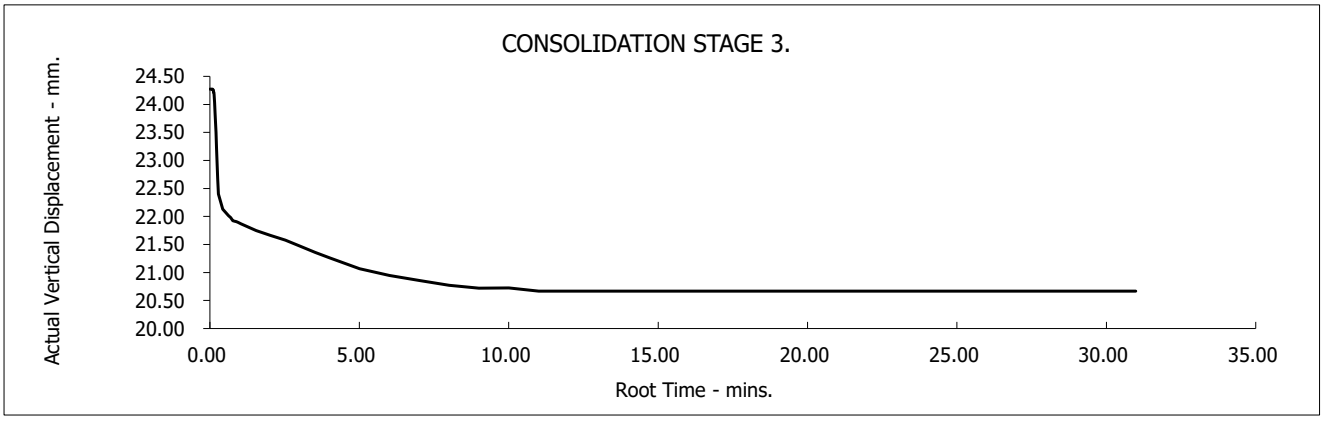
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole/Sample Number: M08 Depth (m): 3.00







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	5.00
Sample Number :		Depth to (m):	

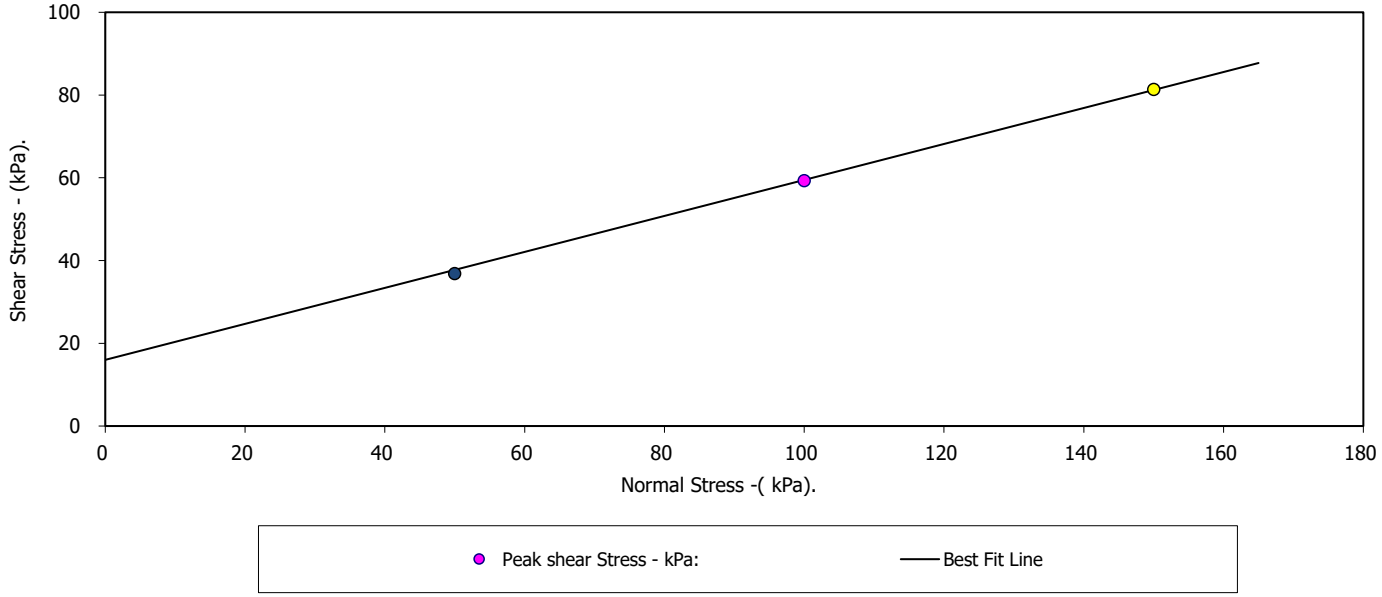
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brownish grey soft gravelly (fine-coarse/angular) silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	33	33	33
Bulk Density - Mg/m3:	1.95	1.95	1.95
Dry Density - Mg/m3:	1.46	1.46	1.46
Voids Ratio:	0.8127	0.8155	0.8143
Normal Pressure- kPa	50	100	150
Consolidation			
Consolidated Height - mm:	22.66	22.15	21.11
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	3.83	4.02	4.01
Peak shear Stress - kPa:	37	59	81

PEAK	
Angle of Shearing Resistance:(θ)	**23.5**
Effective Cohesion - kPa:	**16**

FAILURE CONDITIONS



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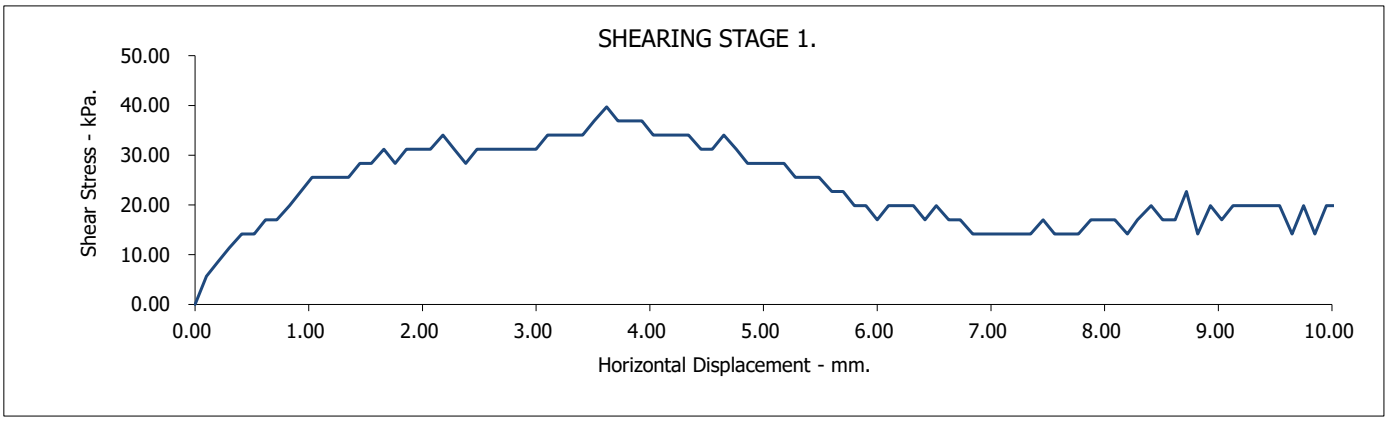
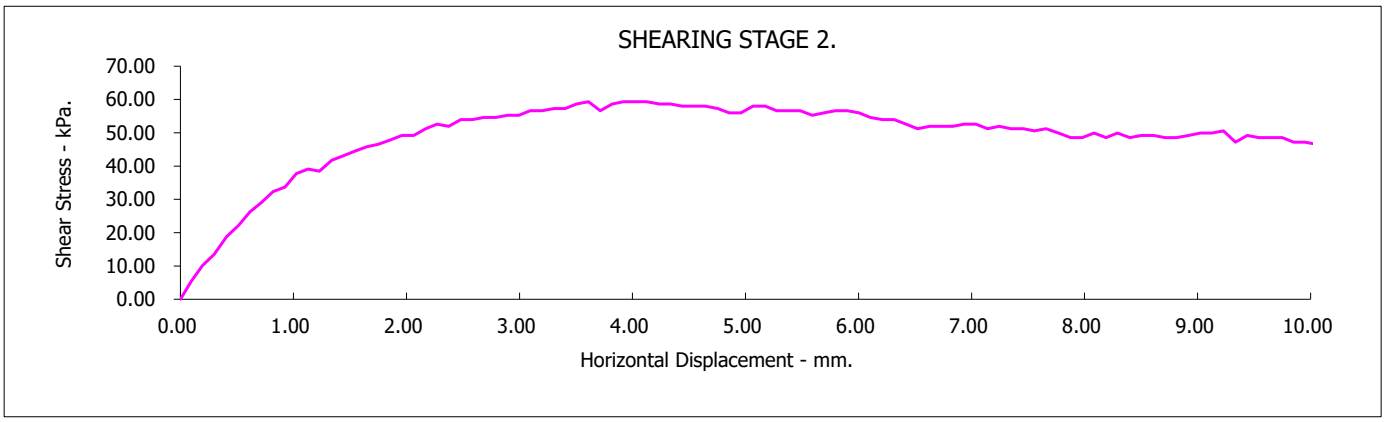
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	5.00
Sample Number :		Depth to (m):	





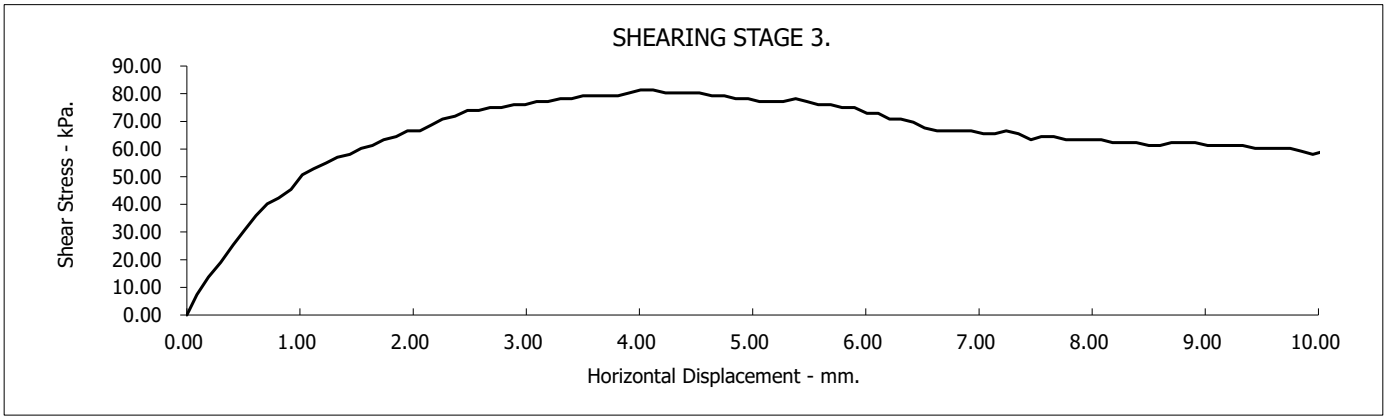


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Figure.

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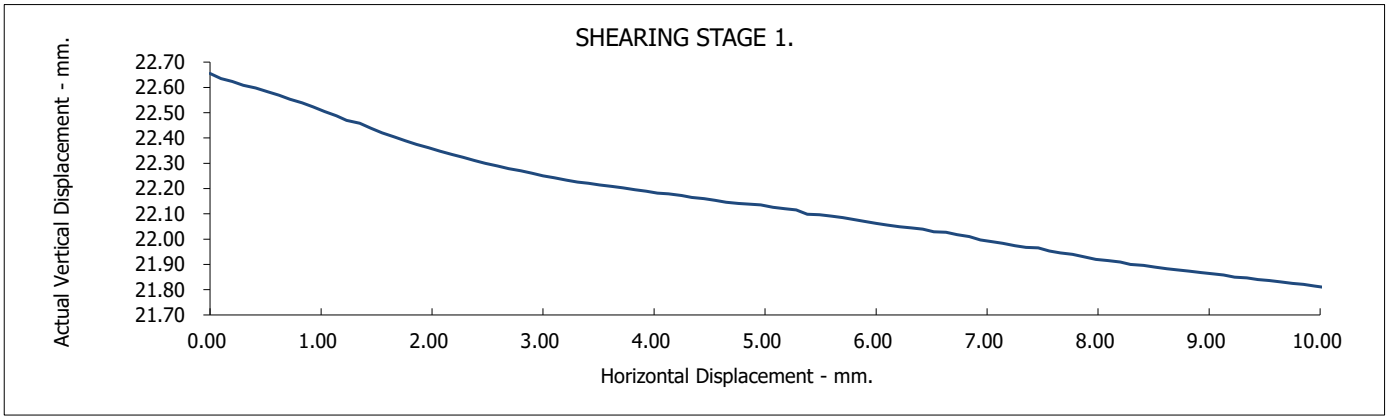
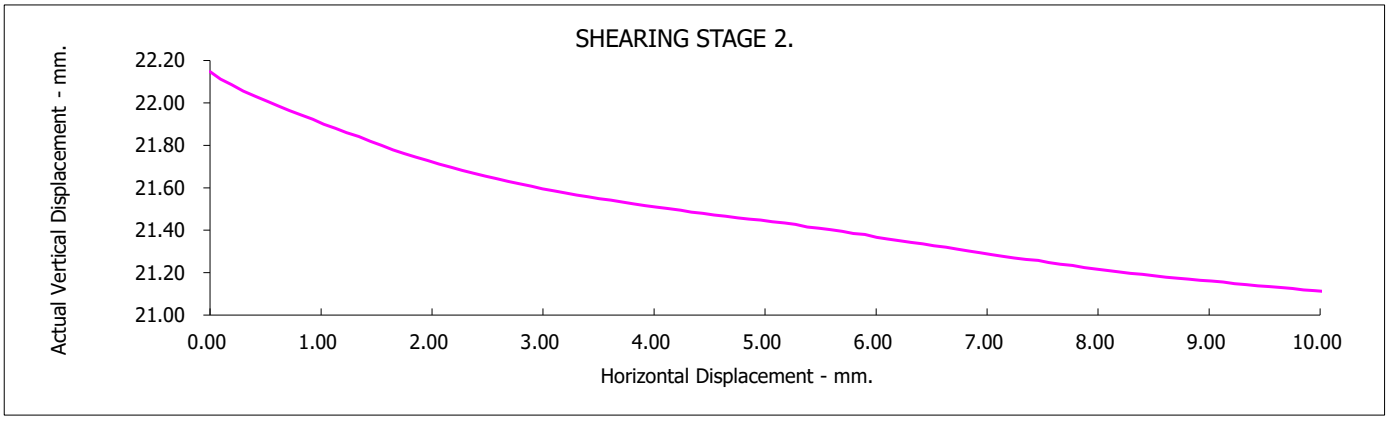
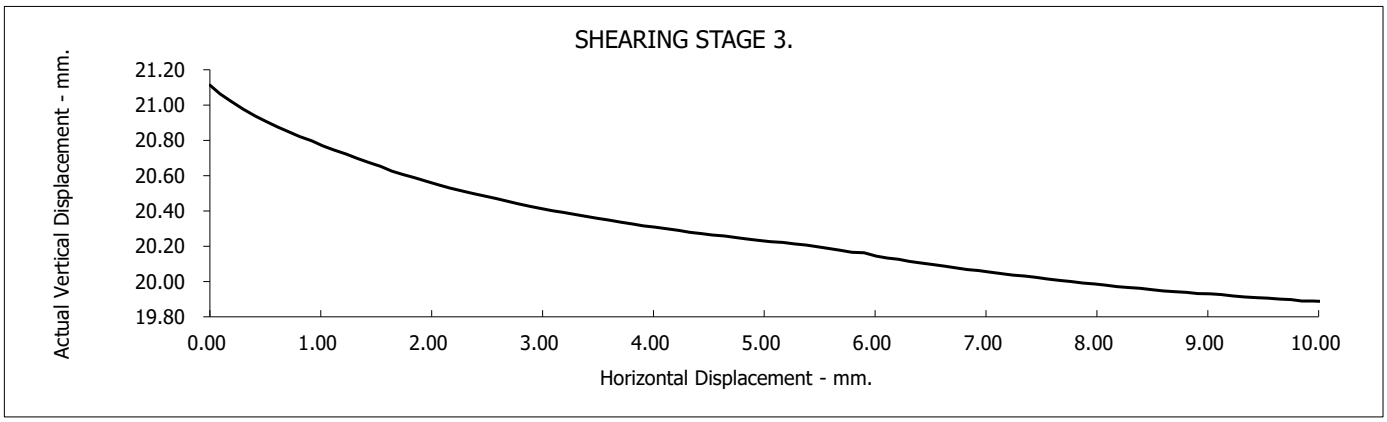
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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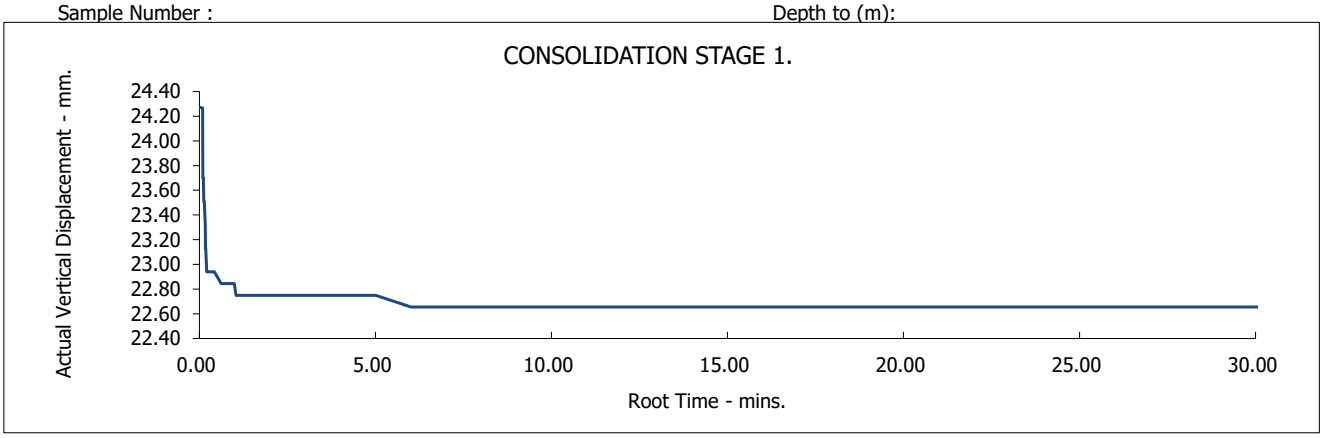
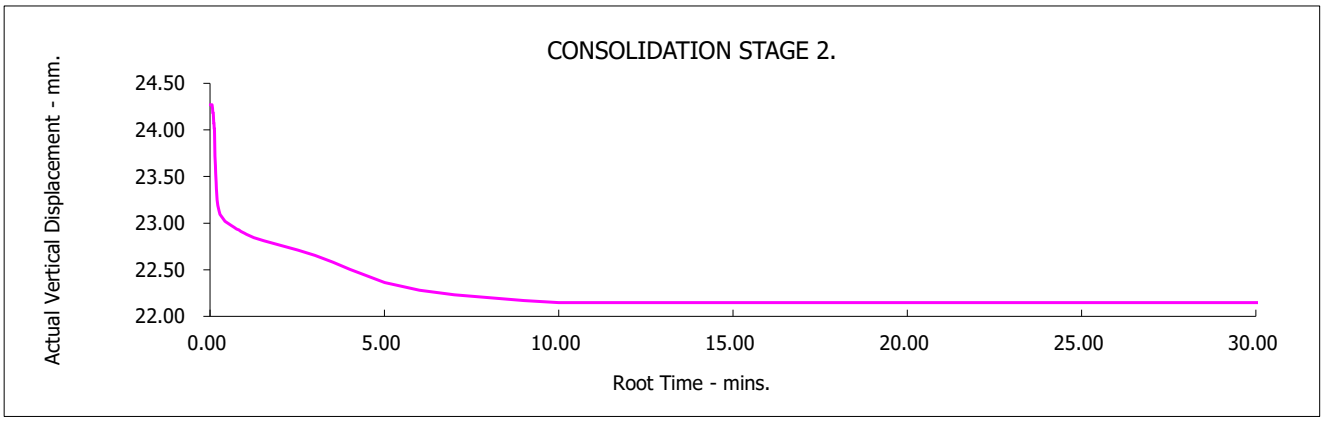
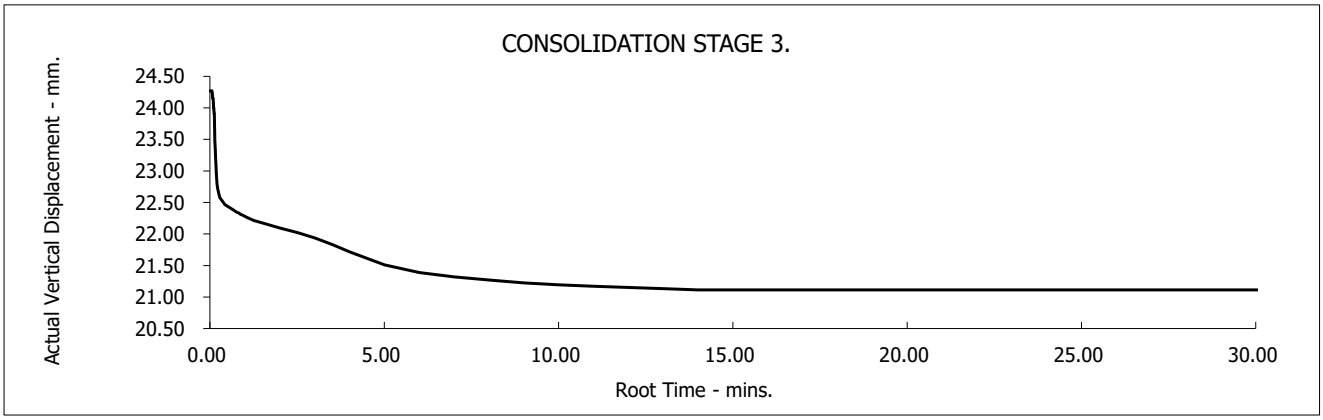
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	5.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	11.00
Sample Number :		Depth to (m):	

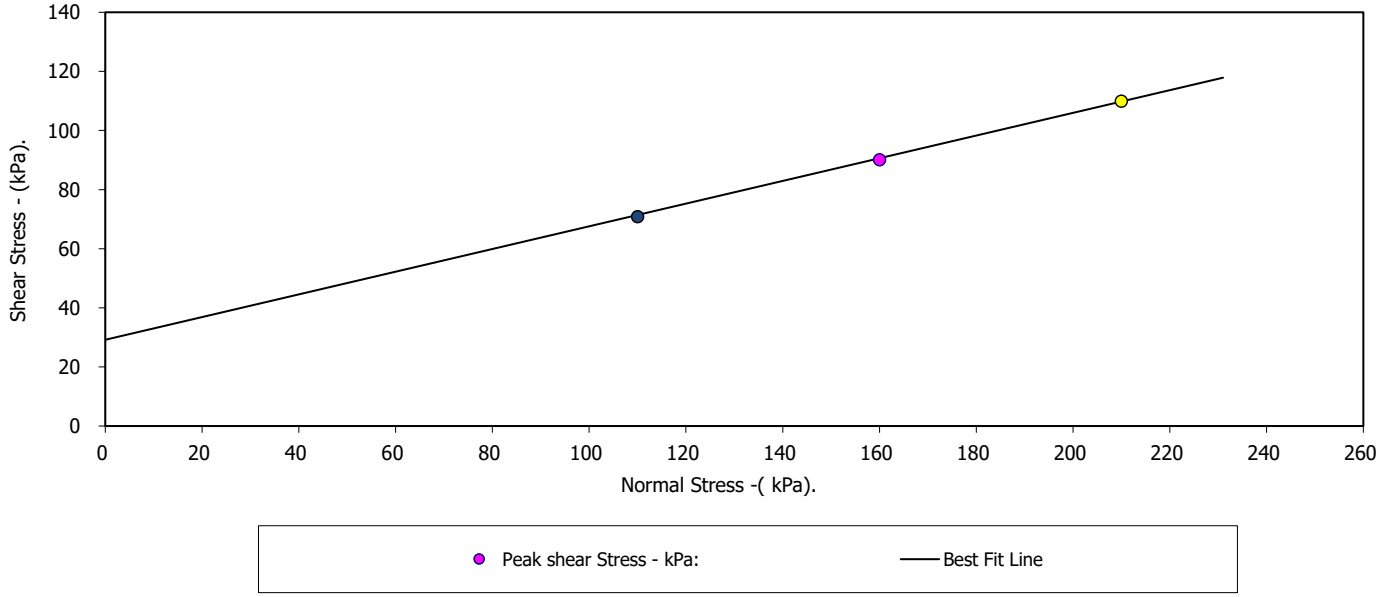
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown grey soft silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	50	50	50
Bulk Density - Mg/m3:	1.70	1.70	1.71
Dry Density - Mg/m3:	1.14	1.14	1.14
Voids Ratio:	1.3307	1.3320	1.3273
Normal Pressure- kPa	110	160	210
Consolidation			
Consolidated Height - mm:	22.23	21.16	20.20
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	9.39	9.67	10.05
Peak shear Stress - kPa:	71	90	110

PEAK	
Angle of Shearing Resistance:(θ)	**21.0**
Effective Cohesion - kPa:	**29**

FAILURE CONDITIONS



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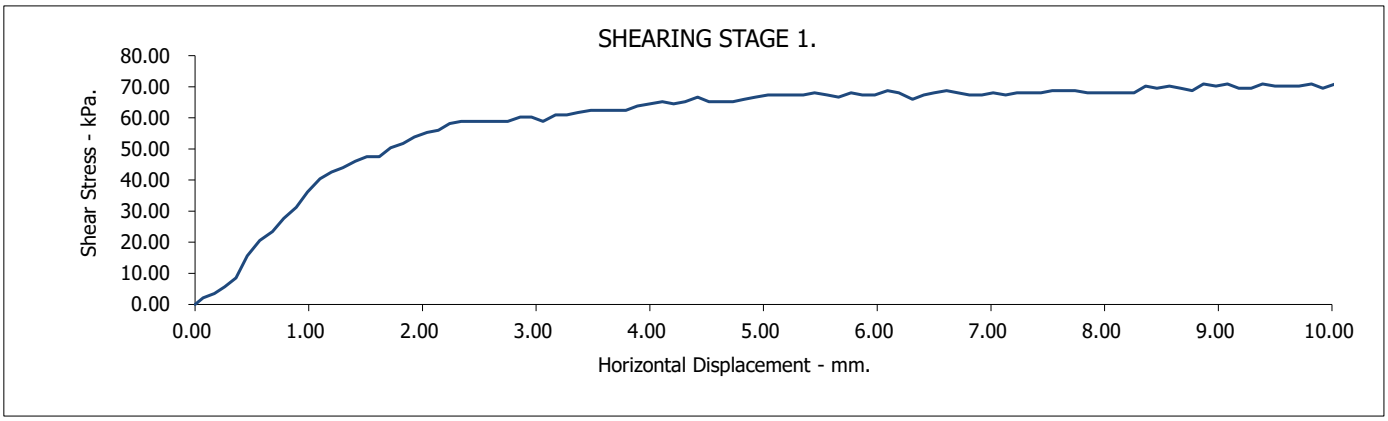
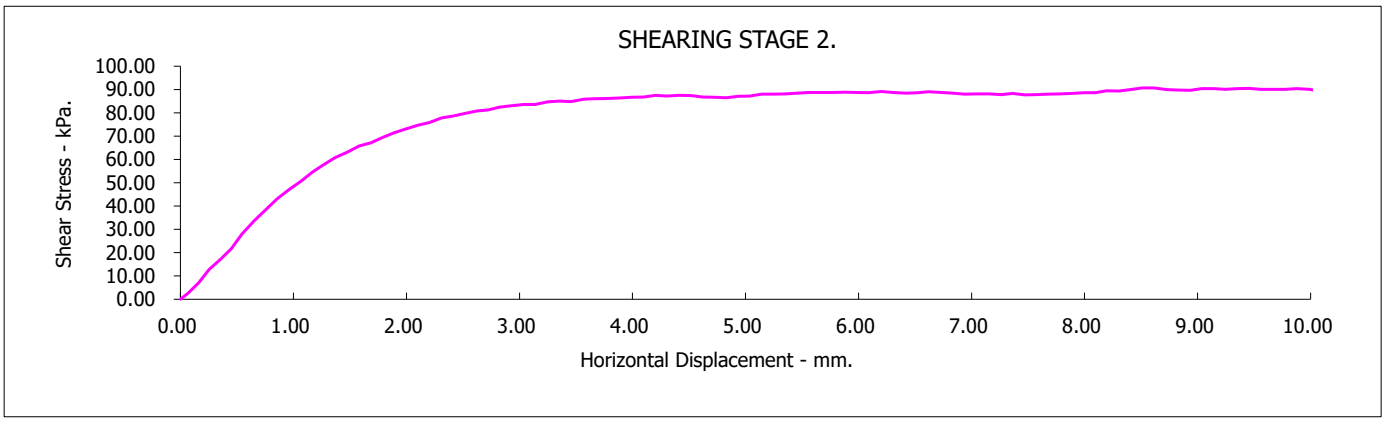
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	11.00
Sample Number :		Depth to (m):	





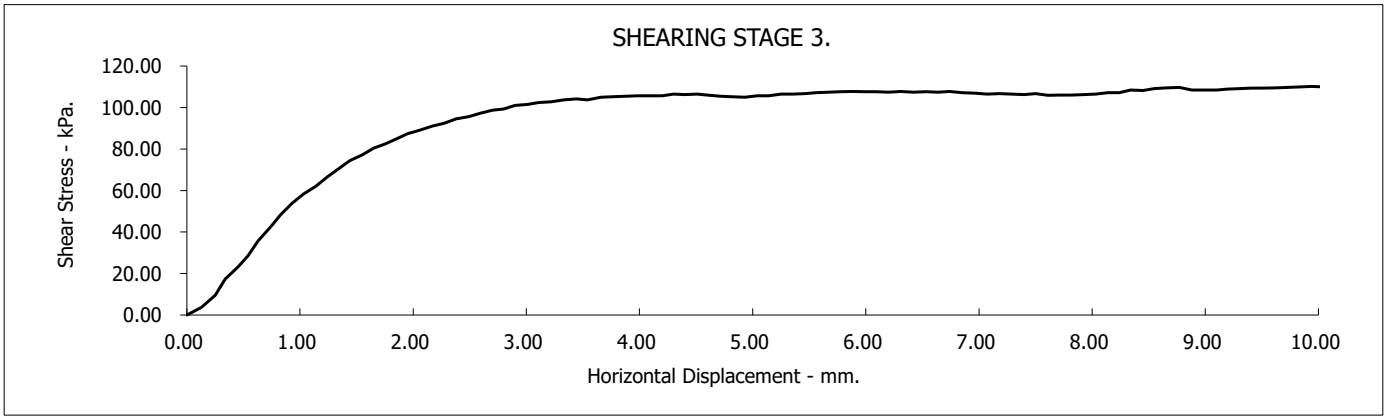


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Figure.

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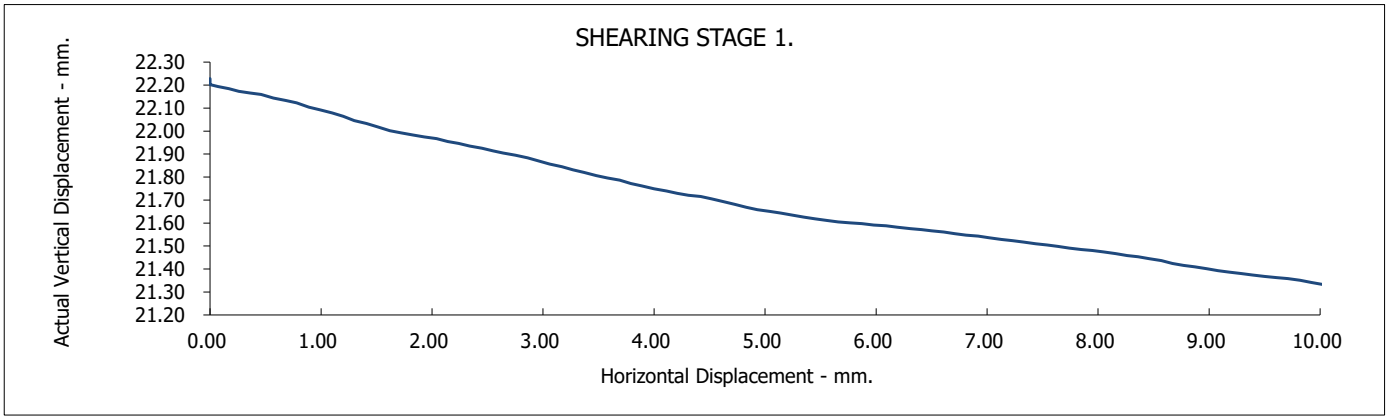
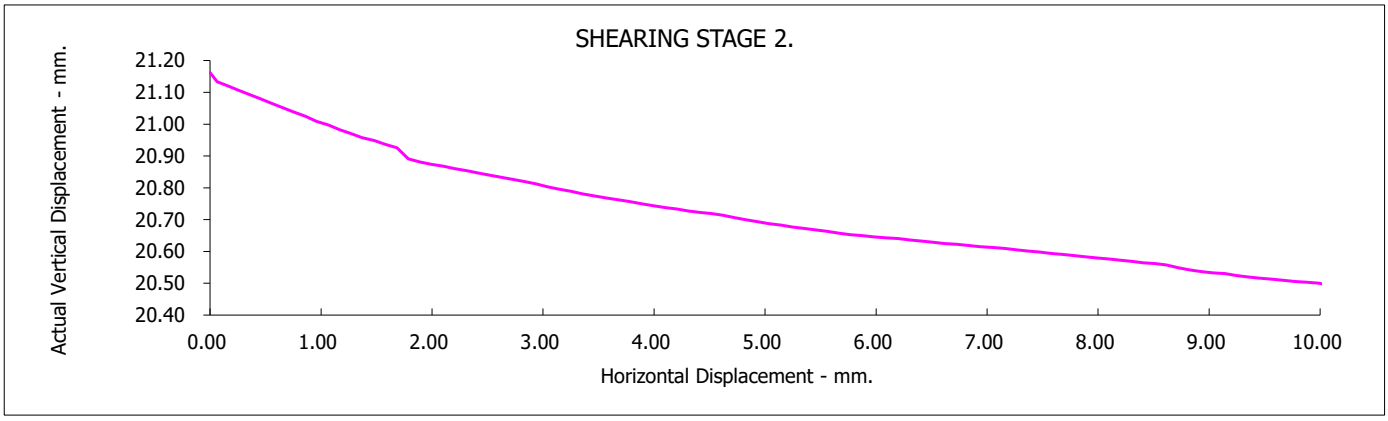
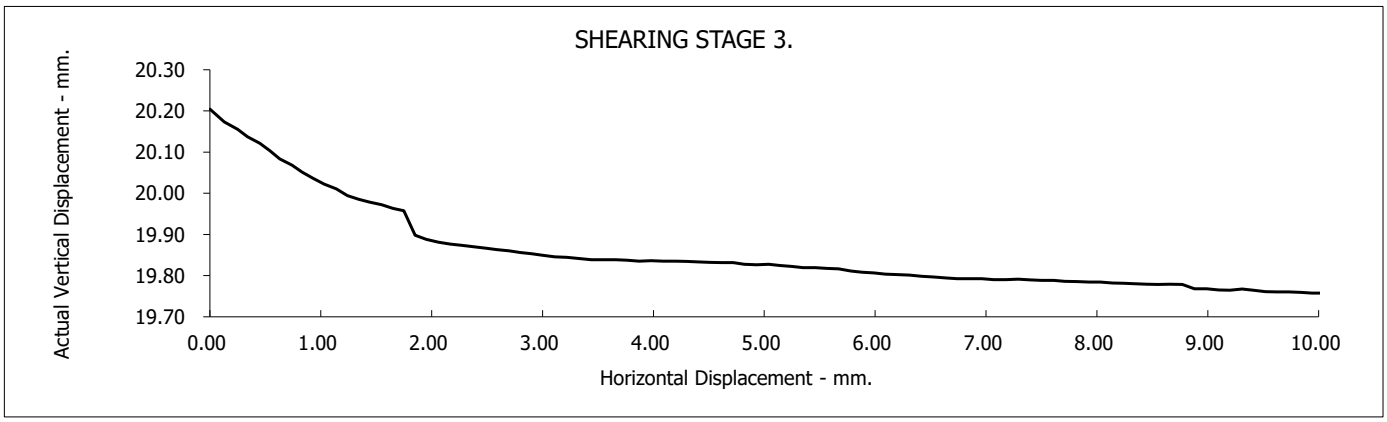
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	11.00
Sample Number :		Depth to (m):	







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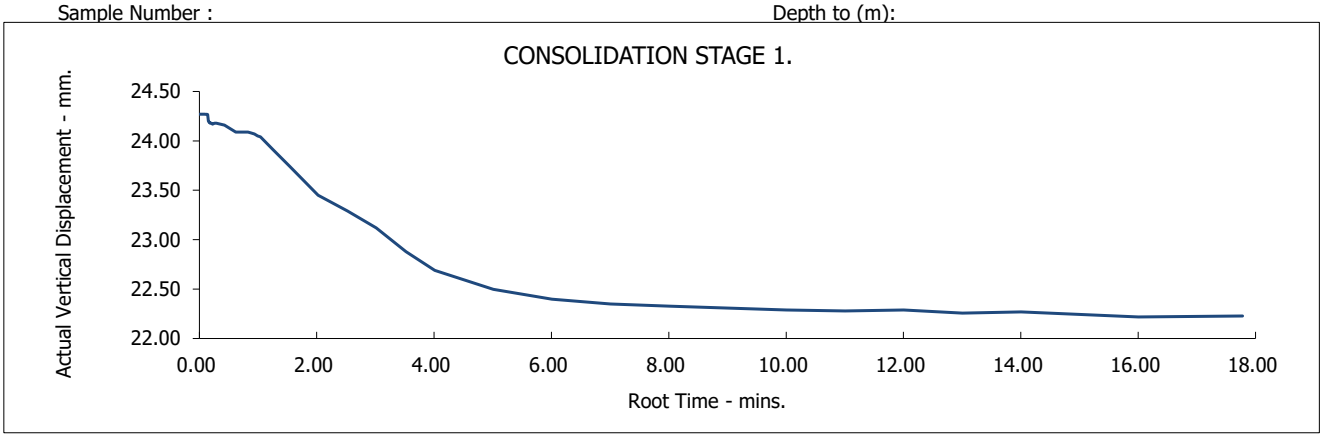
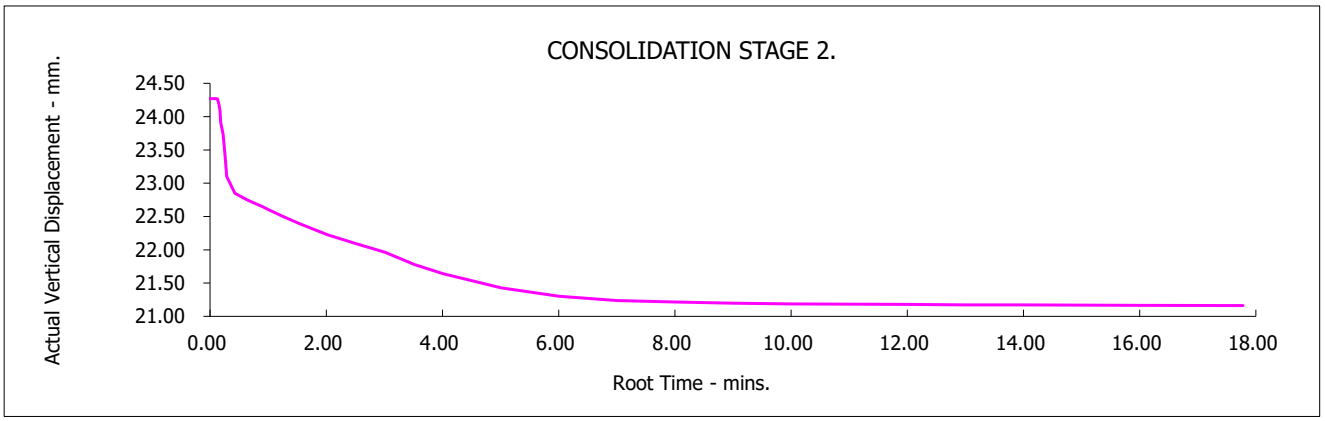
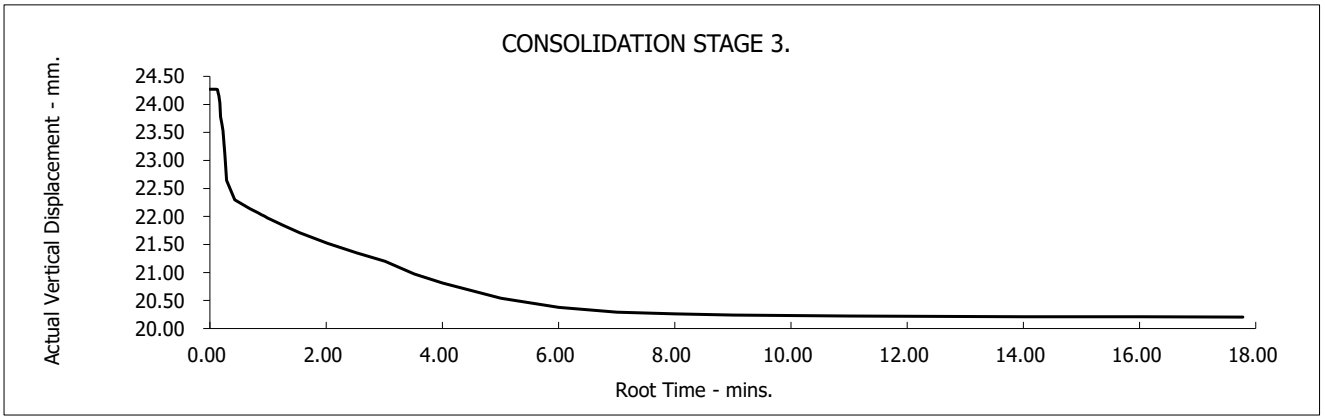
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M11	Depth from (m):	11.00
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M13	Depth from (m):	2.10
Sample Number :		Depth to (m):	

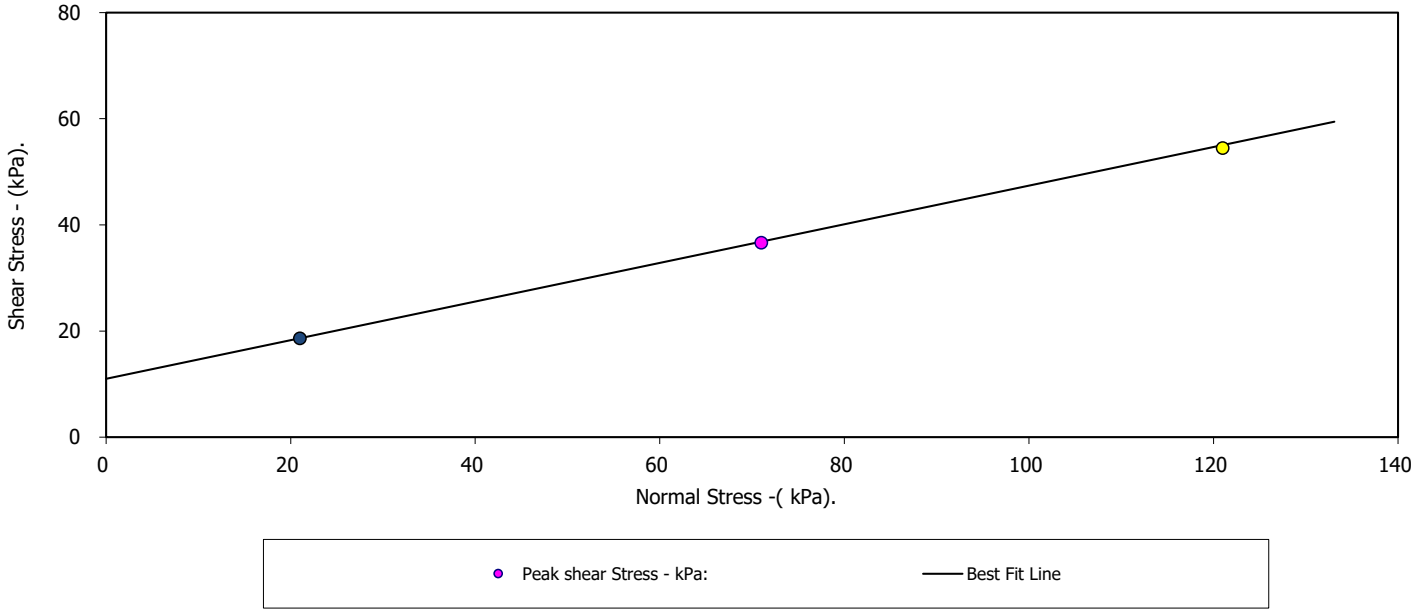
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brownish grey slightly sandy very silty soft CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	48	48	48
Bulk Density - Mg/m3:	1.67	1.67	1.67
Dry Density - Mg/m3:	1.13	1.13	1.13
Voids Ratio:	1.3400	1.3383	1.3367
Normal Pressure- kPa	21	71	121
Consolidation			
Consolidated Height - mm:	23.65	22.41	21.18
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	3.28	4.36	4.86
Peak shear Stress - kPa:	19	37	54

PEAK	
Angle of Shearing Resistance:(θ)	**20.0**
Effective Cohesion - kPa:	**11**

FAILURE CONDITIONS



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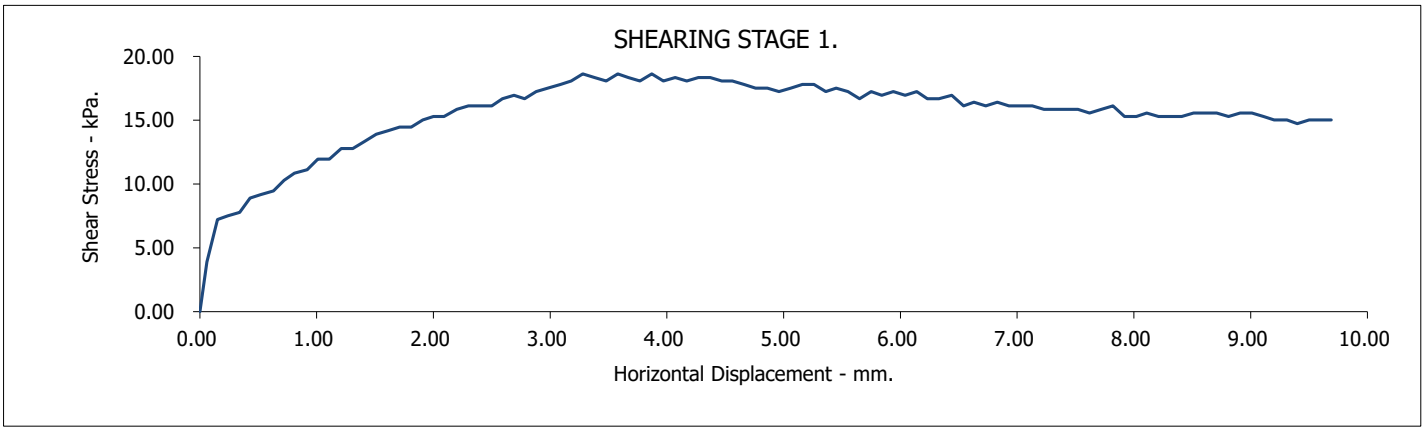
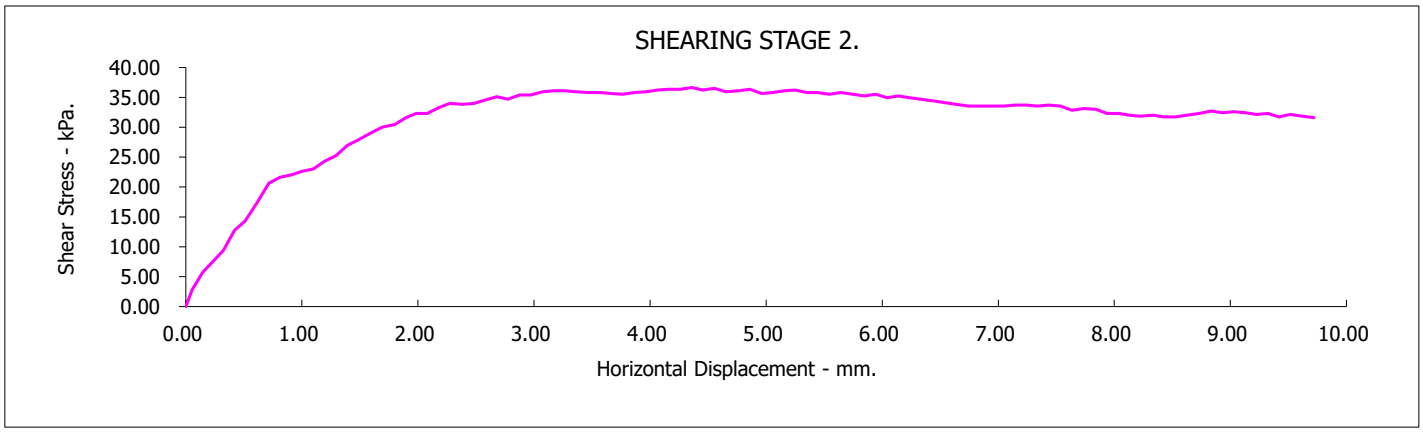
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M13	Depth from (m):	2.10
Sample Number :		Depth to (m):	





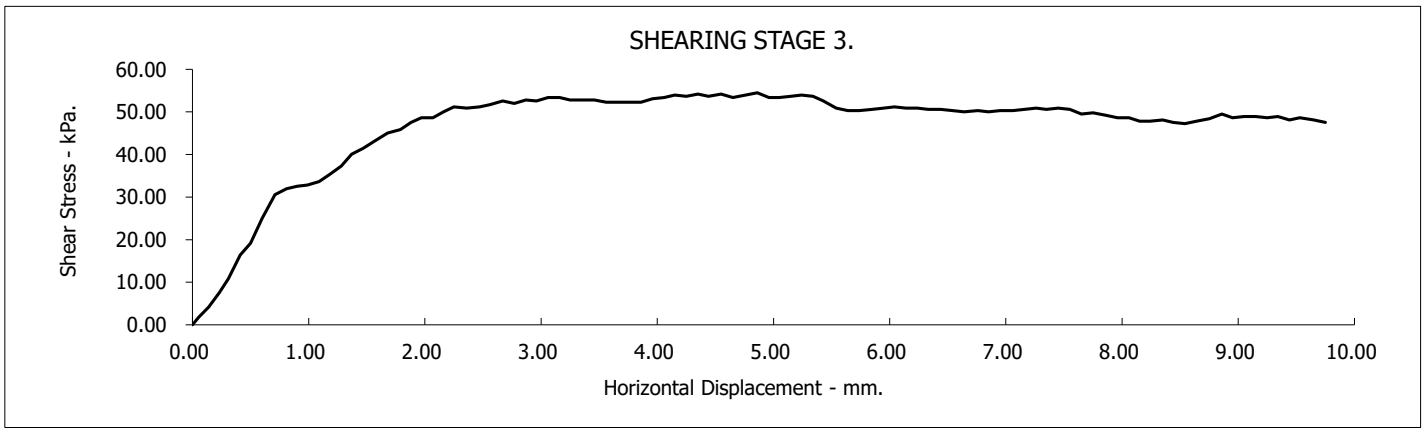


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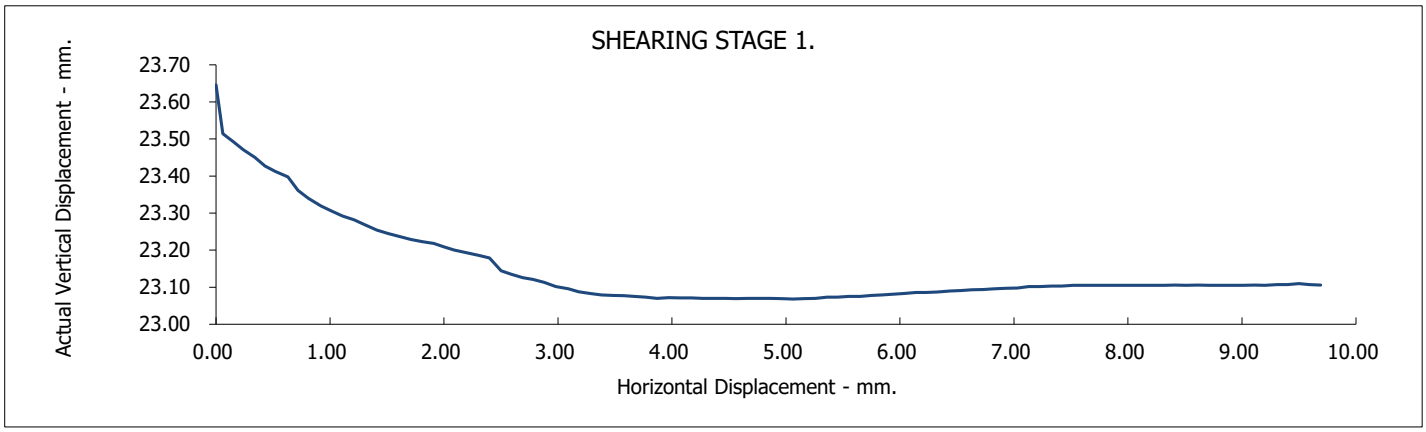
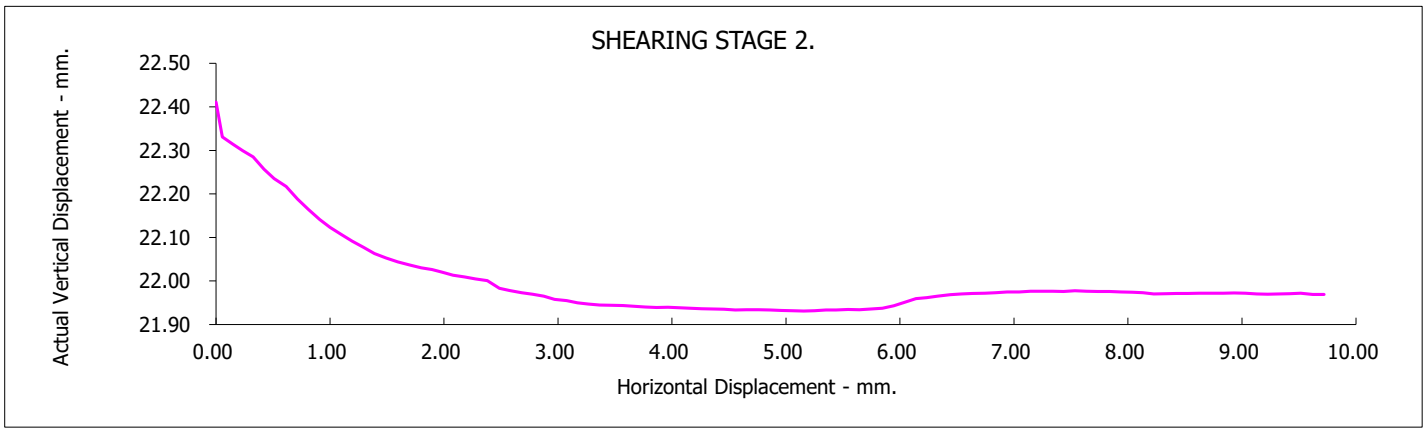
Figure.

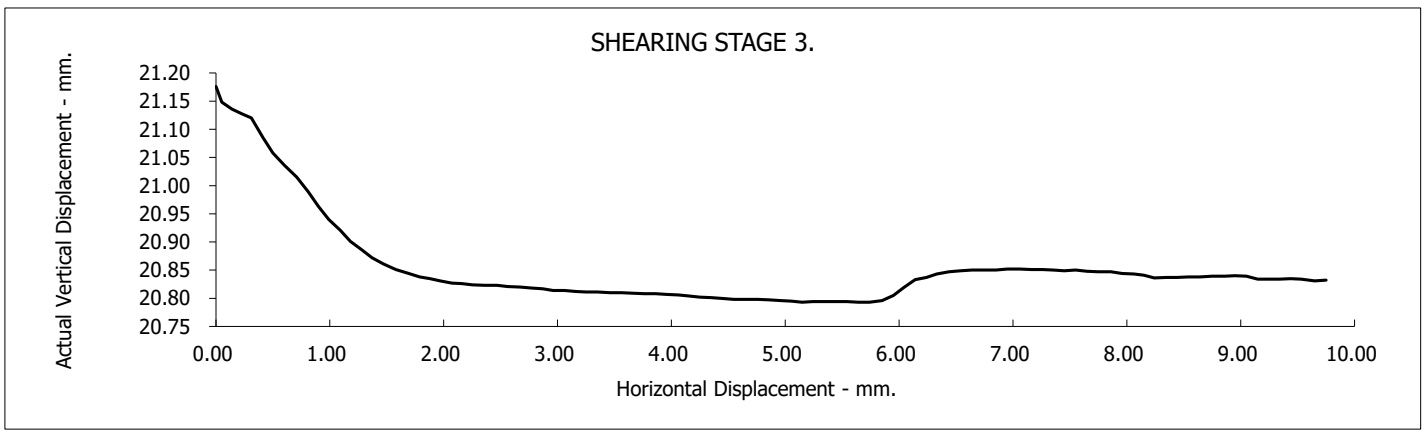
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M13	Depth from (m):	2.10
Sample Number :		Depth to (m):	







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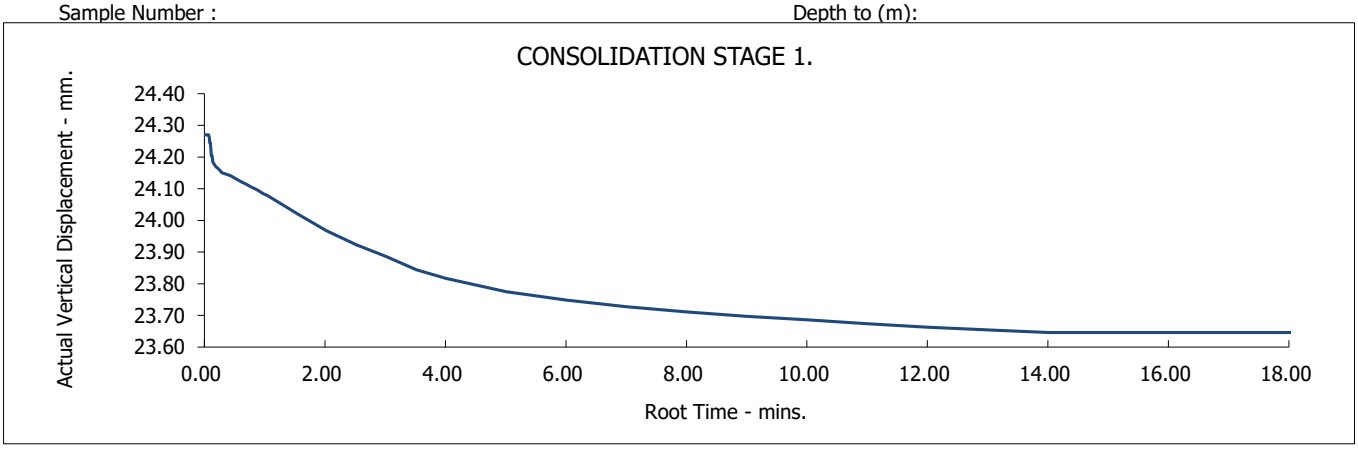
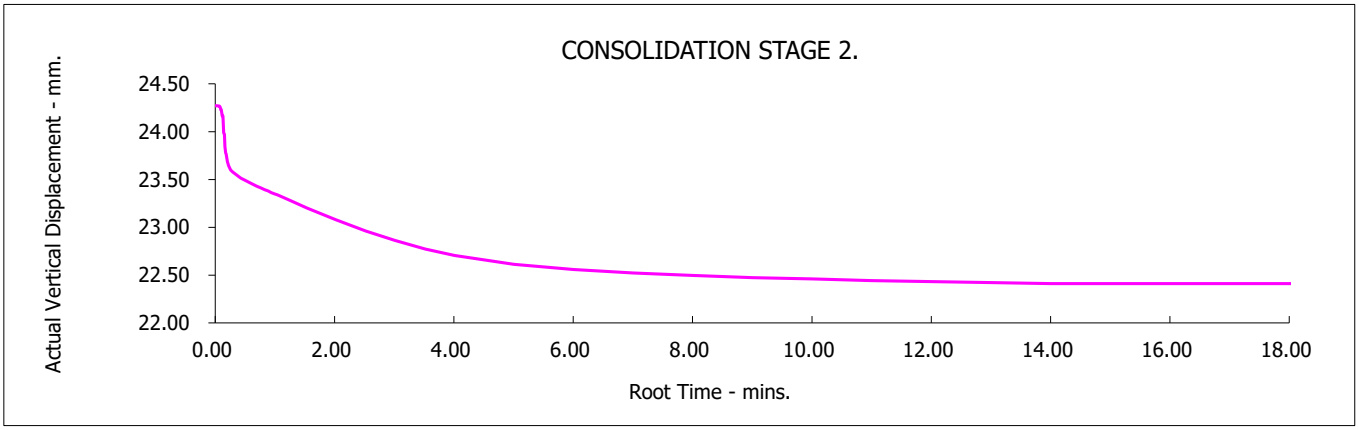
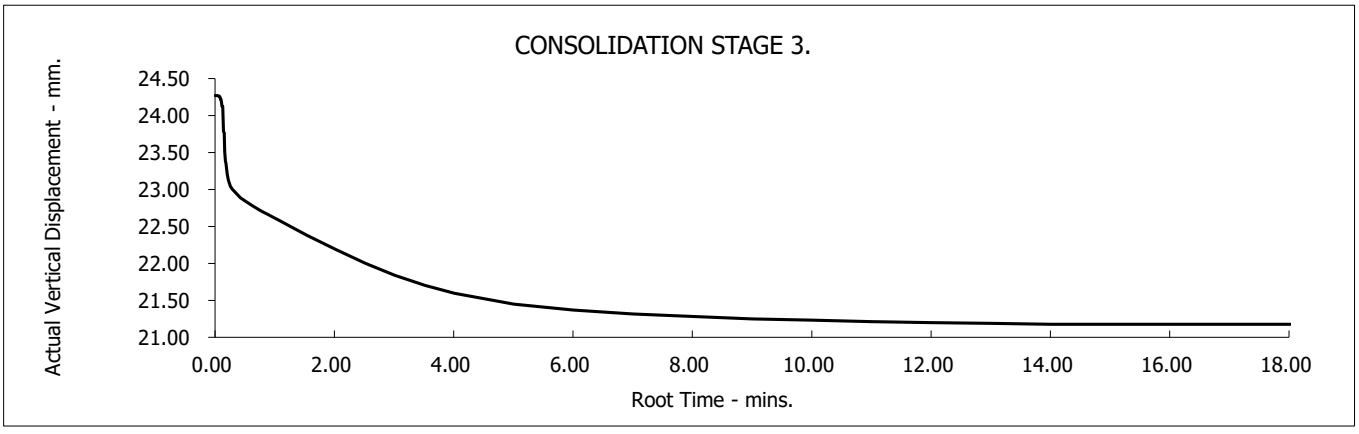
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M13	Depth from (m):	2.10
Sample Number :		Depth to (m):	







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Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	2.00
Sample Number :		Depth to (m):	

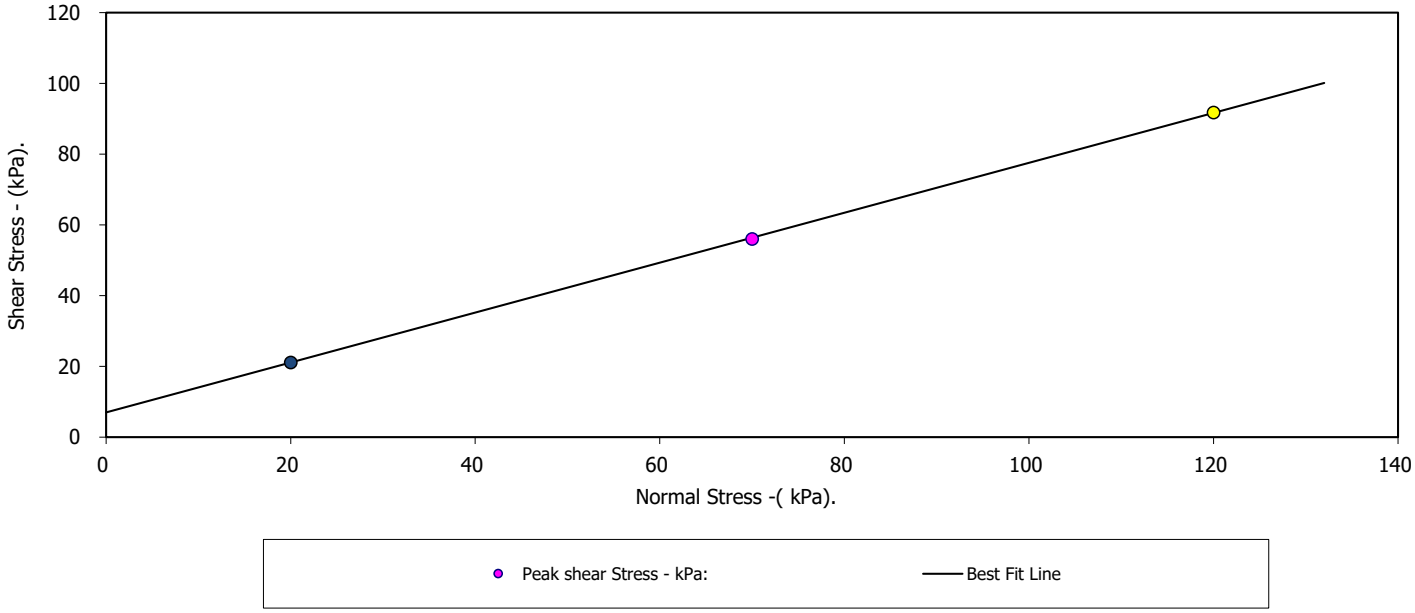
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Brown slightly gravelly soft sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	46	46	46
Bulk Density - Mg/m3:	1.69	1.69	1.69
Dry Density - Mg/m3:	1.16	1.16	1.16
Voids Ratio:	1.2936	1.2905	1.2888
Normal Pressure- kPa	20	70	120
Consolidation			
Consolidated Height - mm:	23.54	22.29	21.04
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	5.87	8.31	8.00
Peak shear Stress - kPa:	21	56	92

PEAK	
Angle of Shearing Resistance:(θ)	**35.2**
Effective Cohesion - kPa:	**7**

FAILURE CONDITIONS



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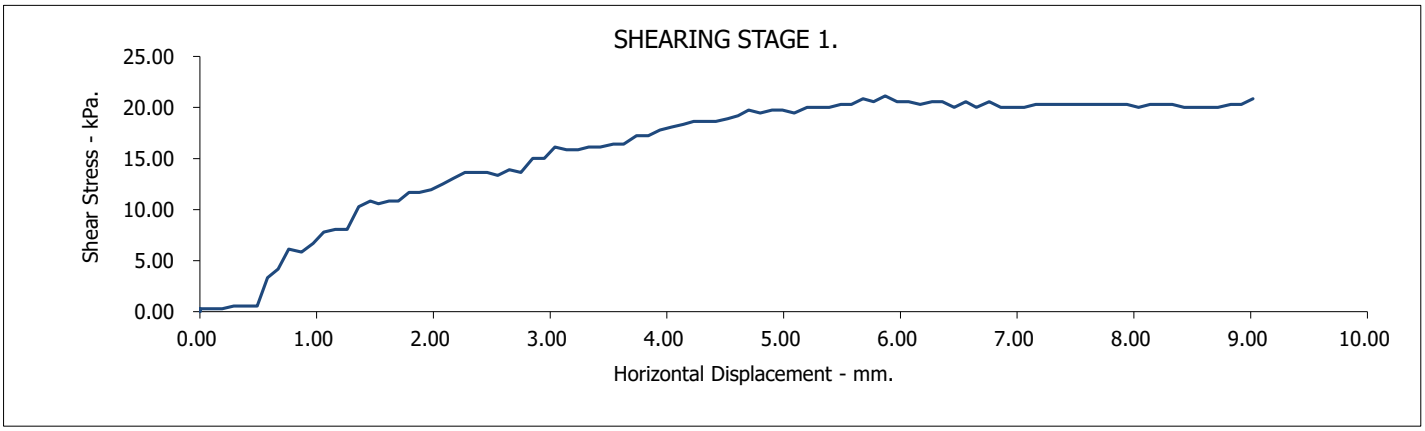
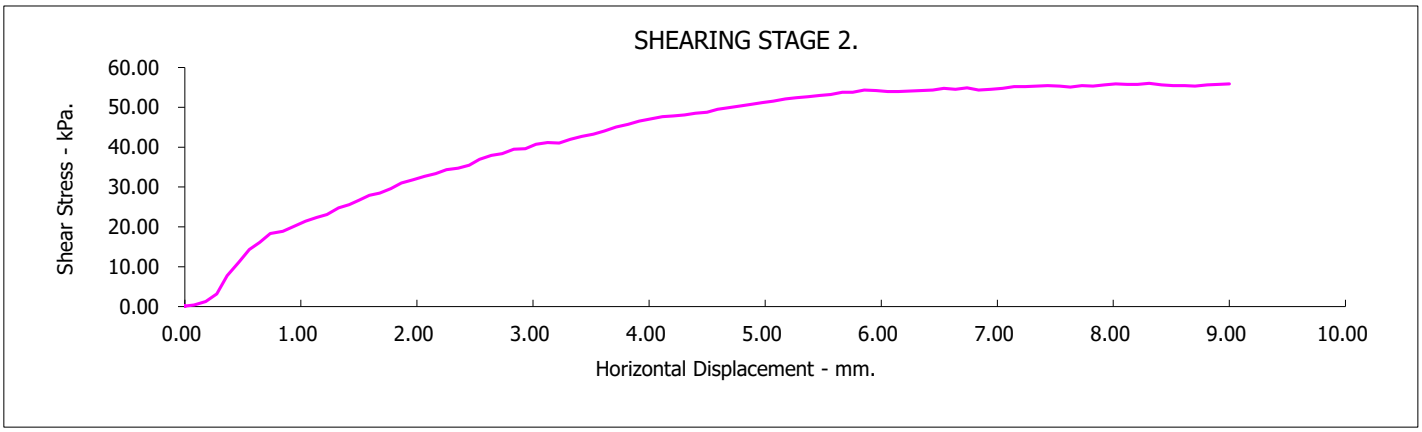
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	2.00
Sample Number :		Depth to (m):	





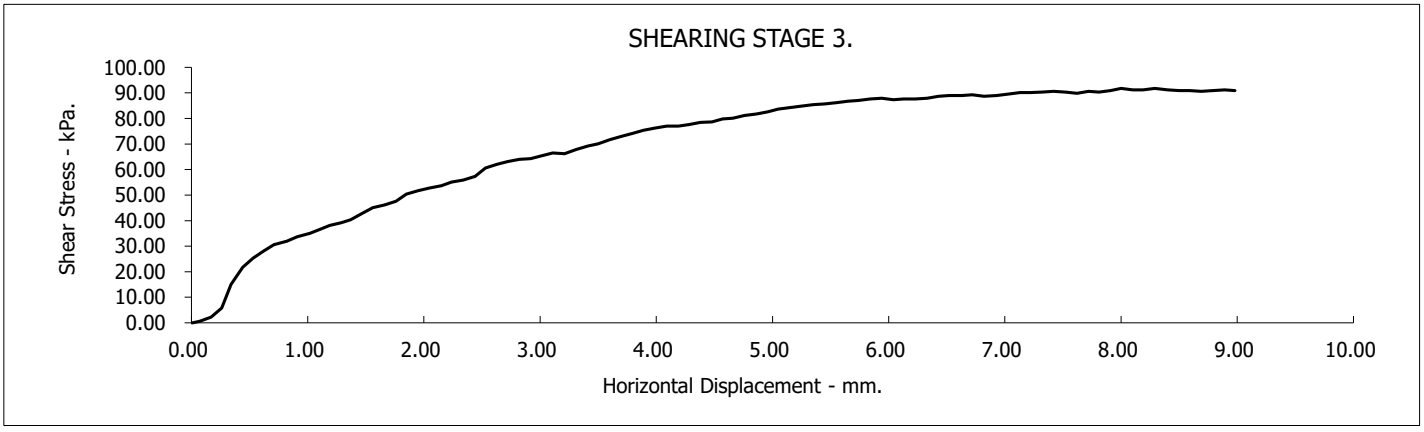


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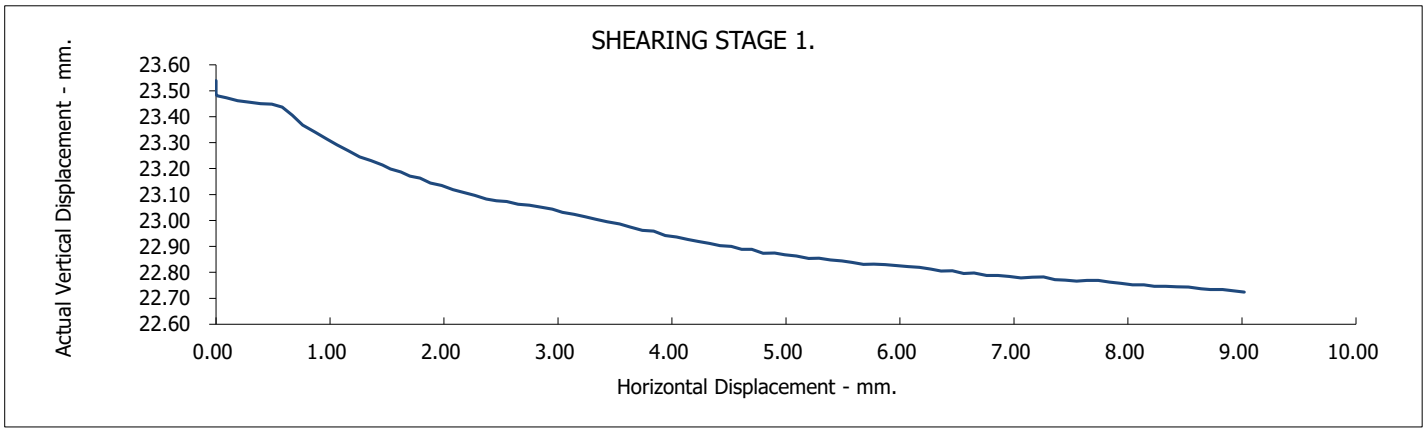
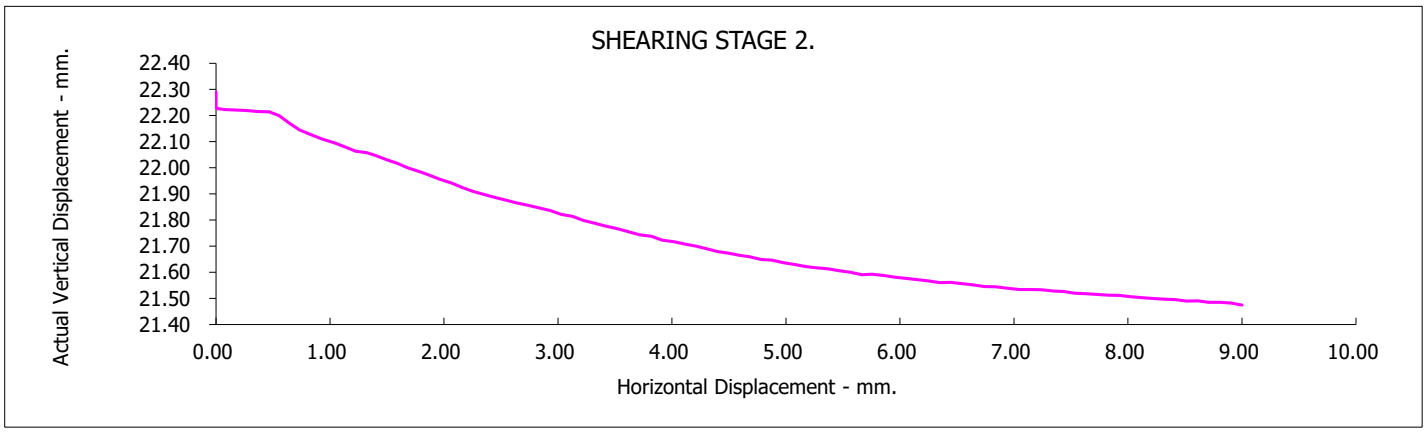
Figure.

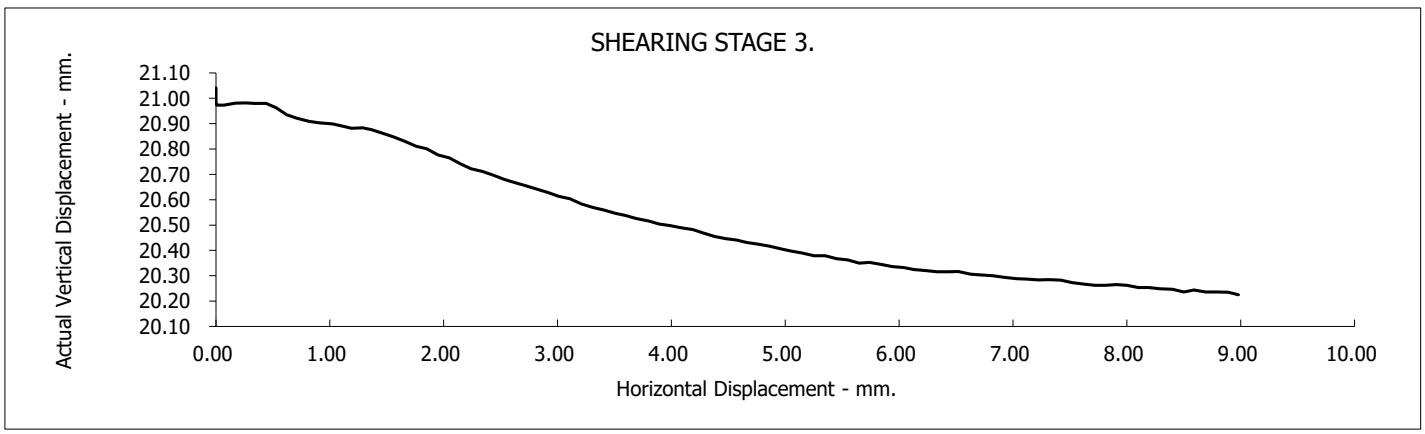
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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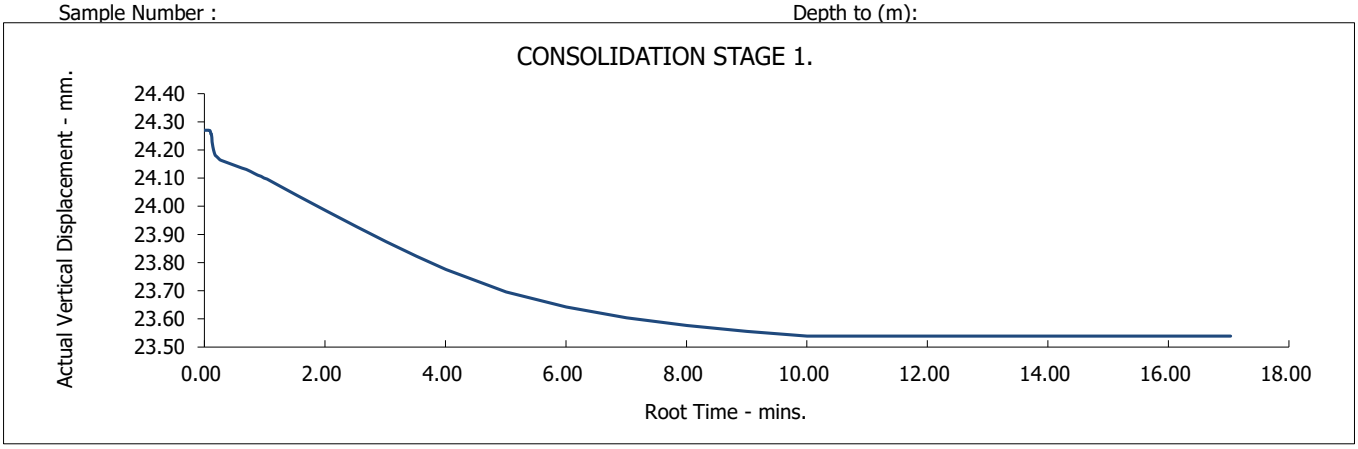
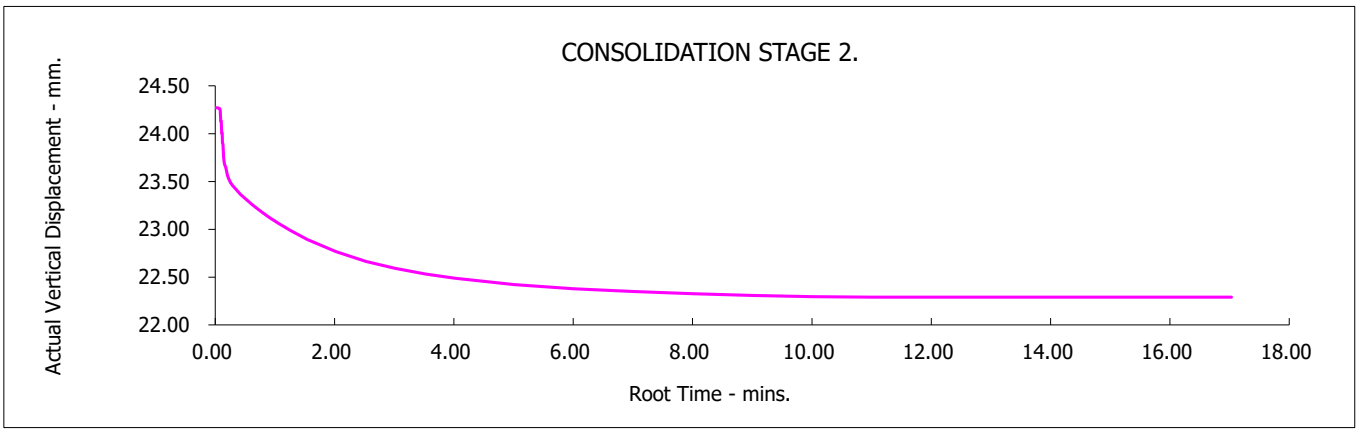
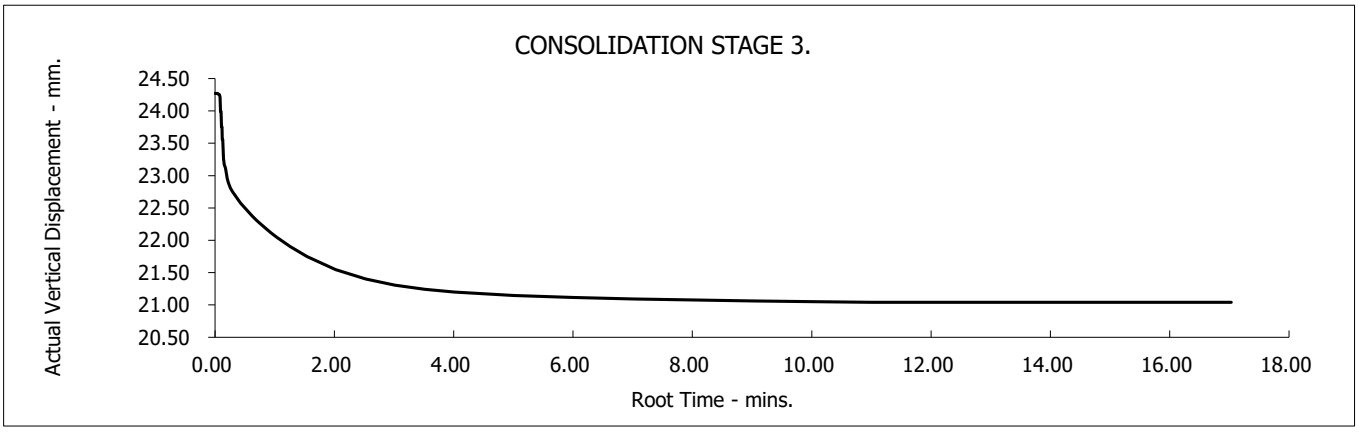
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	2.00
Sample Number :		Depth to (m):	







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Client Ref Number:
0.00

Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	6.00
Sample Number :		Depth to (m):	

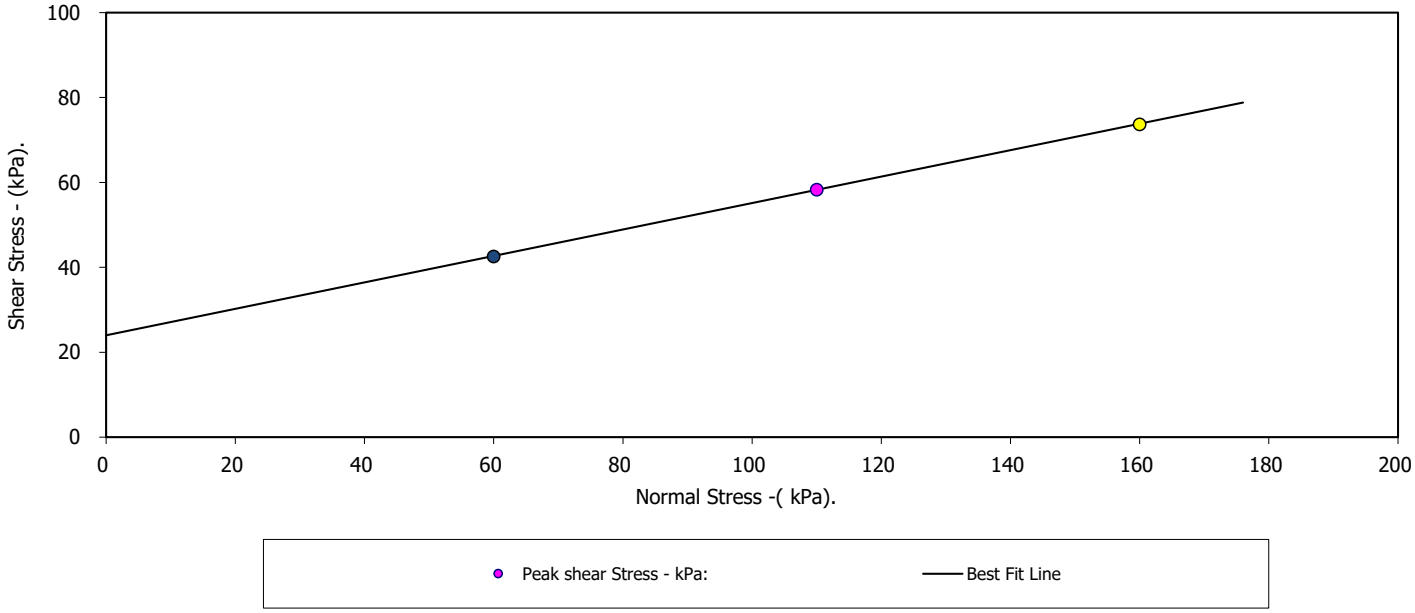
Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Undisturbed, Material above 2mm removed.

Sample Description:
Dark grey slightly gravelly soft slightly sandy silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.27	24.27	24.27
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	46	46	46
Bulk Density - Mg/m3:	1.66	1.66	1.66
Dry Density - Mg/m3:	1.14	1.14	1.14
Voids Ratio:	1.3297	1.3281	1.3265
Normal Pressure- kPa	60	110	160
Consolidation			
Consolidated Height - mm:	21.38	20.67	19.97
Shear			
Rate of Strain (mm/min)	0.010	0.010	0.010
Strain at peak shear stress (mm)	4.81	4.50	5.76
Peak shear Stress - kPa:	43	58	74

PEAK	
Angle of Shearing Resistance:(θ)	**17.3**
Effective Cohesion - kPa:	**24**

FAILURE CONDITIONS



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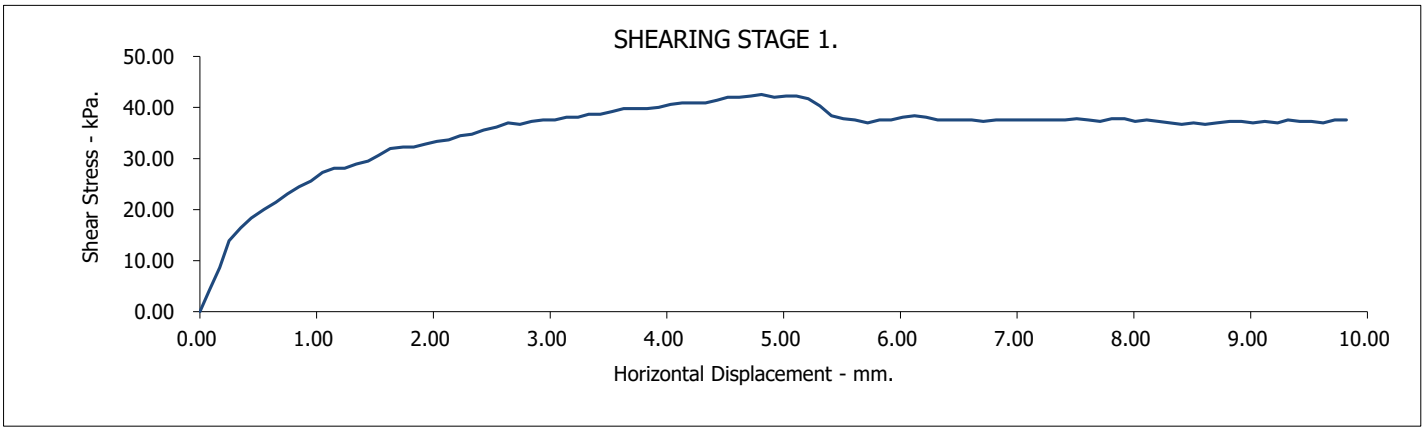
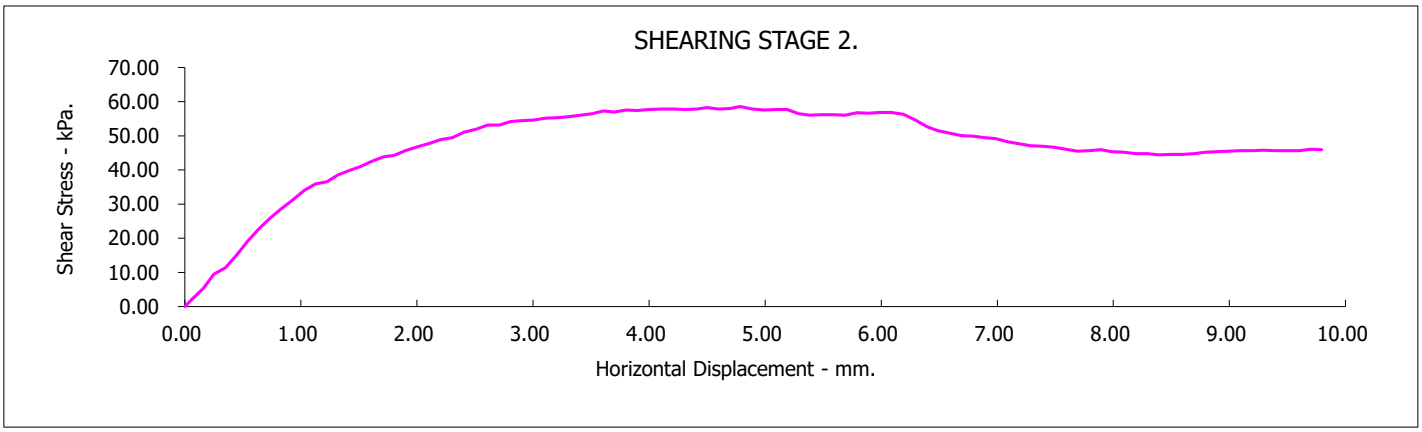
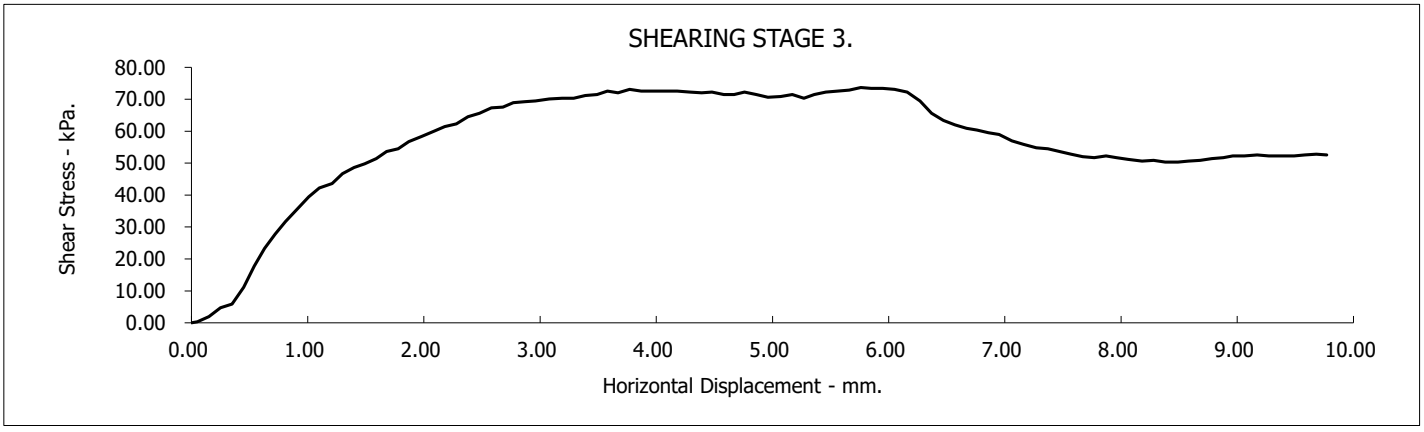
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	6.00
Sample Number :		Depth to (m):	







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Client Ref Number: **0.00**

Figure.

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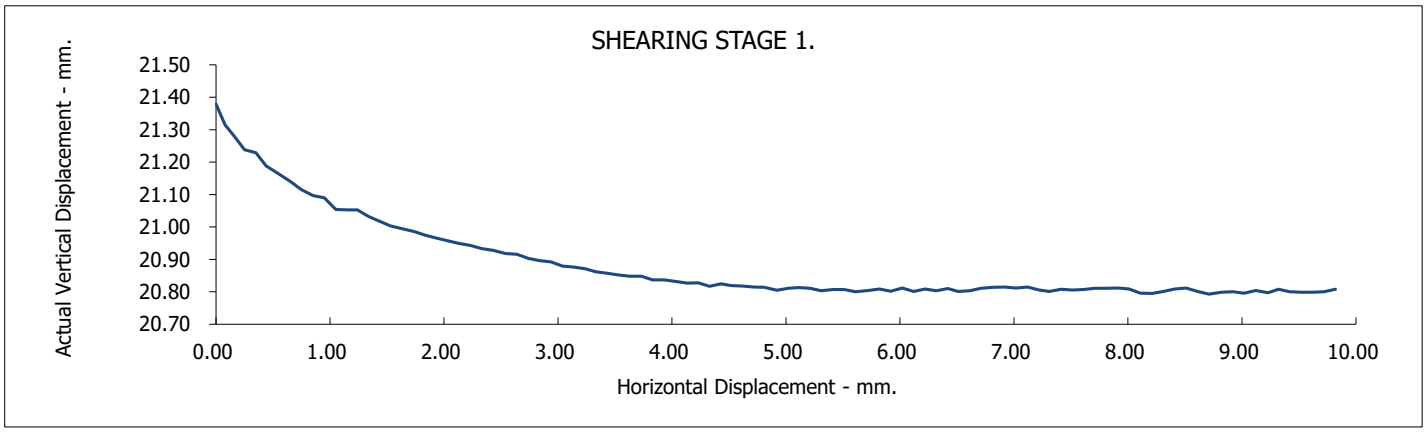
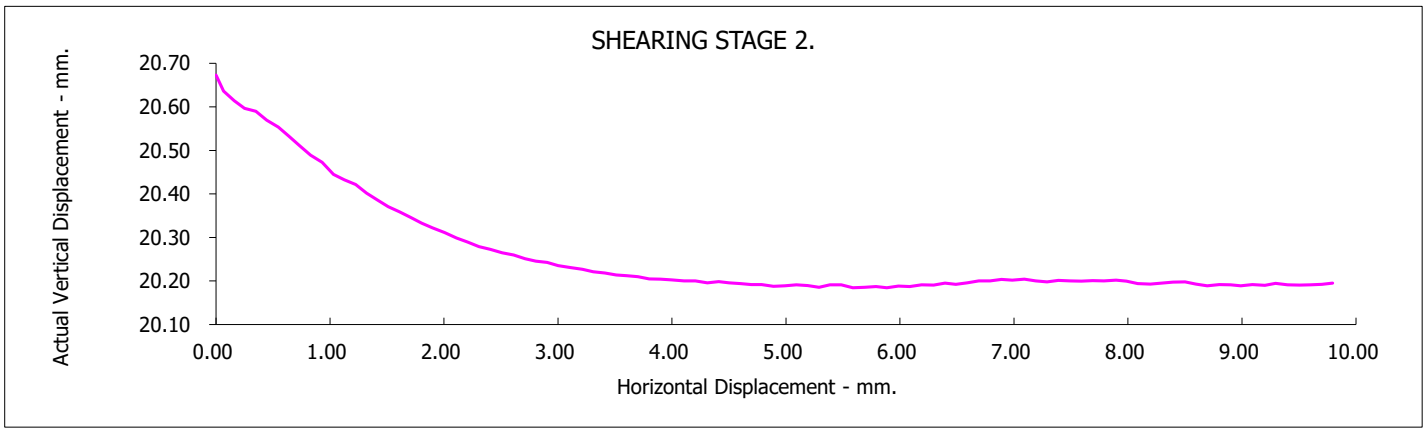
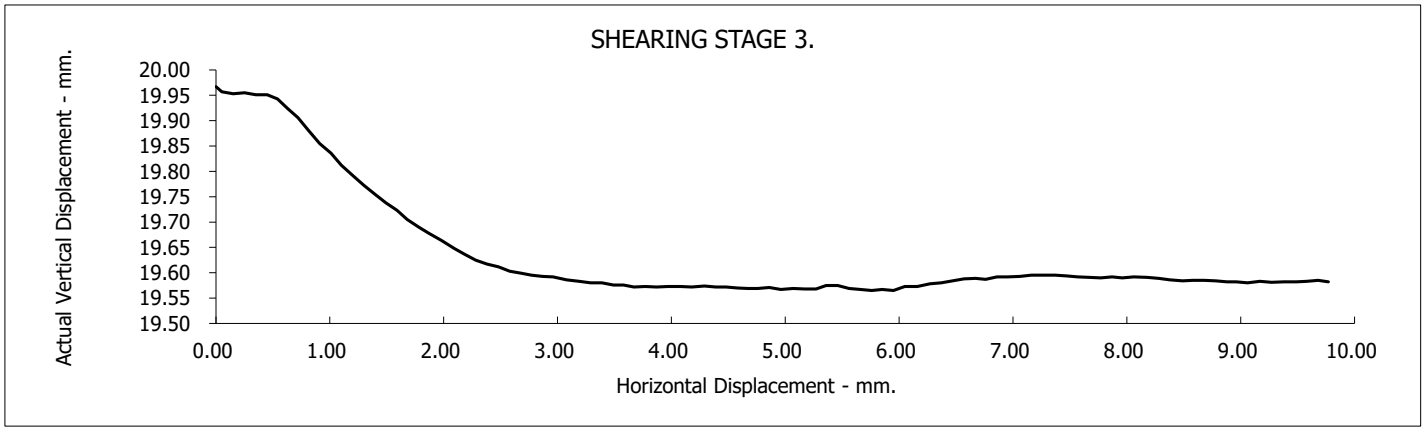
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	6.00
Sample Number :		Depth to (m):	







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Client Ref Number:
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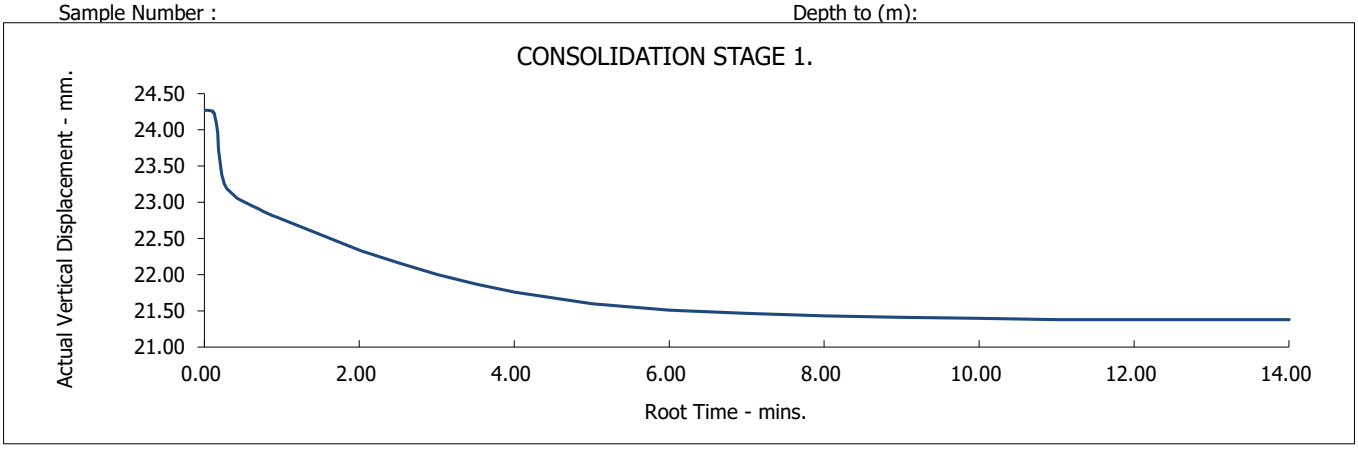
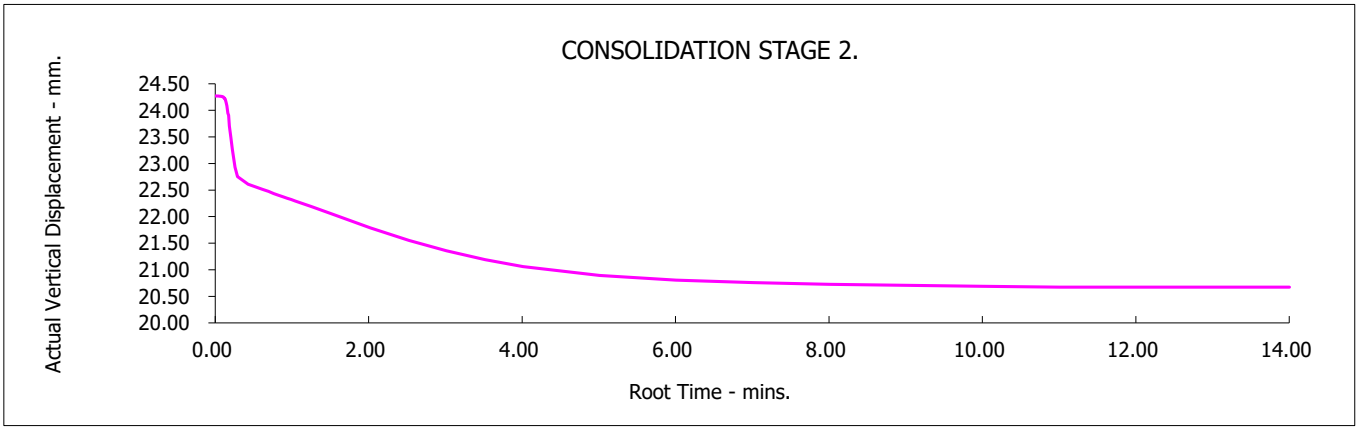
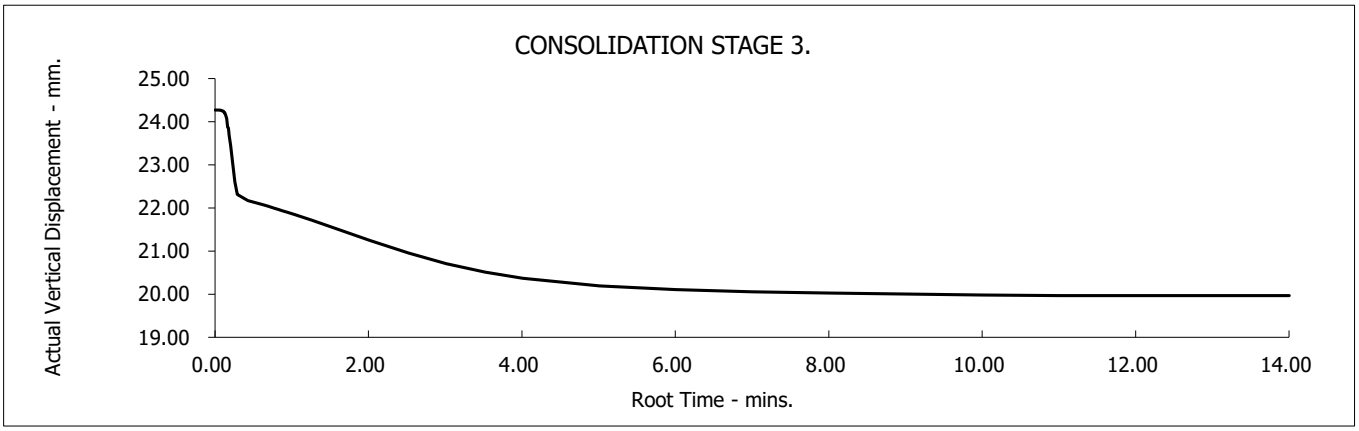
Test Report: CONSOLIDATED DRAINED SHEARBOX TEST.

BS1377:Part 7:4.5 :1990.

Borehole Number:	M15	Depth from (m):	6.00
Sample Number :		Depth to (m):	







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Client Ref Number:
0.00

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LABORATORY TEST CERTIFICATE

MATtest Limited
materials testing & consultancy

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

Tel: 0141 774 4032
Fax: 0141 774 3552

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

Certificate No : **17/1099 - 01**

To : **Conor Finnerty**

Client : **Ground Investigations Ireland Limited**
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
D22 YD52

Dear Sirs,

LABORATORY TESTING OF ROCK

Introduction

We refer to samples taken from Shannon Foynes Port Company and delivered to our laboratory on 20th September 2017.

Material & Source

Sample Reference	:	See Report Plates
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	See Report Plates
Description	:	Rock cores
Date Sampled	:	Not Supplied
Date Tested	:	20th September 2017 Onwards
Source	:	Shannon Foynes Port Company

Test Results;

As Detailed On Page 2 to Page 26 inclusive

Comments;

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

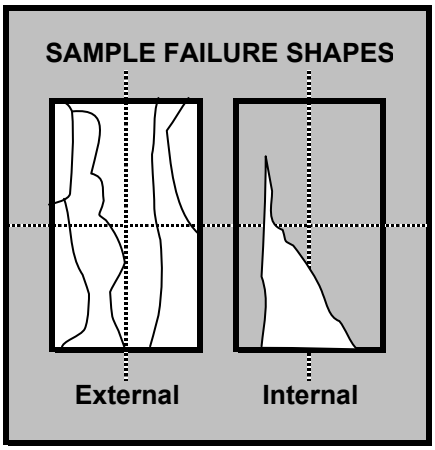
Remarks;

Approved for Issue

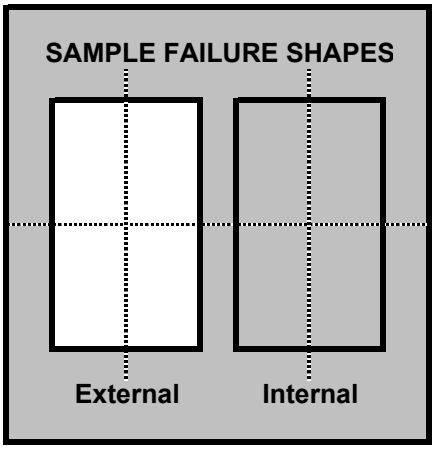
Date 19/10/2017

T McLelland (Director)

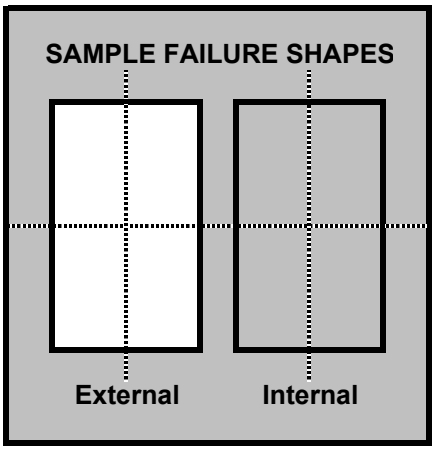
BOREHOLE		LD05
SAMPLE		C
DEPTH	m	8.20-8.40
SAMPLE DIAMETER	mm	101.50
SAMPLE HEIGHT	mm	218.72
TEST CONDITION		As Received
RATE OF LOADING	kN/s	1.1
TEST DURATION	min.sec	13.09
DATE OF TESTING		27/09/2017
LOAD FRAME USED		2000kN
LOAD DIRECTION WITH RESPECT TO LITHOLOGY		Unknown
FAILURE LOAD	kN	842.9
UNCONFINED COMPRESSIVE STRENGTH	MPa	104.2
WATER CONTENT (ISRM Suggested Methods)	%	0.2
BULK DENSITY (ISRM Suggested Methods)	Mg/m^3	2.68
DRY DENSITY (ISRM Suggested Methods)	Mg/m^3	2.67



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



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



Tested in accordance with ASTM D7012 - 14

SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

MATtest Limited
materials testing & consultancy

SAMPLE DETAILS		
Borehole		L07
Sample Type		C
Depth	(m)	17.10
Type Of Discontinuity		Existing
Moisture Condition Used During Test		As Received
Initial Sample Shape		Cylindrical Core
Date Of Sampling		Not Supplied
Date Of Test		12/10/2017
Number Of Specimens Tested		1
Type Of Encapsulating Material		Gypsum Plaster

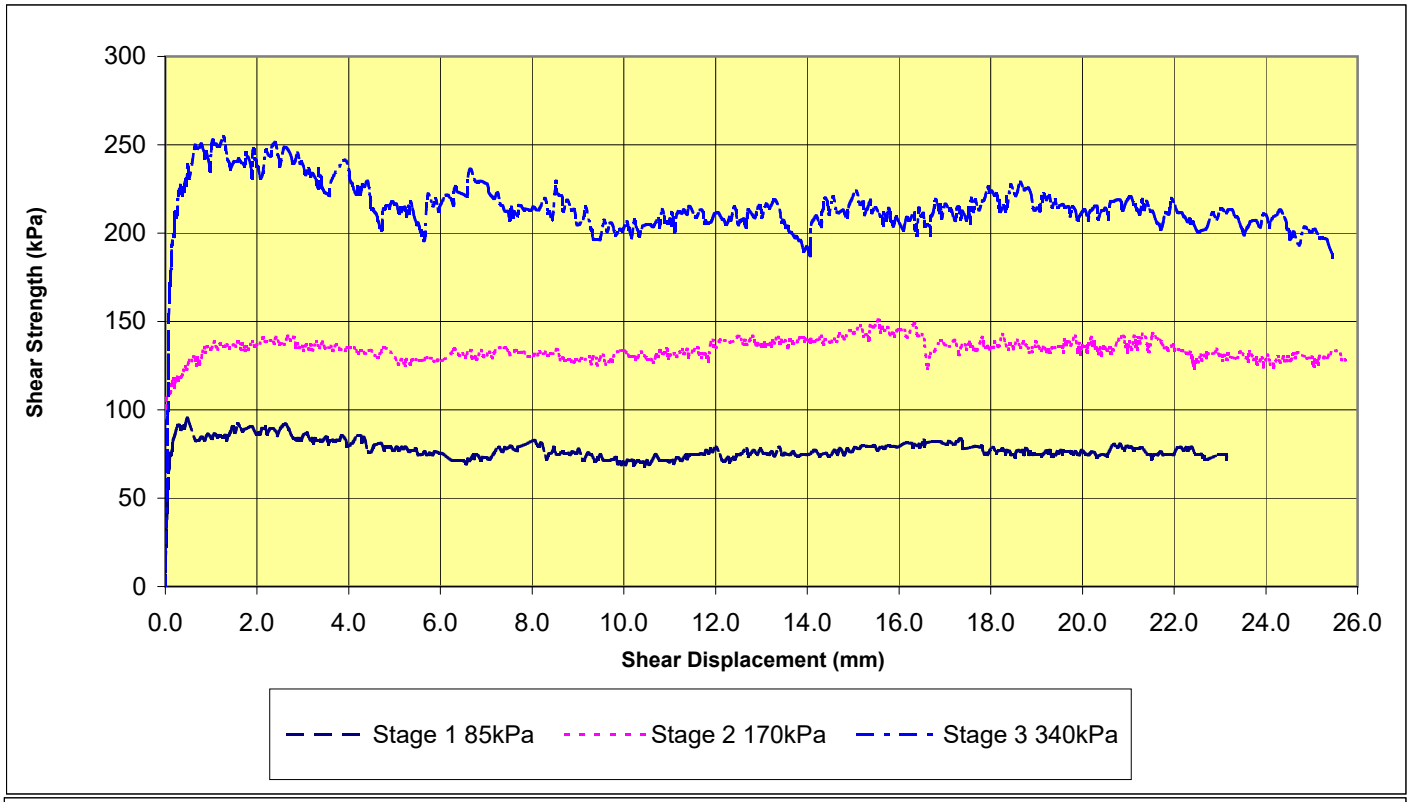
LOADING DETAILS		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Normal Stress	(kPa)	85	170	340	-	-
Shear Stress	(kPa)	95	151	254	-	-
Residual Stress	(kPa)	75	129	205	-	-
Normal Displacement	(mm)	0.18	2.90	0.52	-	-
Shear Displacement	(mm)	0.48	15.56	1.27	-	-

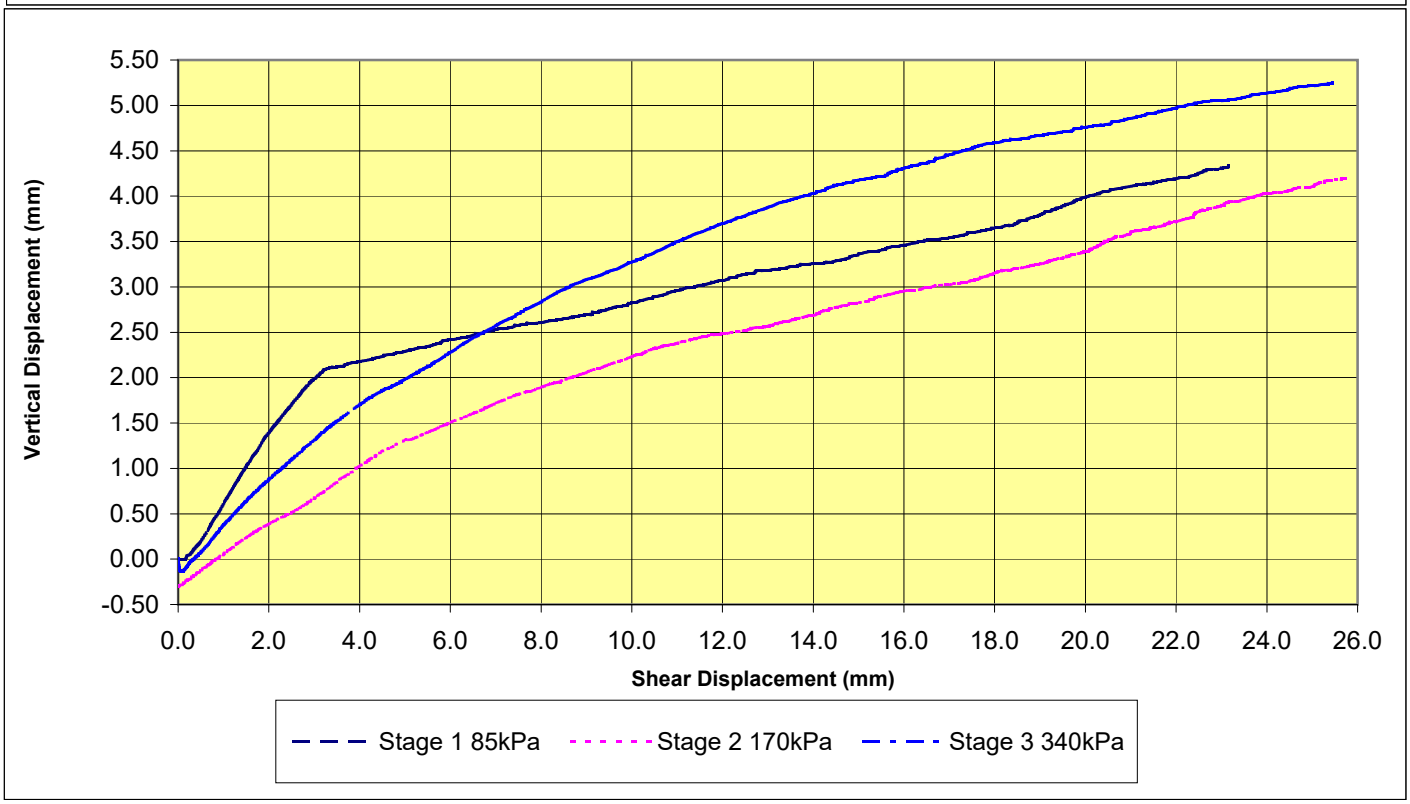
FRICTION ANGLE		
Peak Stress	(°)	31.9
Residual Stress	(°)	26.4

COHESION		
Peak Stress	(kPa)	43.5
Residual Stress	(kPa)	37.8

COMMENTS

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

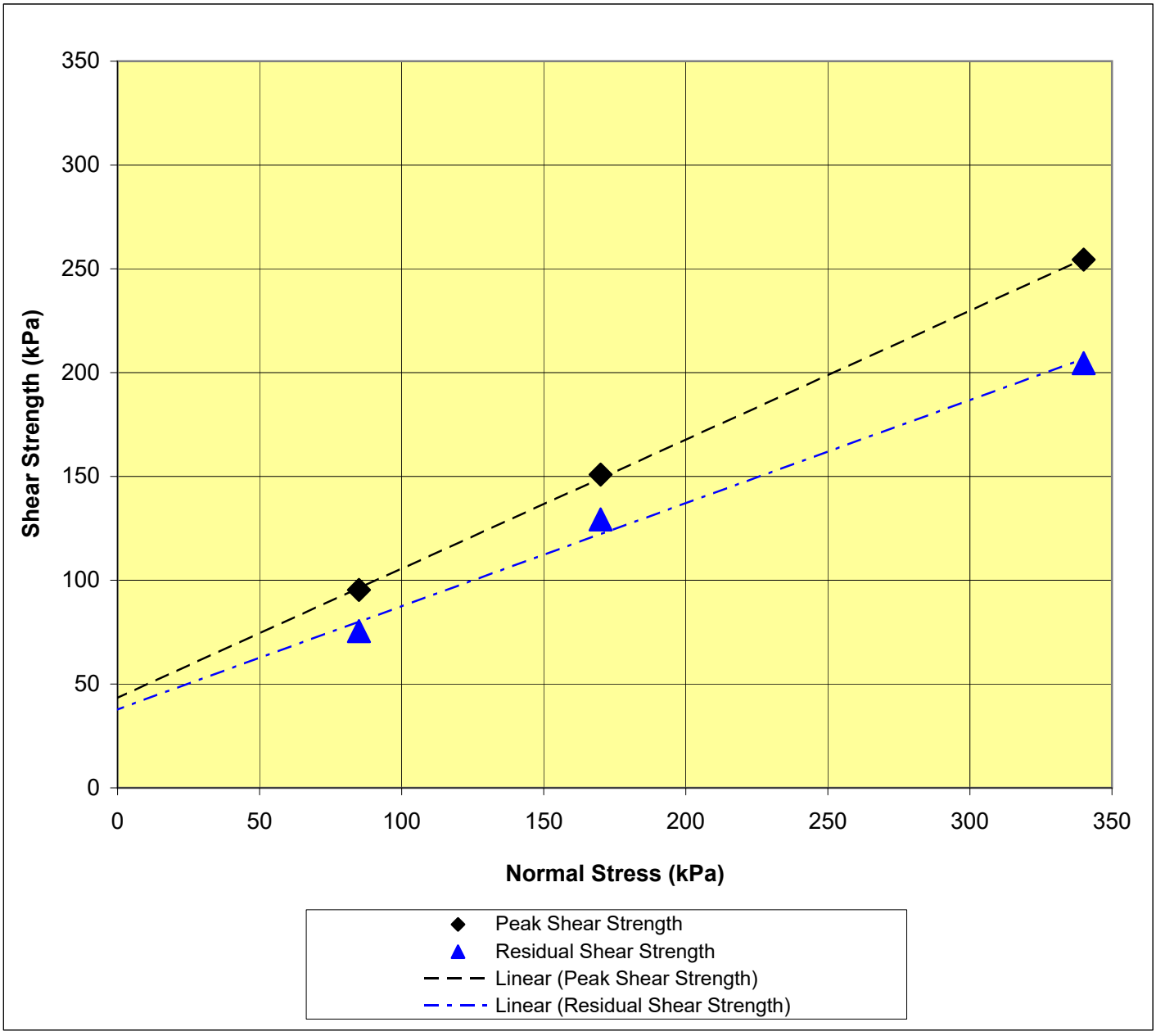




Borehole :	L07
Sample :	C
Depth :	17.10

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS

Test based on "International Society For Rock Mechanics - Suggested Methods"



Borehole :	L07
Sample :	C
Depth :	17.10

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE BEFORE TEST

LOWER SURFACE BEFORE TEST

Borehole	L07
Sample :	C
Depth :	17.10

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE AFTER TEST

LOWER SURFACE AFTER TEST

Borehole	L07
Sample :	C
Depth :	17.10

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

MATtest Limited
materials testing & consultancy

SAMPLE DETAILS		
Borehole		LD02
Sample Type		C
Depth	(m)	14.95
Type Of Discontinuity		Existing
Moisture Condition Used During Test		As Received
Initial Sample Shape		Cylindrical Core
Date Of Sampling		Not Supplied
Date Of Test		12/10/2017
Number Of Specimens Tested		1
Type Of Encapsulating Material		Gypsum Plaster

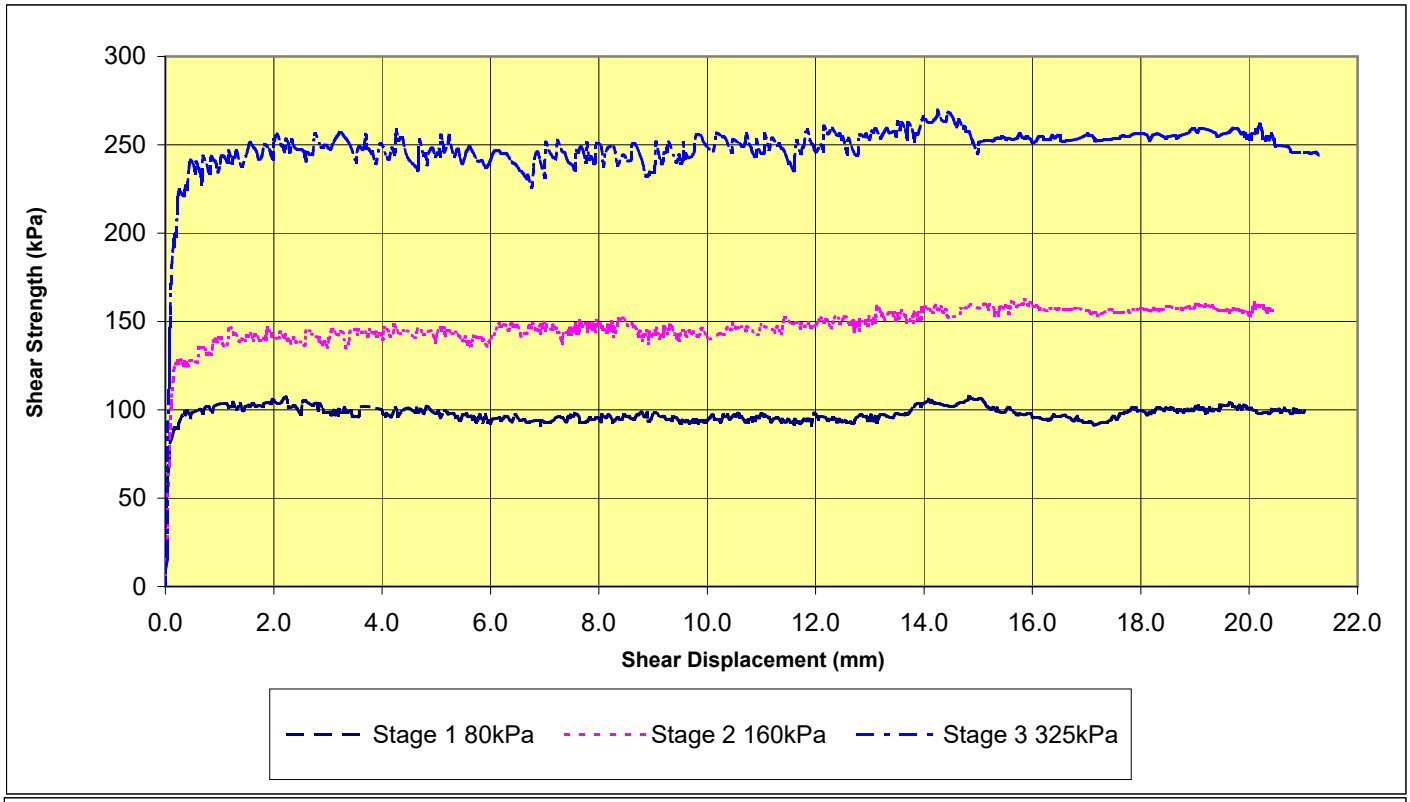
LOADING DETAILS		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Normal Stress	(kPa)	80	160	325	-	-
Shear Stress	(kPa)	107	162	270	-	-
Residual Stress	(kPa)	99	157	254	-	-
Normal Displacement	(mm)	0.72	0.50	-0.24	-	-
Shear Displacement	(mm)	2.23	15.86	14.25	-	-

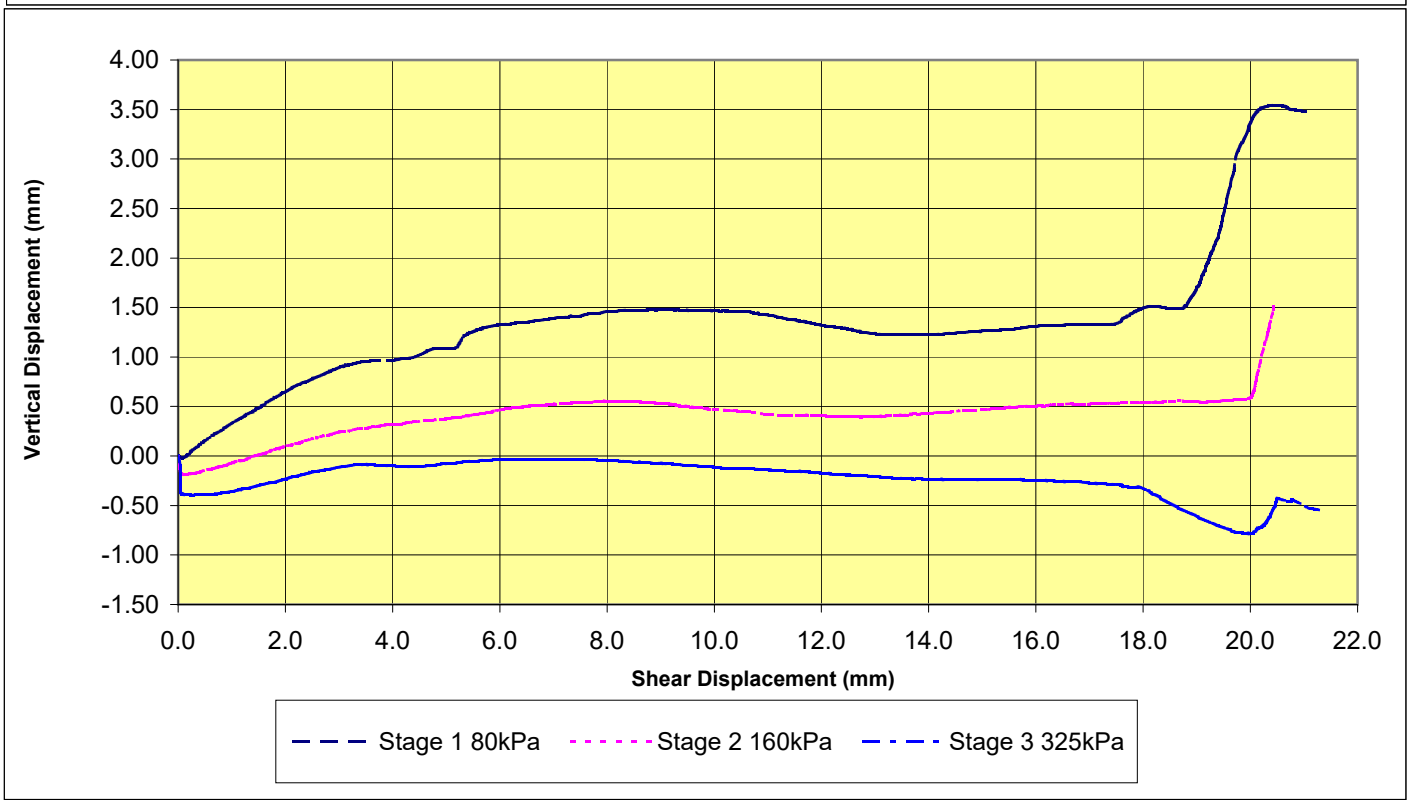
FRICTION ANGLE		
Peak Stress	(°)	33.4
Residual Stress	(°)	32.1

COHESION		
Peak Stress	(kPa)	55.4
Residual Stress	(kPa)	51.9

COMMENTS

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

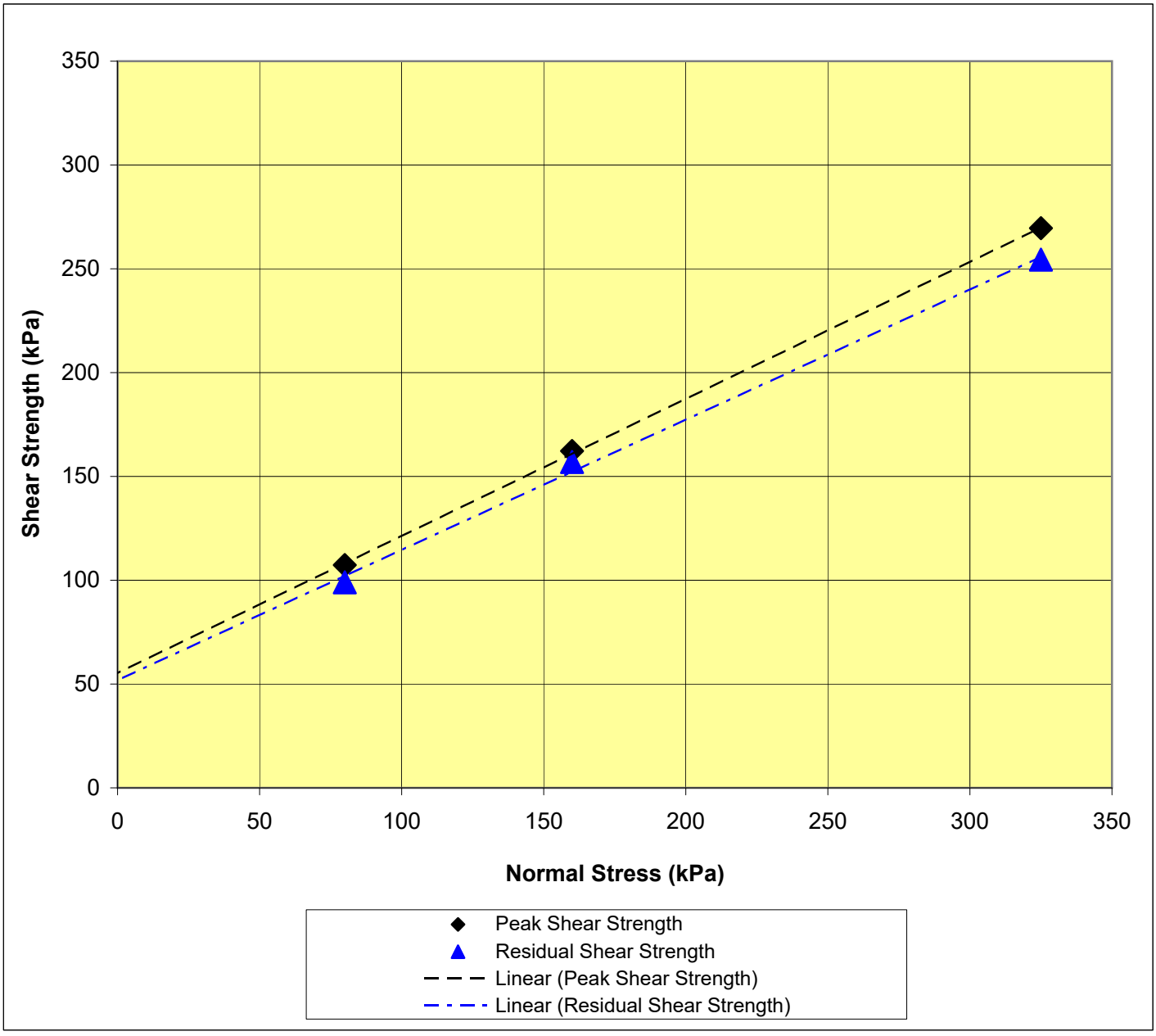




Borehole :	LD02
Sample :	C
Depth :	14.95

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS

Test based on "International Society For Rock Mechanics - Suggested Methods"



Borehole :	LD02
Sample :	C
Depth :	14.95

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE BEFORE TEST

LOWER SURFACE BEFORE TEST

Borehole	LD02
Sample :	C
Depth :	14.95

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE AFTER TEST

LOWER SURFACE AFTER TEST

Borehole	LD02
Sample :	C
Depth :	14.95

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

SAMPLE DETAILS		
Borehole		LD05
Sample Type		C
Depth	(m)	9.20
Type Of Discontinuity		Existing
Moisture Condition Used During Test		As Received
Initial Sample Shape		Cylindrical Core
Date Of Sampling		Not Supplied
Date Of Test		13/10/2017
Number Of Specimens Tested		1
Type Of Encapsulating Material		Gypsum Plaster

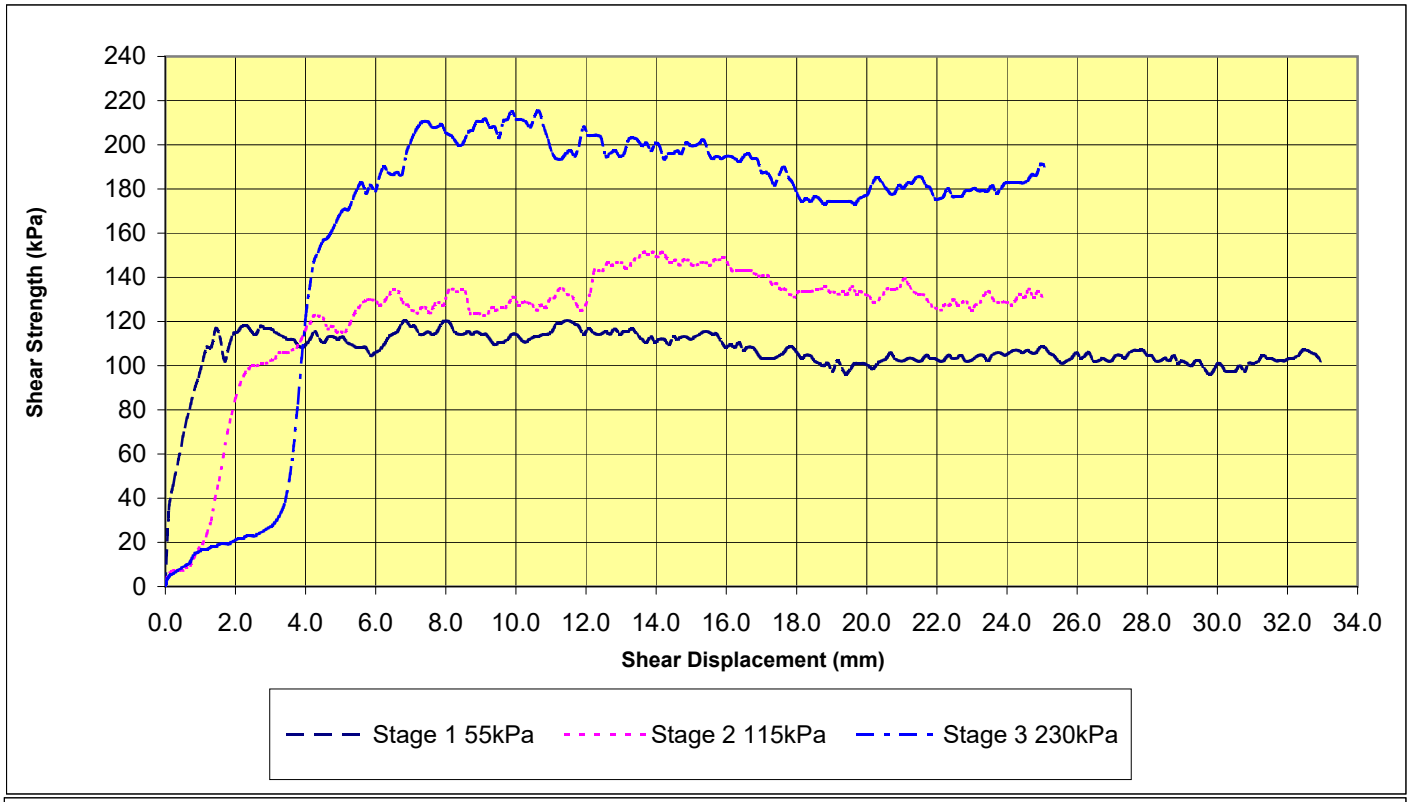
LOADING DETAILS		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Normal Stress	(kPa)	55	115	230	-	-
Shear Stress	(kPa)	120	151	215	-	-
Residual Stress	(kPa)	102	129	179	-	-
Normal Displacement	(mm)	2.09	1.66	0.80	-	-
Shear Displacement	(mm)	6.86	13.65	9.88	-	-

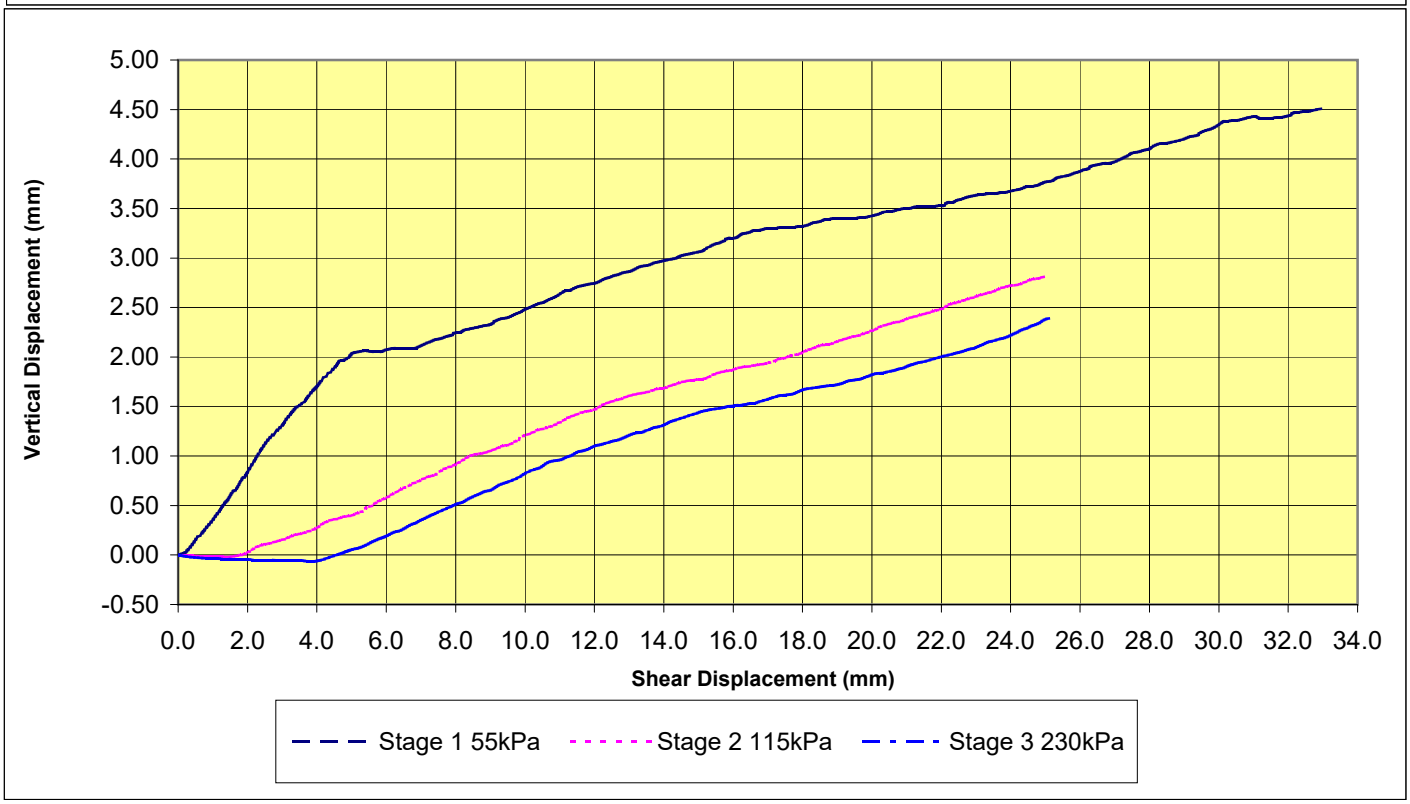
FRICTION ANGLE		
Peak Stress	(°)	28.6
Residual Stress	(°)	23.9

COHESION		
Peak Stress	(kPa)	89.7
Residual Stress	(kPa)	78.0

COMMENTS

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

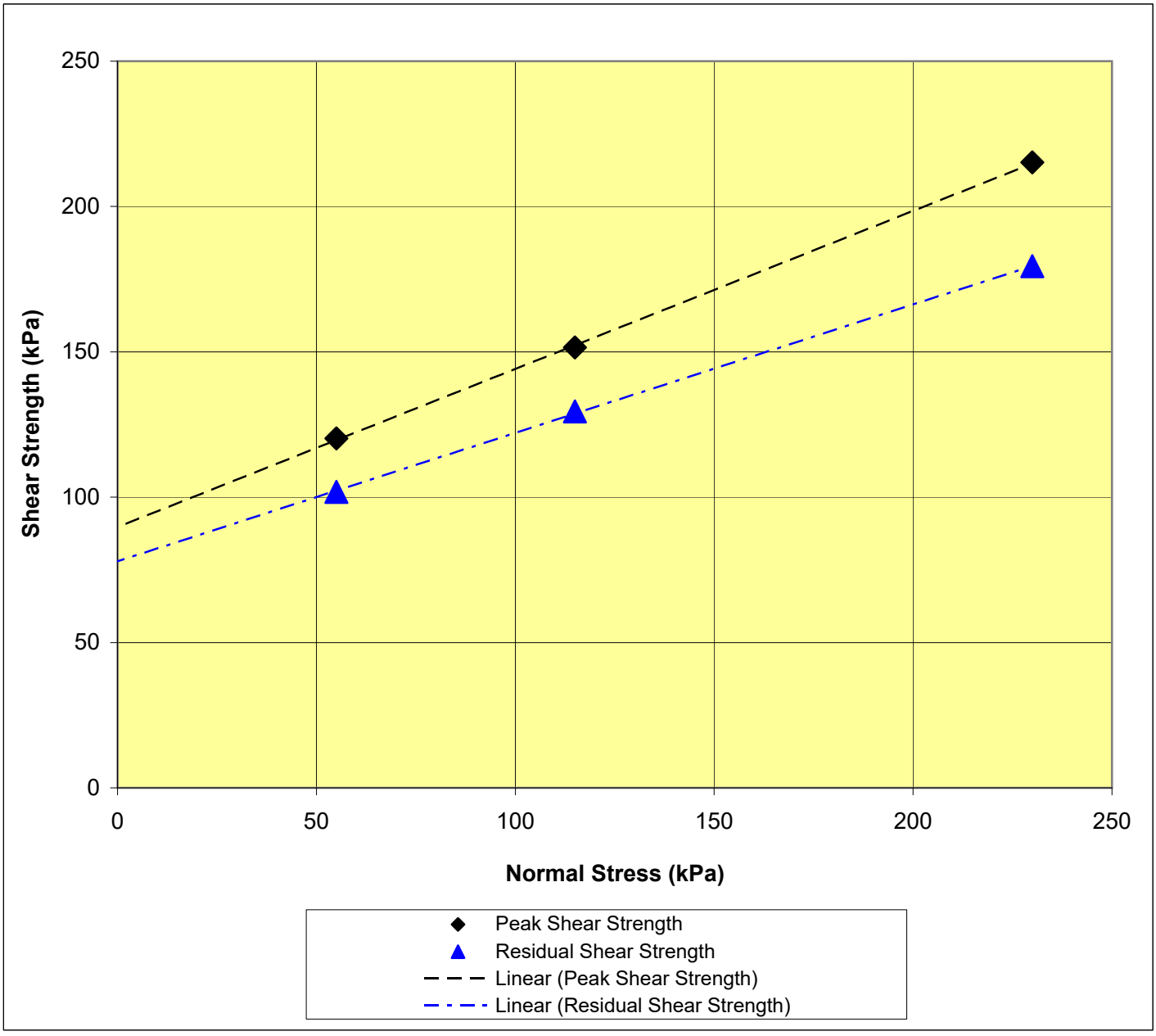




Borehole :	LD05
Sample :	C
Depth :	9.20

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS

Test based on "International Society For Rock Mechanics - Suggested Methods"



Borehole :	LD05
Sample :	C
Depth :	9.20

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

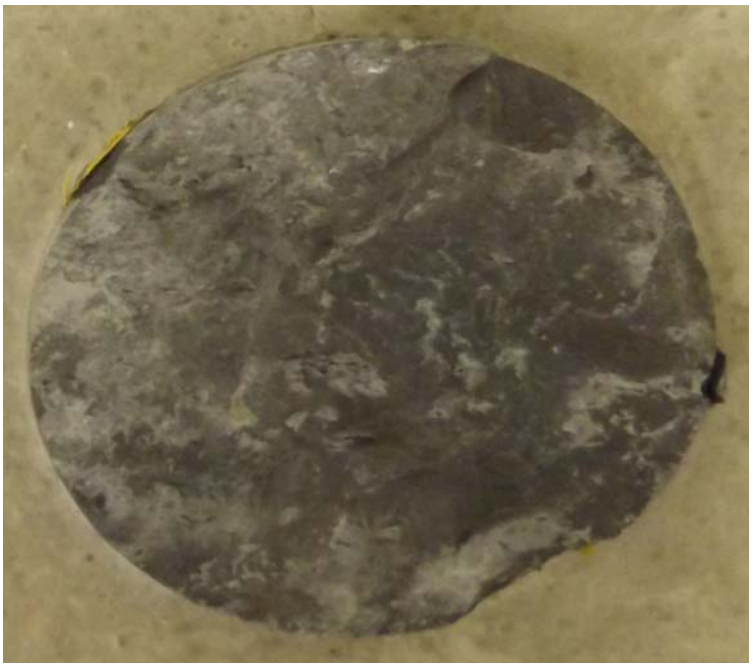
UPPER SURFACE BEFORE TEST

LOWER SURFACE BEFORE TEST

Borehole	LD05
Sample :	C
Depth :	9.20

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE AFTER TEST



LOWER SURFACE AFTER TEST

Borehole	LD05
Sample :	C
Depth :	9.20

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

SAMPLE DETAILS		
Borehole		LD07
Sample Type		C
Depth	(m)	1.90
Type Of Discontinuity		Existing
Moisture Condition Used During Test		As Received
Initial Sample Shape		Cylindrical Core
Date Of Sampling		Not Supplied
Date Of Test		13/10/2017
Number Of Specimens Tested		1
Type Of Encapsulating Material		Gypsum Plaster

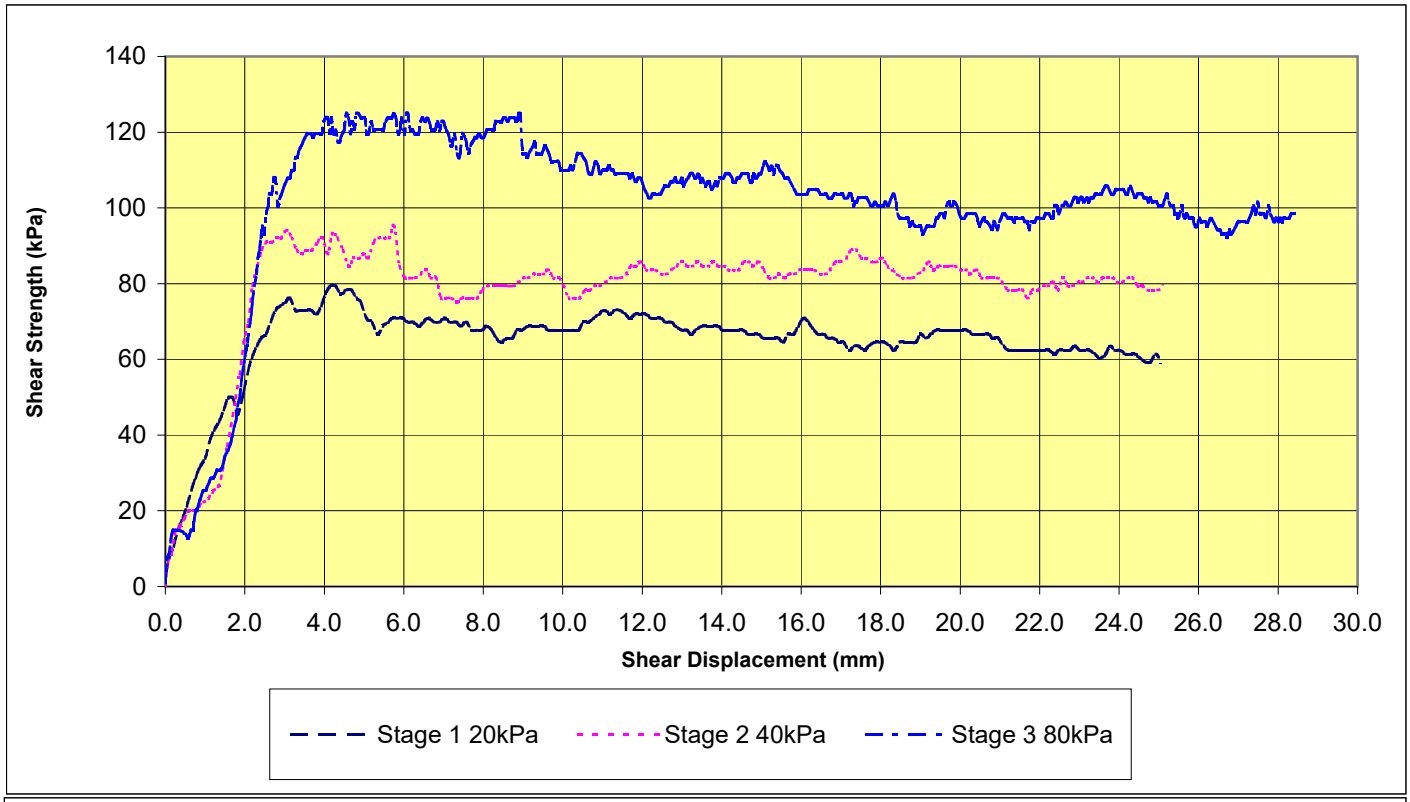
LOADING DETAILS		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Normal Stress	(kPa)	20	40	80	-	-
Shear Stress	(kPa)	79	95	125	-	-
Residual Stress	(kPa)	64	80	100	-	-
Normal Displacement	(mm)	0.21	-0.09	-0.71	-	-
Shear Displacement	(mm)	4.15	5.76	4.55	-	-

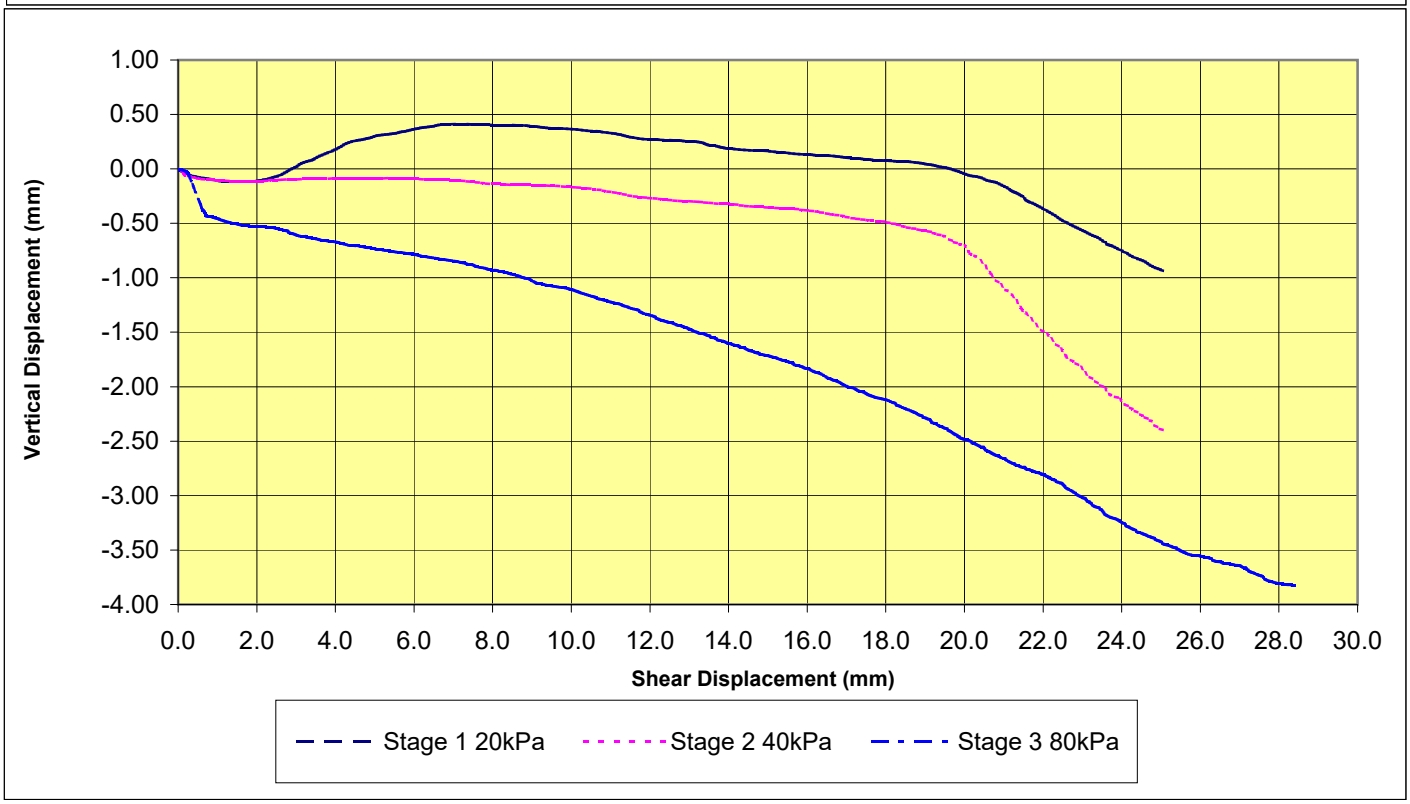
FRICTION ANGLE		
Peak Stress	(°)	37.1
Residual Stress	(°)	30.3

COHESION		
Peak Stress	(kPa)	64.5
Residual Stress	(kPa)	53.9

COMMENTS

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

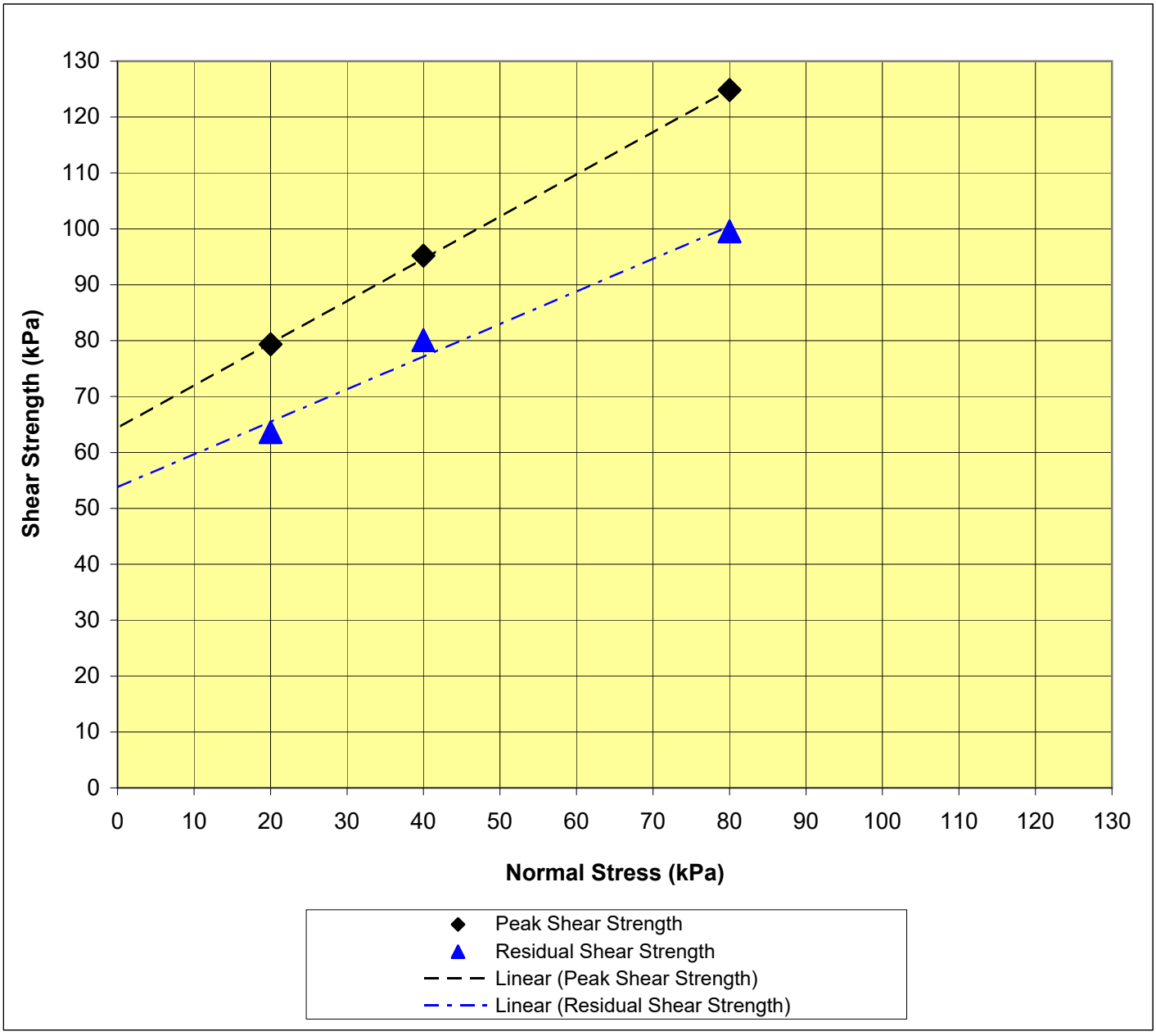




Borehole :	LD07
Sample :	C
Depth :	1.90

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS

Test based on "International Society For Rock Mechanics - Suggested Methods"



Borehole :	LD07
Sample :	C
Depth :	1.90

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE BEFORE TEST

LOWER SURFACE BEFORE TEST

Borehole	LD07
Sample :	C
Depth :	1.90

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

UPPER SURFACE AFTER TEST

LOWER SURFACE AFTER TEST

Borehole	LD07
Sample :	C
Depth :	1.90

DIRECT SHEAR STRENGTH TEST OF ROCK SPECIMENS UNDER CONSTANT NORMAL STRESS
Test based on "International Society For Rock Mechanics - Suggested Methods"

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
L07	C	16.90	As received	D	101.60	101.60	101.60	1.28	0.12	0.17
				A	101.61	77.95	46.96	9.05	1.49	1.82
				A	101.51	76.32	45.07	12.25	2.10	2.54

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

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

Mean Is(50) - Axial tests	2.18
Mean Is(50) - Diametrical tests	0.17
Ia(50)	12.79

Tested in accordance with ISRM Standard, "Suggested Method for determining Point Load Strength"

SUMMARY OF POINT LOAD TEST RESULTS

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
LD02	C	15.70	As received	D	101.20	101.20	101.20	32.31	3.15	4.33
				A	101.26	78.94	48.33	24.62	3.95	4.85
				A	101.21	69.13	37.08	20.57	4.30	4.98

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

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

Mean Is(50) - Axial tests	4.92
Mean Is(50) - Diametrical tests	4.33
Ia(50)	1.13

Tested in accordance with ISRM Standard, "Suggested Method for determining Point Load Strength"

SUMMARY OF POINT LOAD TEST RESULTS

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
LD05	C	8.60	As received	D	101.59	101.59	101.59	35.73	3.46	4.76
				A	101.41	84.59	55.42	29.86	4.17	5.29
				A	101.43	77.88	46.97	28.15	4.64	5.66

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

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

Mean Is(50) - Axial tests	5.48
Mean Is(50) - Diametrical tests	4.76
Ia(50)	1.15

Tested in accordance with ISRM Standard, "Suggested Method for determining Point Load Strength"

SUMMARY OF POINT LOAD TEST RESULTS

BOREHOLE	SAMPLE	DEPTH (m)	MOISTURE CONTENT (%)	TYPE OF TEST * (see below)	CORE DIAMETER (mm)	EQUIVALENT DIAMETER (mm)	PLATEN SEPARATION (mm)	FAILURE LOAD (kN)	Is (MPa)	Is(50) (MPa)
LD07	C	2.50	As received	D	101.53	101.53	101.53	22.44	2.18	2.99
				I	101.78	86.91	58.29	13.22	1.75	2.24
				I	101.23	98.73	75.62	21.78	2.23	3.03

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

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

Mean Is(50) - Axial tests	-
Mean Is(50) - Diametrical tests	2.99
Ia(50)	-

Tested in accordance with ISRM Standard, "Suggested Method for determining Point Load Strength"

SUMMARY OF POINT LOAD TEST RESULTS

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Part**
Client : **Ground Investigations IRELAND**
For the attention of:

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
L04		*12.50M*	*CUT*	*Sample to soft to obtain a CUT test (SLUMPED)*

From Lee Gliddon Date 21/06/2017

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Port**
Client : **Ground Investigation Ireland**
For the attention of: **Connor**

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
L05		*14.00M*	*CUT*	*Sample to soft to obatain a CUT specimen (slumped)*

From Jason Date 11/07/2017

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Port**
Client : **Ground Investigation**
For the attention of: **Connor Finnety**

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
MO3		*1.00M*	*CUT*	*Sample slumped when being extruded (very soft)*
MO3		*3.00M*	*CUT*	*Sample slumped when being extruded (very soft)*

From Lee Gliddon Date 16/06/2017

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Port**
Client : **Ground Investigation**
For the attention of: **Connor Finnety**

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
MO3		*5.00M*	*QUT, CUT*	*Sample sof, slumped when being extruded*

From David Date 28/06/2017

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Port**
Client : **Ground Investigations IRELAND**
For the attention of:

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
M11		*11.00-11.50*	*QUT*	*Sample to soft to obtain a QUT test (SLUMPED)*
M11		*5.00*	*QUT*	*Sample to soft to obtain a QUT test (SLUMPED)*

From Lee Gliddon Date 21/06/2017

TEST AMENDMENT NOTICE

GSTL Job Ref : **35579**
Project Title: **Foynes Port**
Client : **Ground Investigations Ireland**
For the attention of: **Connor**

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
L04		***12.50M***	***SHEARBOX***	***Sample too soft to test, leaking out shearbox when consolidating and submerged with water***
M04		**13.00M**	***SHEARBOX***	

From Brendan Evans Date 12/07/2017

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 36330

Client's Reference: **6552-02-17**

Report Date: **20-09-2017**

Client **Ground Investigation Ireland**
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin

Contract Title: **Foynes Port**

For the attention of: **Fergal Mcnamara**

Date Received: **18-08-2017**

Date Commenced: **18-08-2017**

Date Completed: **20-09-2017**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - * UKAS	109
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	52
PSD Wet Sieve method 1377 : 1990 Part 2 : 9.2 - * UKAS	62
Particle Density (Gas Jar) BS 1377 : 1990 Part 2 : 8.2 - * UKAS	68
PSD: Sedimentation by pipette carried out separately 1377 : 1990 Part 2 : 9.4 - * UKAS	10
One-dimensional Consolidation 75mm or 50mm diameter specimens (5 days) 1377 : 1990 Part 5 : 3 - * UKAS	12
Natural Shear Strength by Hand Vane (3 measurements) - @ Non Accredited Test	12

Notes: **Observations and interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 36330

Test Description	Qty
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) 1377 : 1990 Part 7 : 8 - * UKAS	6
Large Shear Box 300mm Peak with 3 confining pressures includes remoulding (BS1377 : Part 7 : Clause 5 : 1990) and (Specification for Highway Works Vol.1 Clause 636 Part 2) - @ Non Accredited Test	1
CUD 100mm Consolidated undrained triaxial compression test on a Single Specimen with Multistage Loading with the measurement of pore water pressure including saturation and consolidation, test duration FOUR days. BS1377 : Part 8 : Clause 7 : 1990 - @ Non Accredited Test	2
Extra over items for test duration in excess of four days.	7
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
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GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L01		B	0.50	-		Brown fine to coarse sandy silty clayey fine to coarse GRAVEL with many cobbles.
L01		B	1.00	-		Brown fine to medium sandy SILT/CLAY.
L01		B	2.70	-		Greyish brown fine gravelly silty CLAY.
L01		B	3.10	-		Brown fine to medium sandy SILT/CLAY.
L01		B	4.00	-		Brown fine to medium sandy CLAY/SILT.
L01		B	5.00	-		Brown fine to medium sandy CLAY/SILT.
L01		B	6.00	-		Brown fine to medium sandy CLAY/SILT.
L01		B	7.00	-		Brown fine to medium sandy CLAY/SILT.
L01		B	8.00	-		Brown fine to medium sandy CLAY/SILT.
L01		B	9.00	-		Brown fine to coarse sandy CLAY/SILT.
L01		B	10.00	-		Brown fine to medium sandy SILT/CLAY.
L01		B	11.00	-		Brown fine to medium sandy SILT/CLAY.
L01		B	12.00	-		Greyish brown fine gravelly silty CLAY.
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L01		B	0.50	-		8.1					
L01		B	1.00	-		18	54	22	32	99	CH High Plasticity
L01		B	2.70	-		8.3					
L01		B	3.10	-		33		NP		99	
L01		B	4.00	-		30	41	28	13	99	MI Intermediate Plasticity
L01		B	5.00	-		31					
L01		B	6.00	-		31	49	28	21	99	MI Intermediate Plasticity
L01		B	7.00	-		35					
L01		B	8.00	-		44	55	33	22	99	MH High Plasticity
L01		B	9.00	-		34					
L01		B	10.00	-		34	52	25	27	99	CH High Plasticity
L01		B	11.00	-		38					
L01		B	12.00	-		44					
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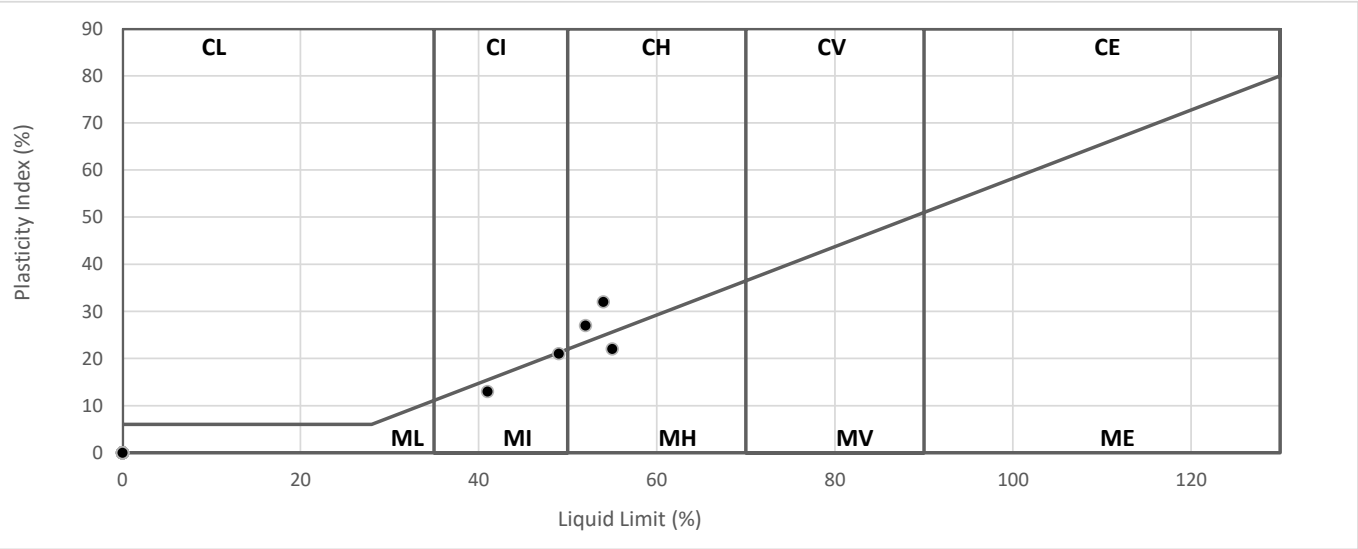
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	19-09-17	Emma Sharp	
DB	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L02		B	0.50	-		Brown gravelly sandy silty CLAY.
L02		B	1.00	-		Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.
L02		B	2.00	-		Brown gravelly sandy silty CLAY.
L02		B	2.60	-		Brown slightly silty fine to coarse sandy fine to coarse GRAVEL.
L02		B	3.00	-		Brown gravelly sandy silty CLAY.
L02		B	3.30	-		Grey fine to medium gravely silty clayey fine to coarse SAND.
L02		B	4.00	-		Brown silty CLAY
L02		B	5.00	-		Grey fine to medium sandy SILT/CLAY.
L02		B	6.00	-		Grey silty CLAY.
L02		B	7.00	-		Grey fine to medium sandy SILT/CLAY.
L02		B	8.00	-		Grey silty CLAY.
L02		B	9.00	-		Grey fine sandy CLAY/SILT.
L02		B	10.00	-		Grey silty CLAY.
L02		B	11.00	-		Grey fine sandy SILT/CLAY.
L02		B	12.00	-		Grey fine sandy CLAY/SILT.
L02		B	13.00	-		Grey silty CLAY.
L02		B	14.00	-		Brown fine to medium sandy CLAY/SILT.
L02		B	15.00	-		Brown silty CLAY
L02		B	16.00	-		Grey fine sandy SILT/CLAY.
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L02		B	0.50	-		13					
L02		B	1.00	-		13	36	17	19	40	CI Intermediate Plasticity
L02		B	2.00	-		11					
L02		B	2.60	-		6.5		NP		8	
L02		B	3.00	-		22					
L02		B	3.30	-		32	39	25	14	76	CI Intermediate Plasticity
L02		B	4.00	-		27					
L02		B	5.00	-		31		NP		99	
L02		B	6.00	-		27					
L02		B	7.00	-		34	49	27	22	99	CI Intermediate Plasticity
L02		B	8.00	-		42					
L02		B	9.00	-		35	46	28	18	100	MI Intermediate Plasticity
L02		B	10.00	-		33					
L02		B	11.00	-		38	50	28	22	99	CI/H Inter/High Plasticity
L02		B	12.00	-		37	57	33	24	99	MH High Plasticity
L02		B	13.00	-		36					
L02		B	14.00	-		40	55	30	25	99	MH High Plasticity
L02		B	15.00	-		36					
L02		B	16.00	-		40	43	24	19	99	CI Intermediate Plasticity
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
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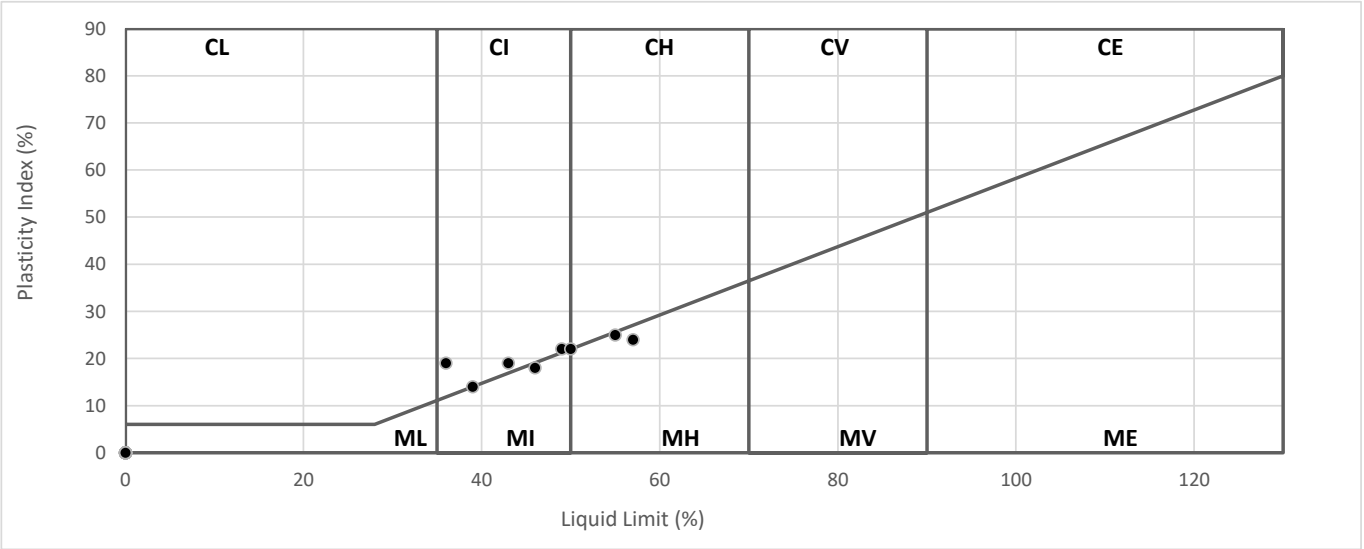

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UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L03		B	1.00	-		Brown fine to medium sandy gravelly silty CLAY.
L03		B	3.00	-		Dark grey clayey silty GRAVEL.
L03		B	5.00	-		Grey fine to coarse sandy SILT/CLAY.
L03		B	6.00	-		Brown fine to coarse sandy SILT/CLAY.
L03		B	7.00	-		Grey silty CLAY.
L03		B	8.00	-		Brown fine to coarse sandy SILT/CLAY.
L03		B	9.00	-		Grey silty CLAY.
L03		B	10.00	-		Brown fine to coarse sandy CLAY/SILT.
L03		B	11.00	-		Grey silty CLAY.
L03		B	12.00	-		Brown fine slightly sandy CLAY/SILT
L03		B	13.00	-		Grey silty CLAY.
L03		B	14.00	-		Grey fine to medium sandy CLAY/SILT
L03		B	15.00	-		Grey silty CLAY.
L03		B	17.00	-		Grey silty CLAY.
L03		B	18.00	-		Brown fine to coarse slightly sandy silty fine to coarse GRAVEL.
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				-		

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L03		B	1.00	-		14					
L03		B	3.00	-		14					
L03		B	5.00	-		46	50	25	25	98	CI/H Inter/High Plasticity
L03		B	6.00	-		31	52	26	26	99	CH High Plasticity
L03		B	7.00	-		28					
L03		B	8.00	-		33	38	24	14	100	CI Intermediate Plasticity
L03		B	9.00	-		37					
L03		B	10.00	-		34	47	28	19	99	MI Intermediate Plasticity
L03		B	11.00	-		35					
L03		B	12.00	-		34	53	31	22	100	MH High Plasticity
L03		B	13.00	-		37					
L03		B	14.00	-		35	59	37	22	99	MH High Plasticity
L03		B	15.00	-		42					
L03		B	17.00	-		54					
L03		B	18.00	-		11		NP		8	
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
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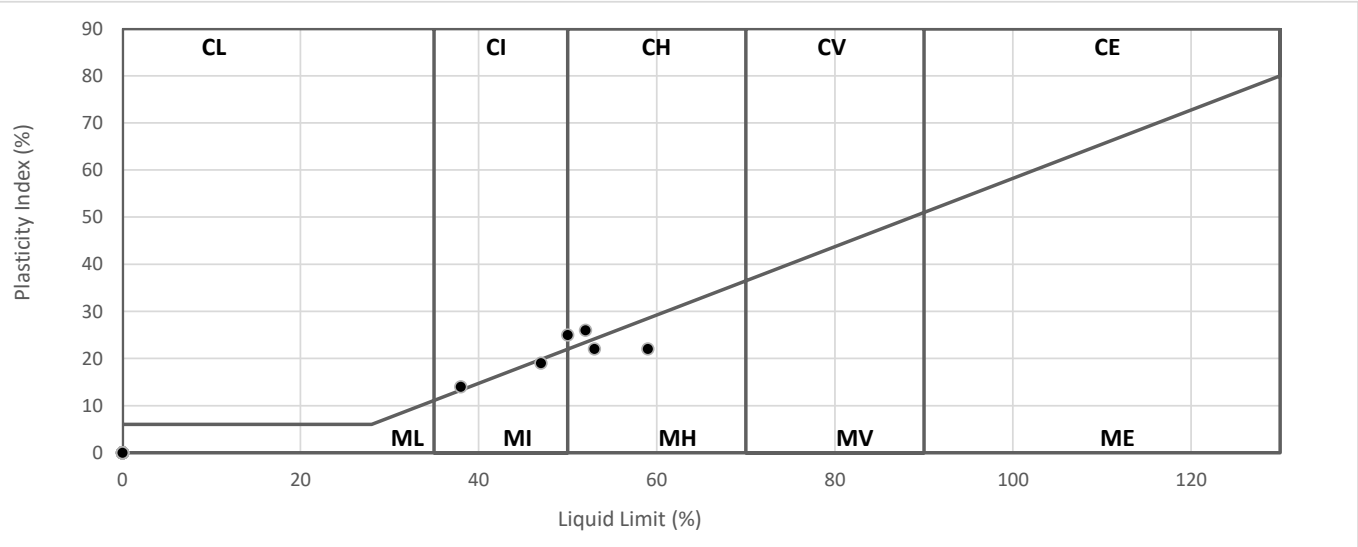

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UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L06		B	9.00	-		Grey fine to coarse sandy fine to coarse gravelly CLAY/SILT with many cobbles.
L06		B	10.00	-		Greyish brown gravelly silty CLAY
L06		B	11.00	-		Brown fine to medium gravelly fine to coarse sandy CLAY/SILT.
L06		B	12.00	-		Greyish brown gravelly silty CLAY
L06		B	13.00	-		Brown fine to coarse sandy SILT/CLAY.
L06		B	14.00	-		Greyish brown silty CLAY
L06		B	15.00	-		Brown fine to medium sandy CLAY/SILT.
L06		B	16.00	-		Greyish brown silty CLAY
L06		B	17.00	-		Brown fine to medium slightly sandy CLAY/SILT.
L06		B	18.00	-		Greyish brown silty CLAY
L06		B	19.00	-		Brown fine to medium slightly sandy CLAY/SILT.
L06		B	20.00	-		Greyish brown silty CLAY
L06		B	21.00	-		Brown fine to medium slightly sandy CLAY/SILT.
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Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L06		B	9.00	-		32	45	31	14	32	MI Intermediate Plasticity
L06		B	10.00	-		35					
L06		B	11.00	-		36	47	31	16	89	MI Intermediate Plasticity
L06		B	12.00	-		32					
L06		B	13.00	-		35	44	26	18	98	CI Intermediate Plasticity
L06		B	14.00	-		33					
L06		B	15.00	-		34	39	26	13	99	MI Intermediate Plasticity
L06		B	16.00	-		39					
L06		B	17.00	-		35	45	30	15	99	MI Intermediate Plasticity
L06		B	18.00	-		41					
L06		B	19.00	-		39	45	27	18	99	MI Intermediate Plasticity
L06		B	20.00	-		44					
L06		B	21.00	-		47	56	35	21	99	MH High Plasticity
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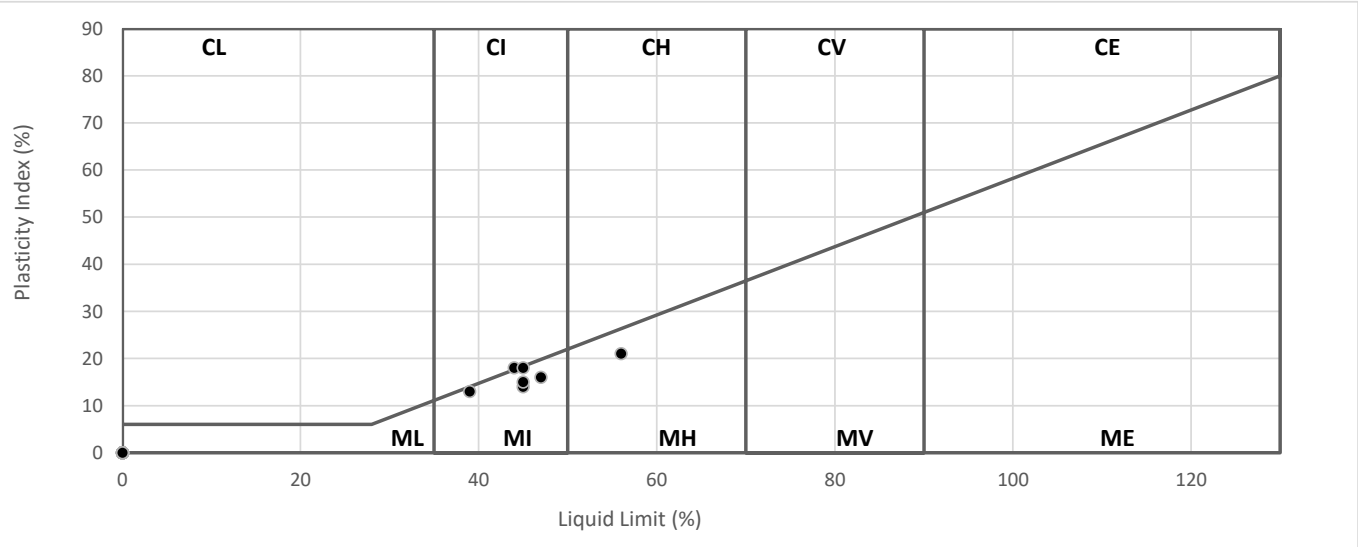

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GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L07		B	0.00	-		Brown silty CLAY.
L07		B	0.50	-		Brown fine to medium sandy CLAY/SILT.
L07		B	1.50	-		Brown silty CLAY.
L07		B	2.50	-		Brown fine slightly gravelly fine to coarse sandy CLAY/SILT.
L07		B	4.50	-		Brown silty CLAY.
L07		B	5.50	-		Brown fine to coarse sandy SILT/CLAY.
L07		B	7.00	-		Brown fine to coarse sandy SILT/CLAY.
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GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L07		B	0.00	-		64					
L07		B	0.50	-		66	69	38	31	99	MH High Plasticity
L07		B	1.50	-		70					
L07		B	2.50	-		74	81	51	30	98	MV Very High Plasticity
L07		B	4.50	-		54					
L07		B	5.50	-		45	52	27	25	98	CH High Plasticity
L07		B	7.00	-		25					
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
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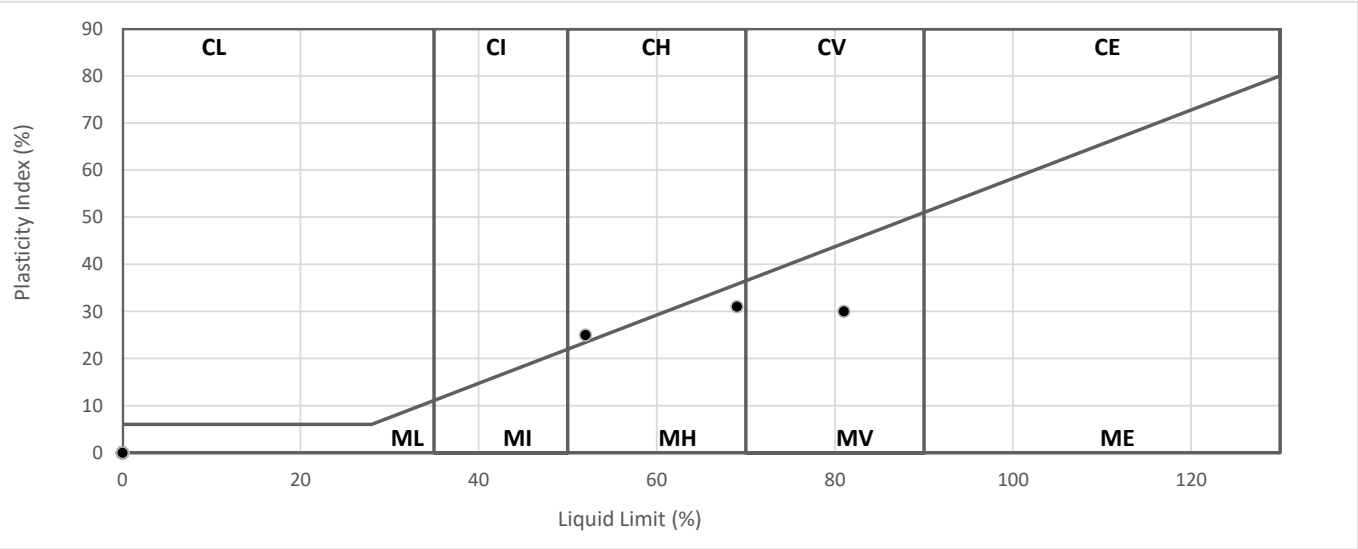

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UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
L08		B	0.00	-		Greyish brown sity CLAY.
L08		B	0.50	-		Grey fine to coarse sandy SILT/CLAY.
L08		B	1.50	-		Greyish brown sity CLAY.
L08		B	4.50	-		Greyish brown fine to gravelly silty CLAY.
L08		B	6.80	-		Greyish brown clayey sandy GRAVEL.
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Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
L08		B	0.00	-		65					
L08		B	0.50	-		55	66	31	35	99	CH High Plasticity
L08		B	1.50	-		43					
L08		B	4.50	-		23					
L08		B	6.80	-		5.6					
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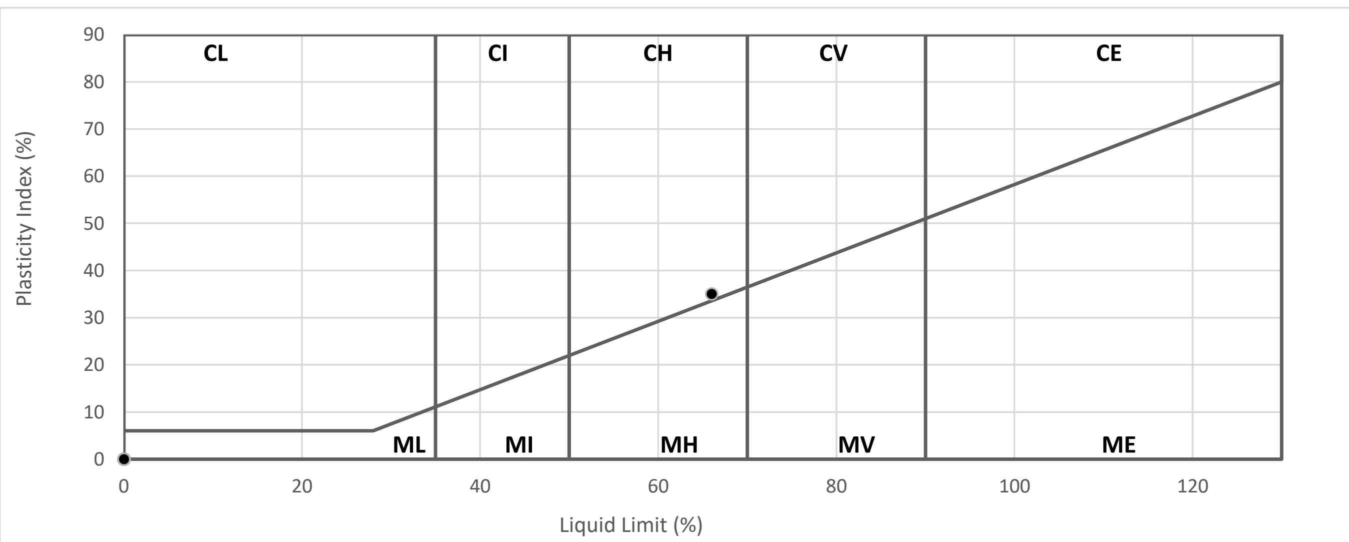

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UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
LD01		B	1.00	-		Brown silty CLAY.
LD01		B	2.00	-		Brown slightly fine to medium gravelly slightly fine to coarse sandy CLAY/SILT.
LD01		B	3.00	-		Brown silty CLAY.
LD01		B	4.00	-		Brown slightly fine gravelly SILT/CLAY.
LD01		B	6.00	-		Brown slightly fine sandy SILT/CLAY.
LD01		B	8.00	-		Grey fine to coasre sandy silty clayey fine to coarse GRAVEL with many cobbles.
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
LD01		B	1.00	-		38					
LD01		B	2.00	-		46	60	37	23	95	MH High Plasticity
LD01		B	3.00	-		36					
LD01		B	4.00	-		27	51	24	27	99	CH High Plasticity
LD01		B	6.00	-		29		NP		98	
LD01		B	8.00	-		ey fine to c					
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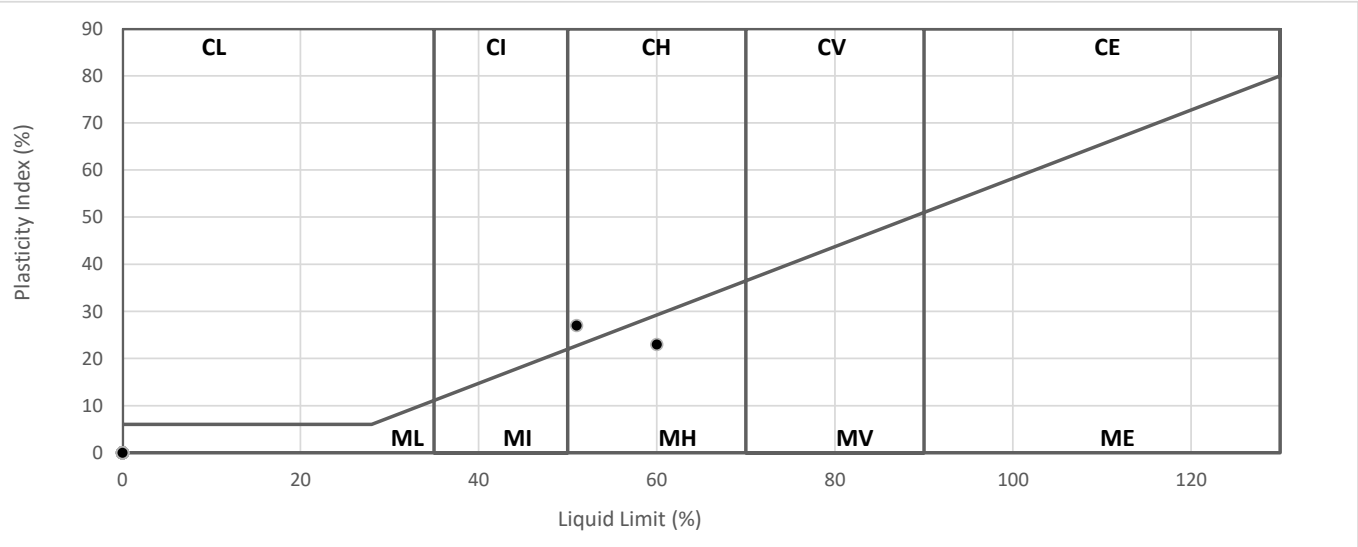
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	19-09-17	Emma Sharp	
DB	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
LD02		B	1.00	-		Brown fine to medium slightly sandy SILT/CLAY.
LD02		B	2.00	-		Brown sandy silty CLAY.
LD02		B	3.00	-		Brown fine to medium sandy CLAY/SILT.
LD02		B	4.00	-		Greyish brown clsyey SILT.
LD02		B	5.00	-		Brown fine to medium sandy CLAY/SILT.
LD02		B	6.00	-		Grey silty CLAY.
LD02		B	7.00	-		Brown fine to medium sandy CLAY/SILT.
LD02		B	8.00	-		Grey silty CLAY.
LD02		B	9.00	-		Brown fine to medium sandy CLAY/SILT.
LD02		B	10.00	-		Brown fine to medium sandy SILTCLAY.
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
LD02		B	1.00	-		31	56	26	30	99	CH High Plasticity
LD02		B	2.00	-		33					
LD02		B	3.00	-		36	49	30	19	100	MI Intermediate Plasticity
LD02		B	4.00	-		33					
LD02		B	5.00	-		34	46	28	18	99	MI Intermediate Plasticity
LD02		B	6.00	-		39					
LD02		B	7.00	-		37	45	28	17	100	MI Intermediate Plasticity
LD02		B	8.00	-		40					
LD02		B	9.00	-		39	53	30	23	97	MH High Plasticity
LD02		B	10.00	-		136	139	49	90	99	CE Extremely High Plasticity
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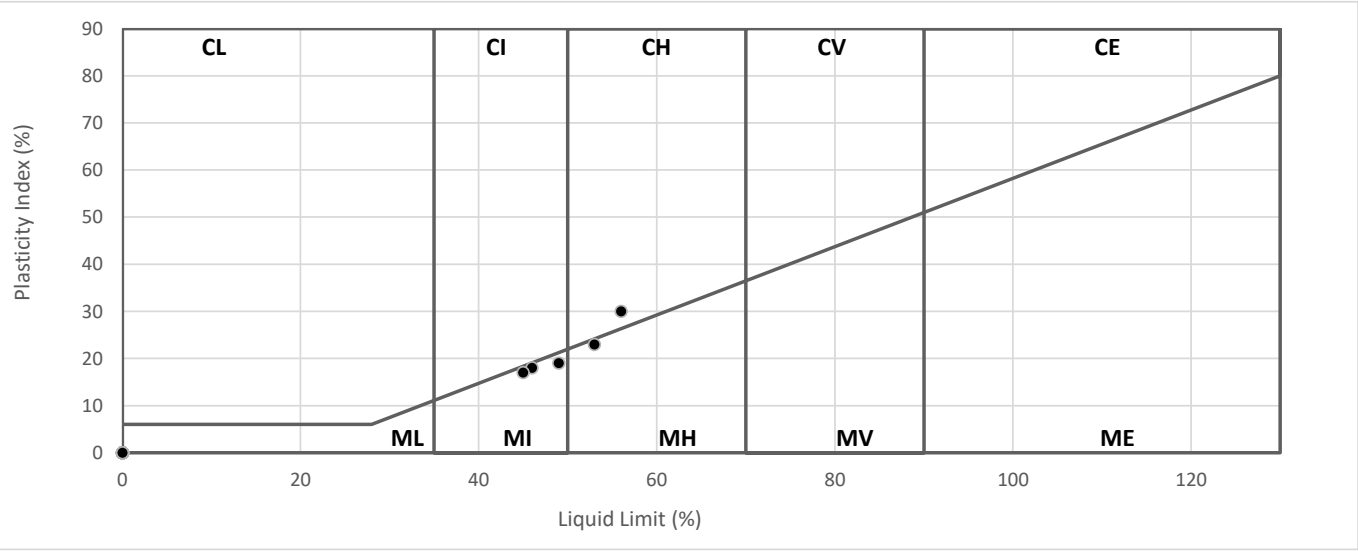
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	19-09-17	Emma Sharp	
DB	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
LD04		B	1.00	-		Brown fine to coarse sandy fine to coarse gravelly SILT/CLAY.
LD04		B	3.50	-		Brown fine to coarse slightly sandy fine to coarse gravelly SILT/CLAY.
LD04		B	4.50	-		Brown fine to coarse sandy gravelly silty CLAY.
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
LD04		B	1.00	-		29	44	26	18	51	CI Intermediate Plasticity
LD04		B	3.50	-		34	45	18	27	83	CI Intermediate Plasticity
LD04		B	4.50	-		30					
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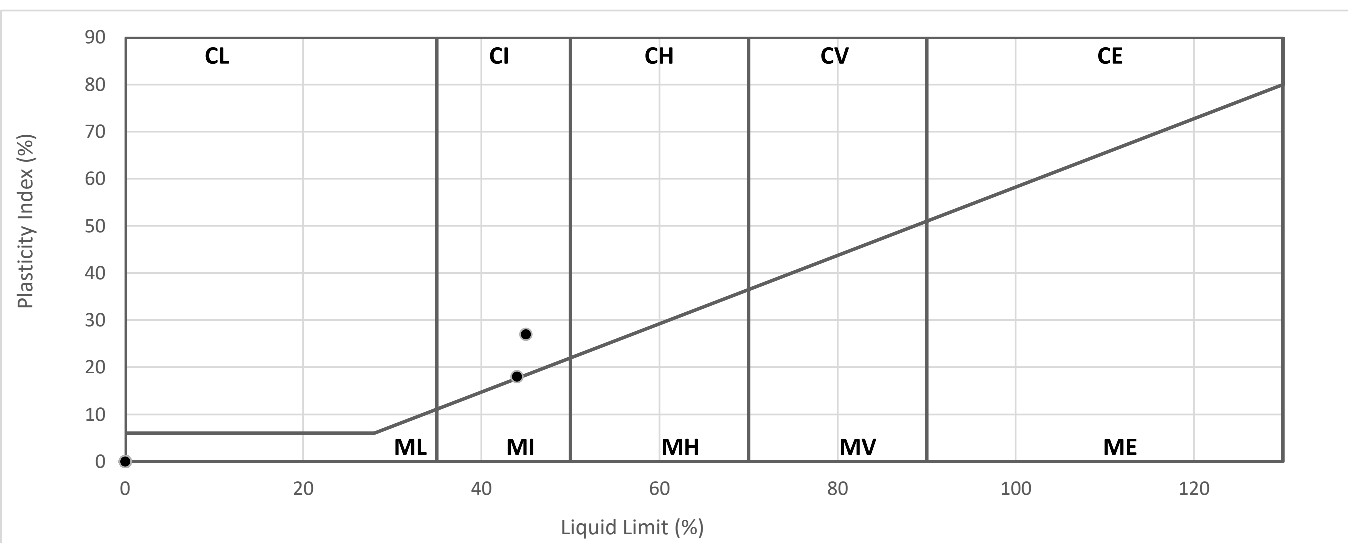
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	19-09-17	Emma Sharp	
DB	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
LD06		B	1.50	-		Brown fine to coarse sandy silty clayey fine to coarse GRAVEL.
LD06		B	2.50	-		Grey slightly silty fine to coarse sandy fine to coarse GRAVEL with many cobbles.
LD06		B	3.40	-		Grey fine to coarse sandy silty clayey fine to coarse GRAVEL.
				-		
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Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)

Contract Number	36330	
Site Name	Foynes Port	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
LD06		B	1.50	-		16	46	25	21	51	CI Intermediate Plasticity
LD06		B	2.50	-		8.1				14	
LD06		B	3.40	-		10		NP	#VALUE!	14	#VALUE!
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				-							
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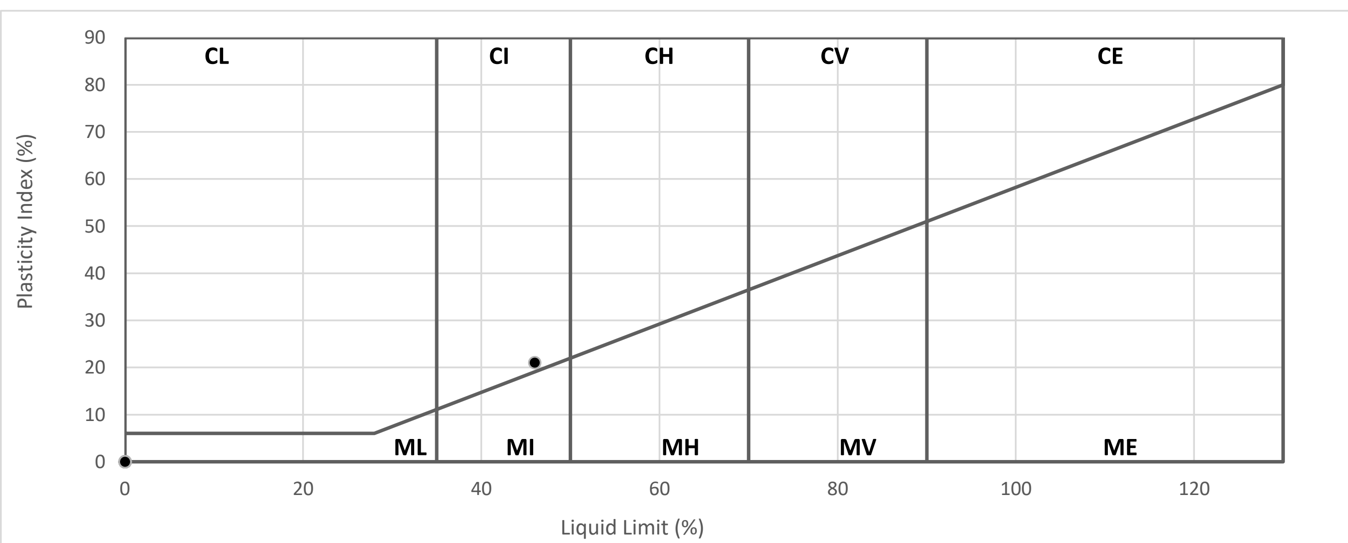
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	19-09-17	Emma Sharp	
DB	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number	36330	
Site Name	Foynes Port	

Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
M09		B	0.50	-		Greyish brown silty CLAY.
M09		B	2.00	-		Grey fine to coarse sandy CLAY/SILT.
M09		B	3.00	-		Greyish brown silty CLAY.
M09		B	4.00	-		Grey fine to coarse sandy CLAY/SILT.
M09		B	5.00	-		Grey fine to coarse sandy CLAY/SILT.
M09		B	6.50	-		Grey fine to medium sandy CLAY/SILT.
M09		B	6.50	-		Greyish brown gravelly silty CLAY.
M09		B	8.50	-		Grey fine to coarse sandy CLAY/SILT.
M09		B	10.00	-		Grey fine to coarse sandy CLAY/SILT.
M09		B	11.50	-		Brown gravelly silty CLAY.
M09		B	13.00	-		Brown silty CLAY.
M09		B	15.50	-		Brown sandy GRAVEL.
M09		B	18.20	-		Grey GRAVEL.
M09		B	20.20	-		Grey GRAVEL.
M09		B	26.00	-		Brown clayey GRAVEL.
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**36330**	
Site Name	**Foynes Port**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
M09		B	0.50	-		59					
M09		B	2.00	-		58	66	45	21	99	MH High Plasticity
M09		B	3.00	-		53					
M09		B	4.00	-		59	65	40	25	97	MH High Plasticity
M09		B	5.00	-		54					
M09		B	6.50	-		59	70	35	35	98	MH/V High/HighPlasticity
M09		B	6.50	-		52					
M09		B	8.50	-		54	63	40	23	98	MH High Plasticity
M09		B	10.00	-		40	48	30	18	97	MI Intermediate Plasticity
M09		B	11.50	-		50					
M09		B	13.00	-		58					
M09		B	15.50	-		5.2					
M09		B	18.20	-		0.5					
M09		B	20.20	-		1.4					
M09		B	26.00	-		4.8					
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				-							
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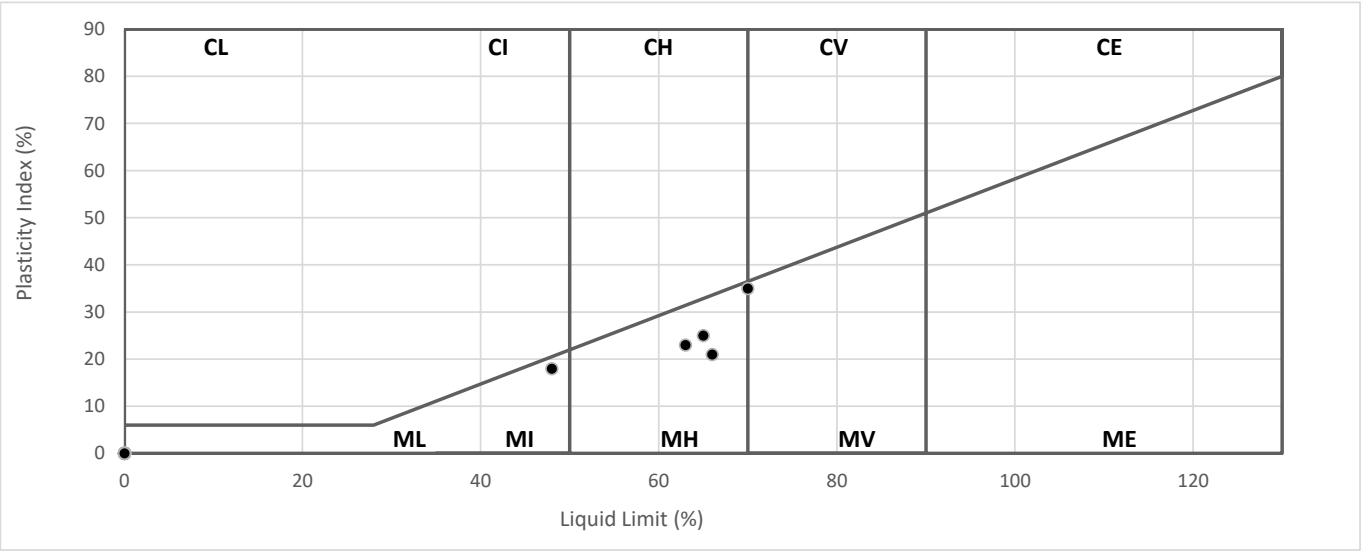
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

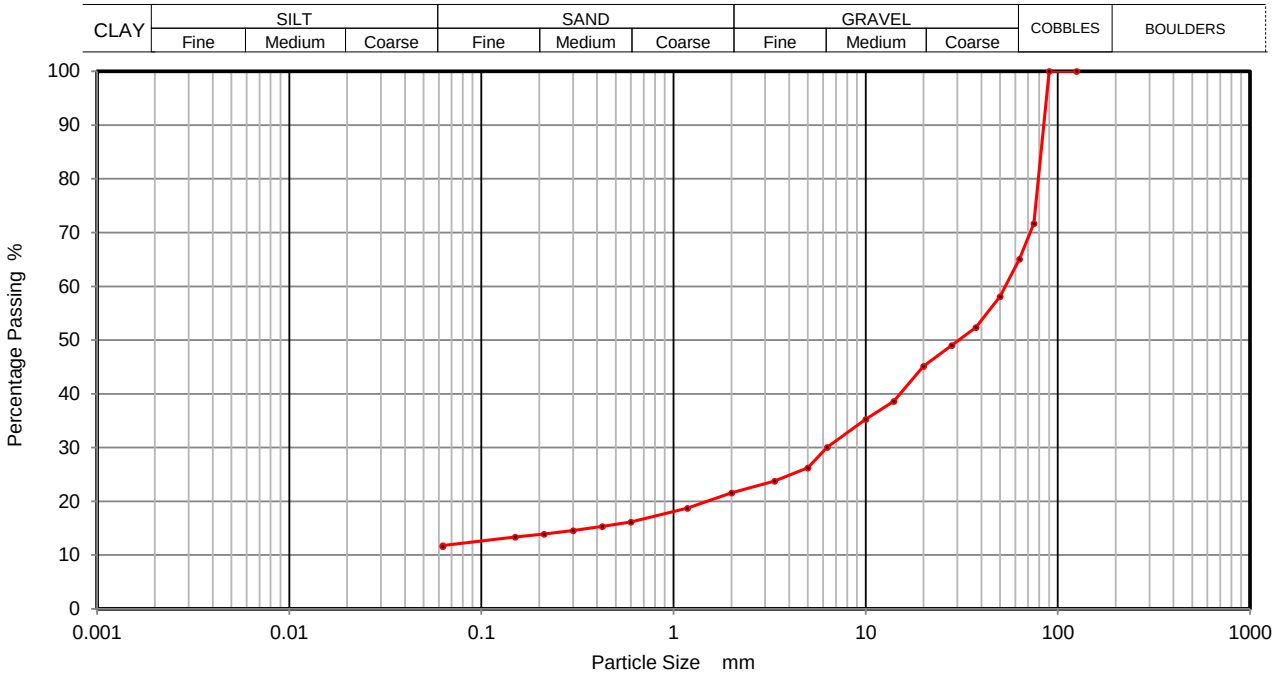
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	21-09-17	Emma Sharp	
DB	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL with many cobbles.	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	72	0.0019	
63	65		
50	58		
37.5	52		
28	49		
20	45		
14	39		
10	35		
6.3	30		
5	26		
3.35	24		
2	22		
1.18	19		
0.6	16		
0.425	15		
0.3	15		
0.212	14		
0.15	13		
0.063	12		

Sample Proportions	% dry mass
Cobbles	35
Gravel	43
Sand	10
Silt and Clay	12

Grading Analysis	
Uniformity Coefficient	

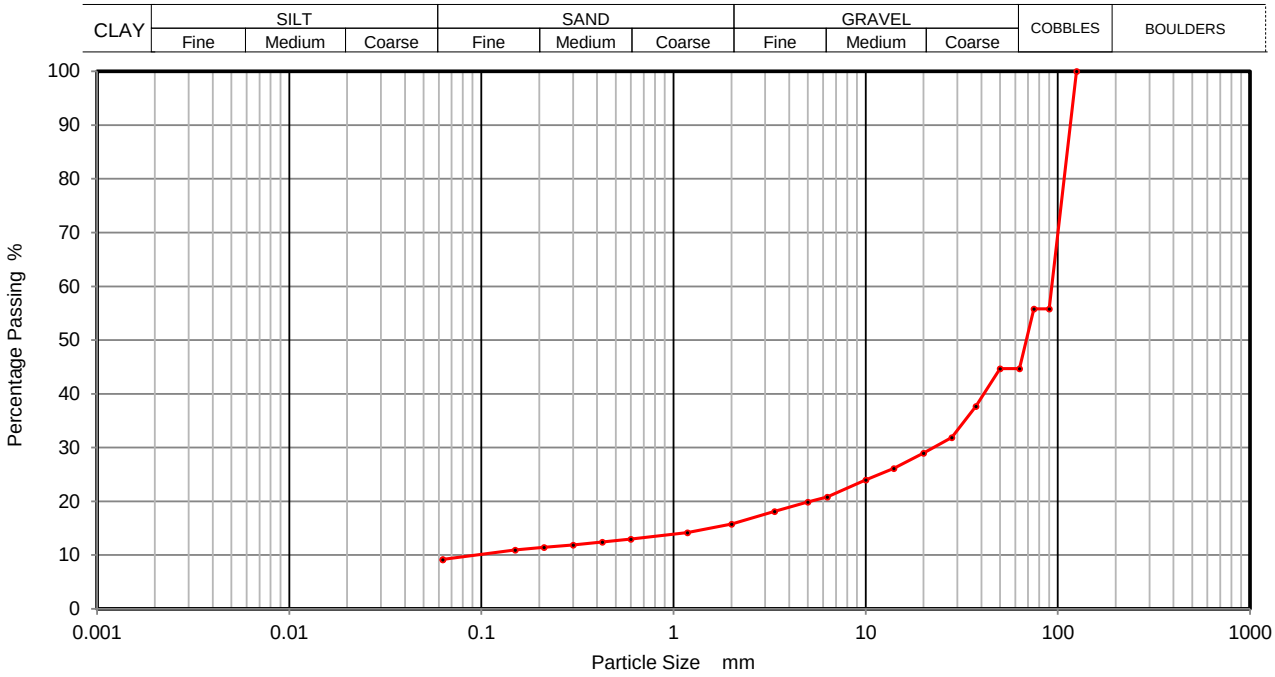
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse slightly sandy silty fine to coarse GRAVEL with many cobbles.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	56	0.0060	
75	56	0.0019	
63	45		
50	45		
37.5	38		
28	32		
20	29		
14	26		
10	24		
6.3	21		
5	20		
3.35	18		
2	16		
1.18	14		
0.6	13		
0.425	12		
0.3	12		
0.212	11		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	55
Gravel	29
Sand	7
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

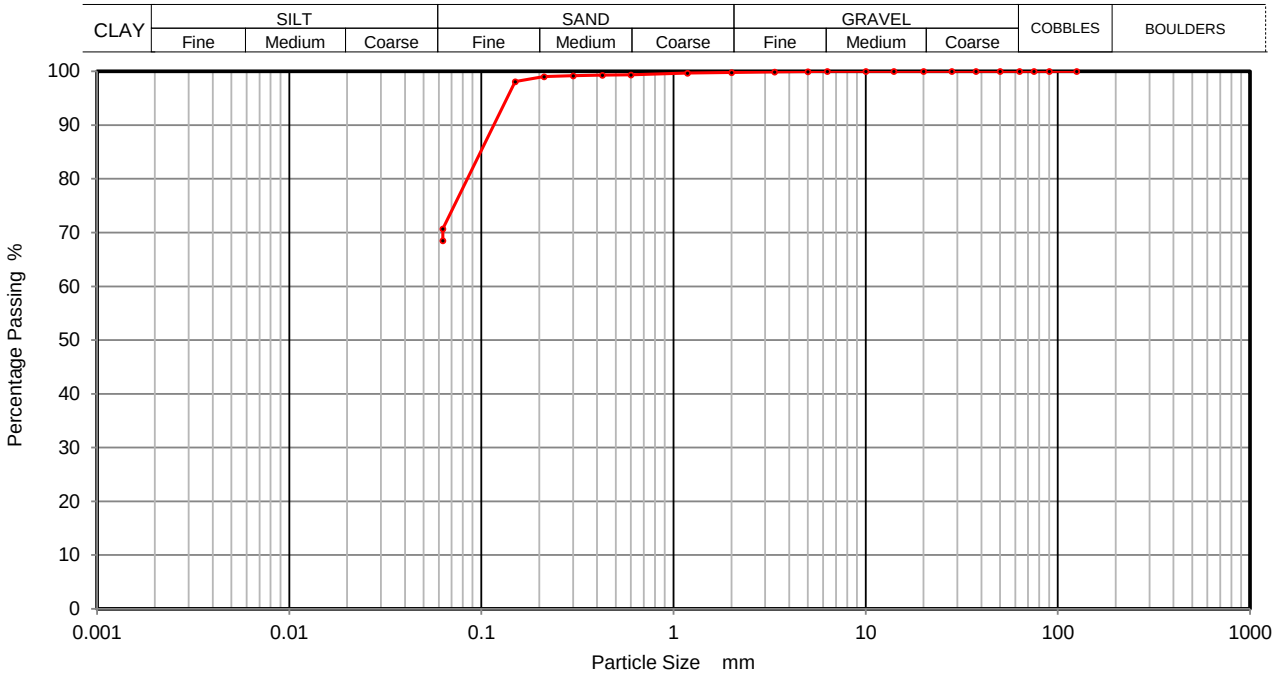
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY.	Depth Top	3.10
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	71		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	29
Silt and Clay	71

Grading Analysis	
Uniformity Coefficient	

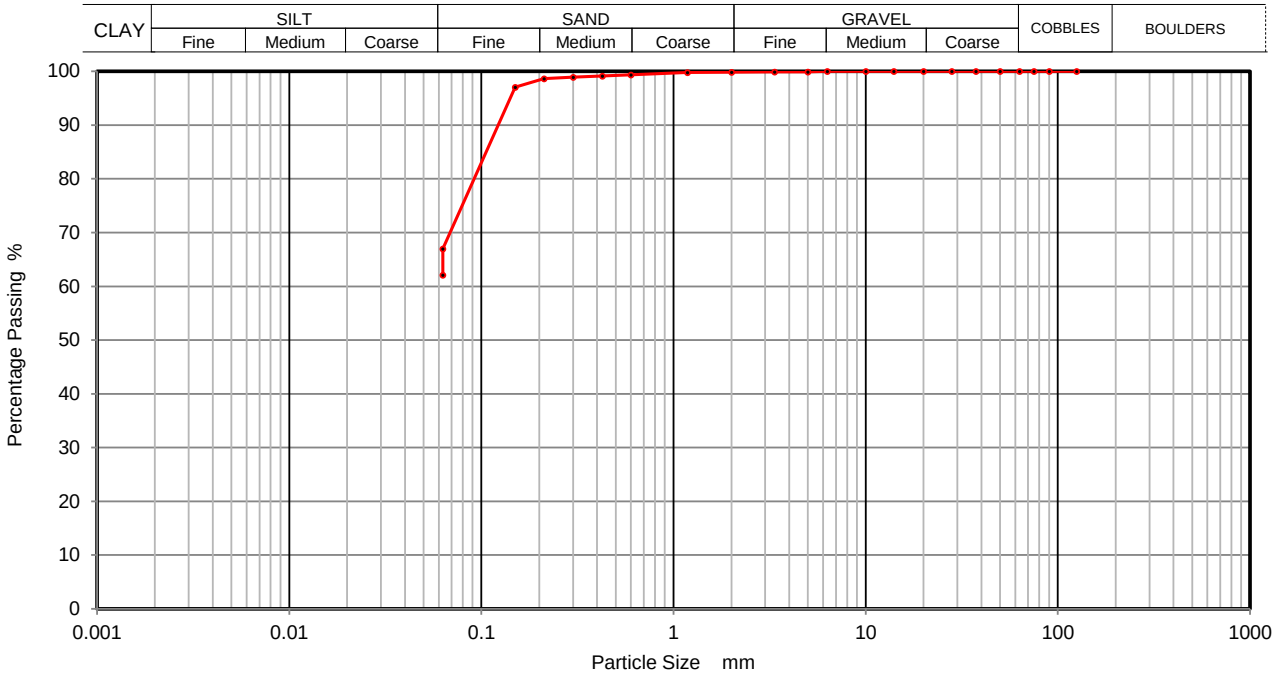
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	5.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	97		
0.063	67		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	33
Silt and Clay	67

Grading Analysis	
Uniformity Coefficient	

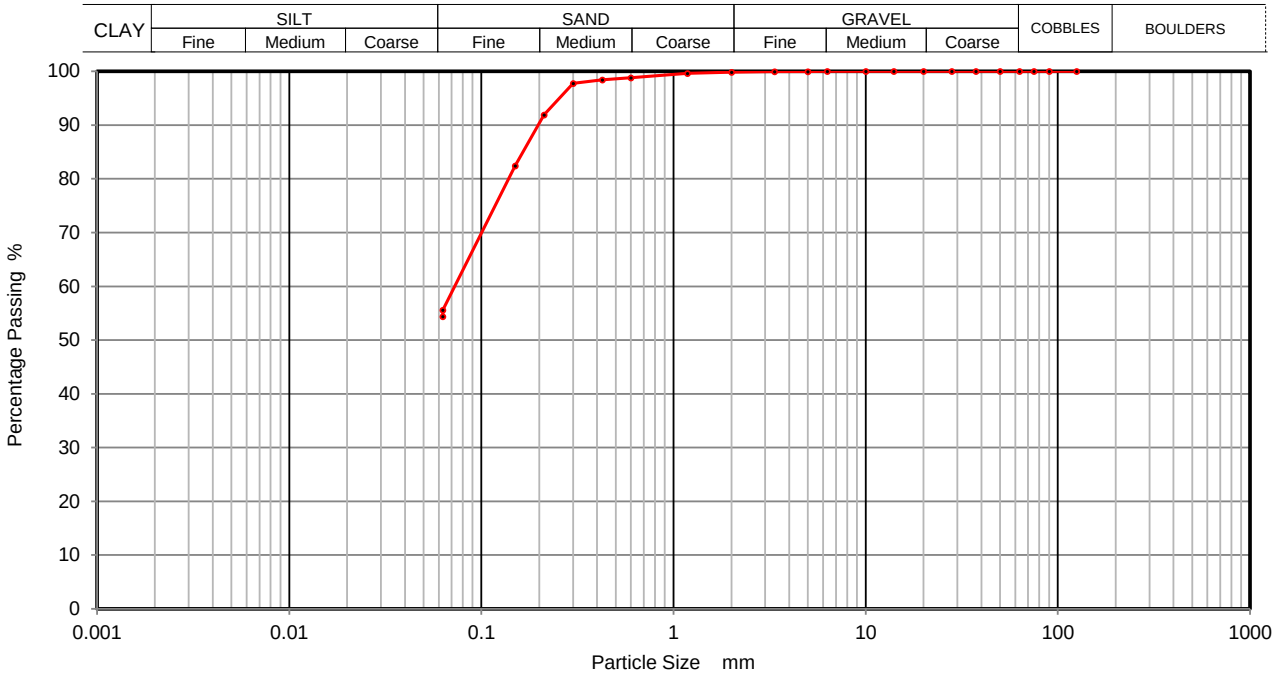
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy CLAY/SILT.	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	92		
0.15	82		
0.063	56		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	44
Silt and Clay	56

Grading Analysis	
Uniformity Coefficient	

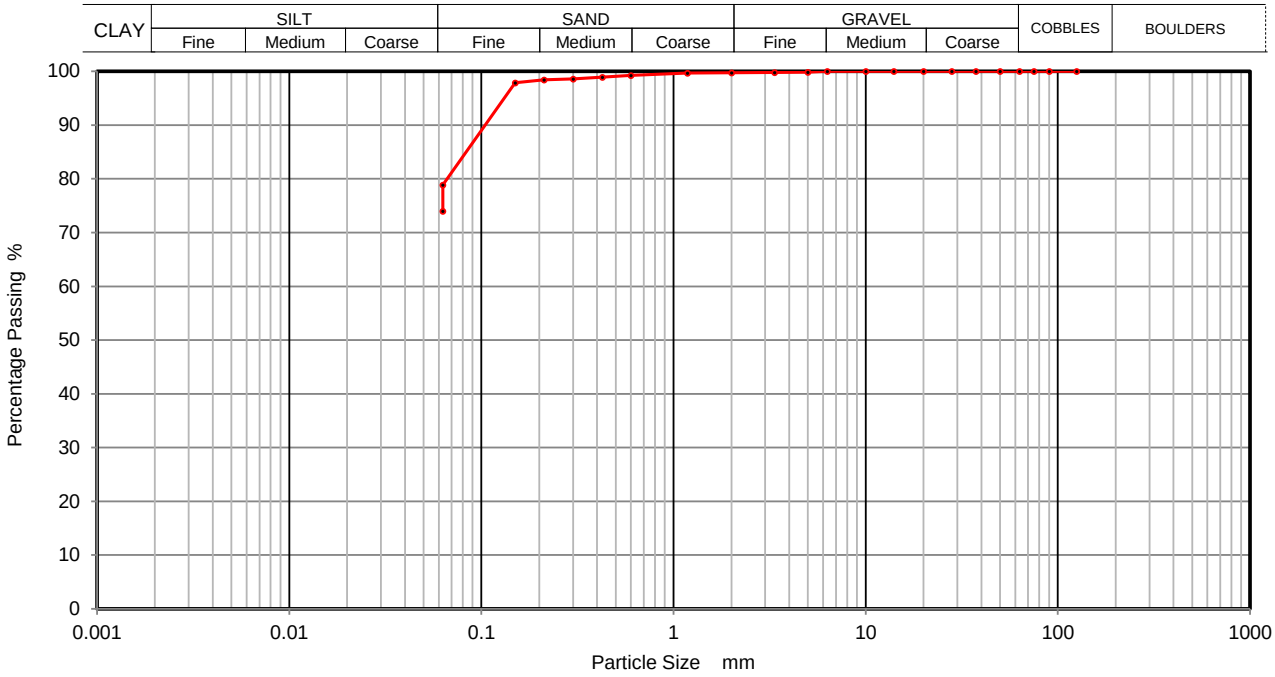
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy CLAY/SILT.	Depth Top	9.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	21
Silt and Clay	79

Grading Analysis	
Uniformity Coefficient	

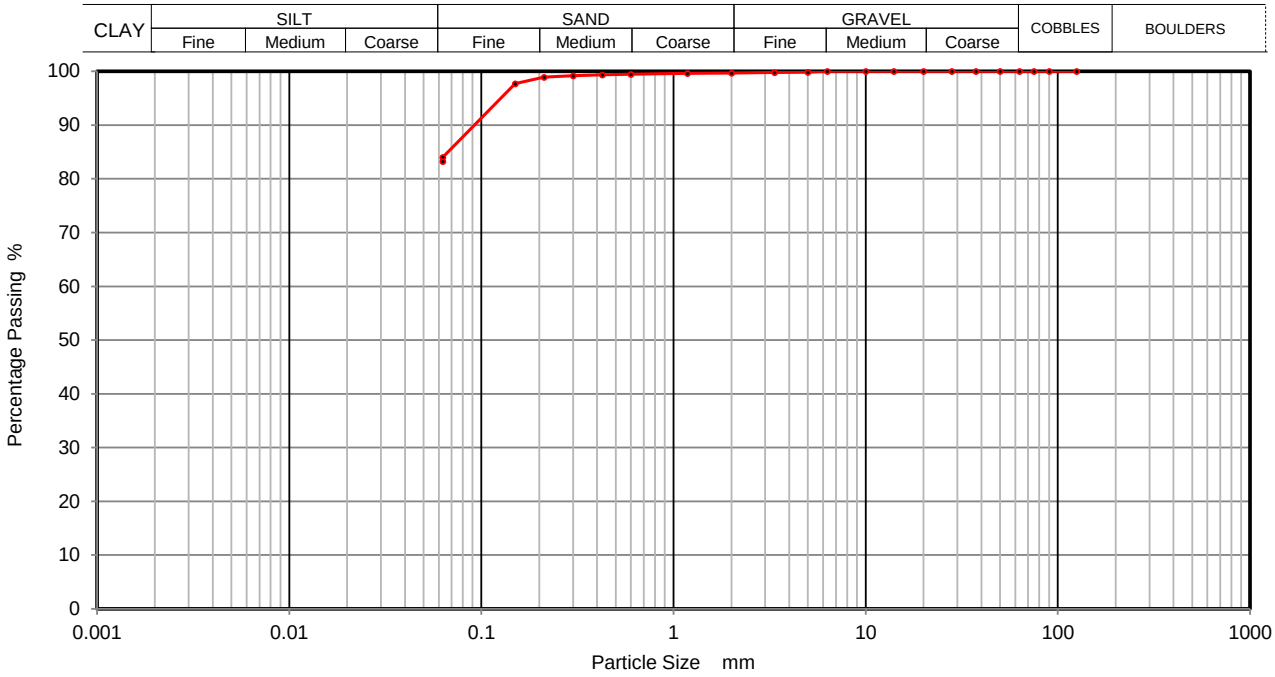
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy CLAY/SILT.	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

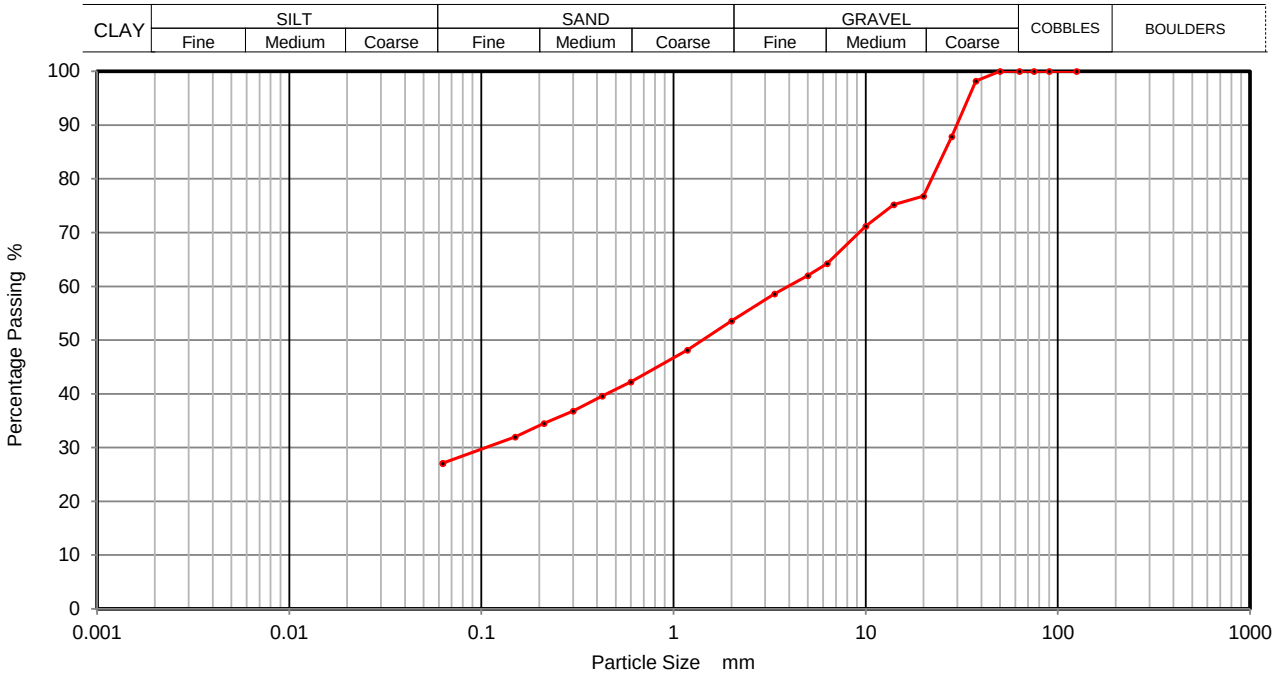
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	98		
28	88		
20	77		
14	75		
10	71		
6.3	64		
5	62		
3.35	59		
2	54		
1.18	48		
0.6	42		
0.425	40		
0.3	37		
0.212	34		
0.15	32		
0.063	27		

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	27
Silt and Clay	27

Grading Analysis	
Uniformity Coefficient	

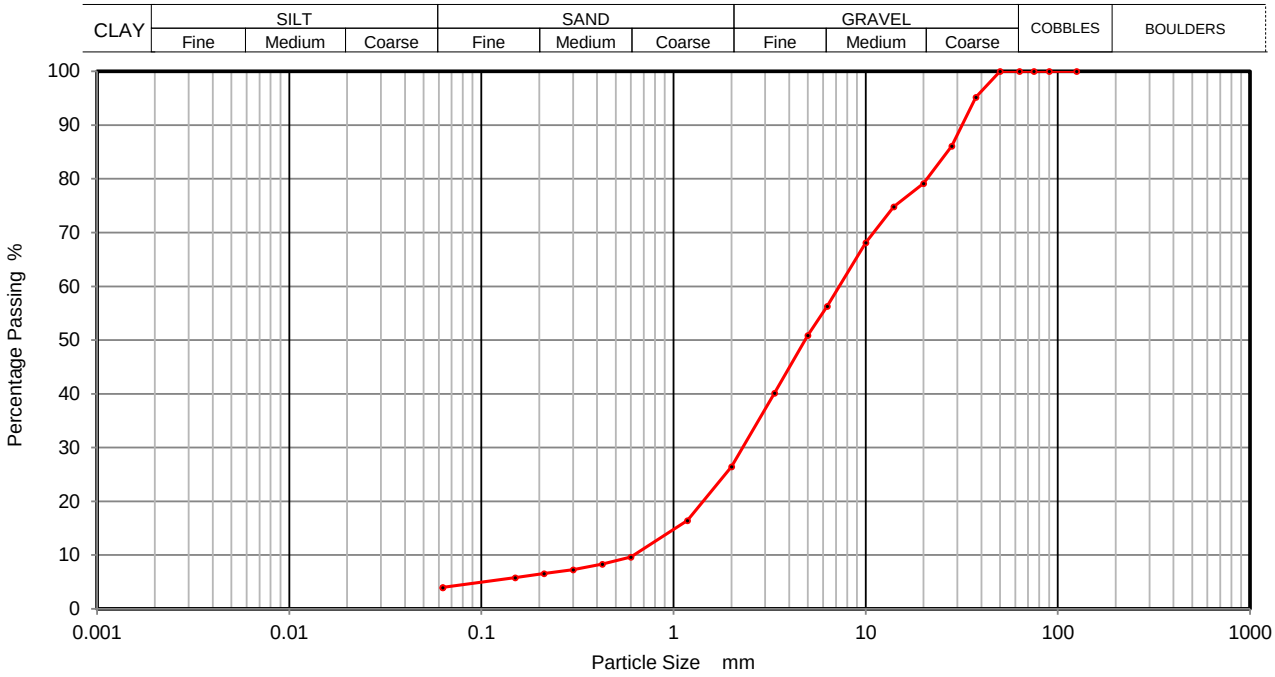
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	2.60
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	95		
28	86		
20	79		
14	75		
10	68		
6.3	56		
5	51		
3.35	40		
2	26		
1.18	16		
0.6	10		
0.425	8		
0.3	7		
0.212	7		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	74
Sand	22
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

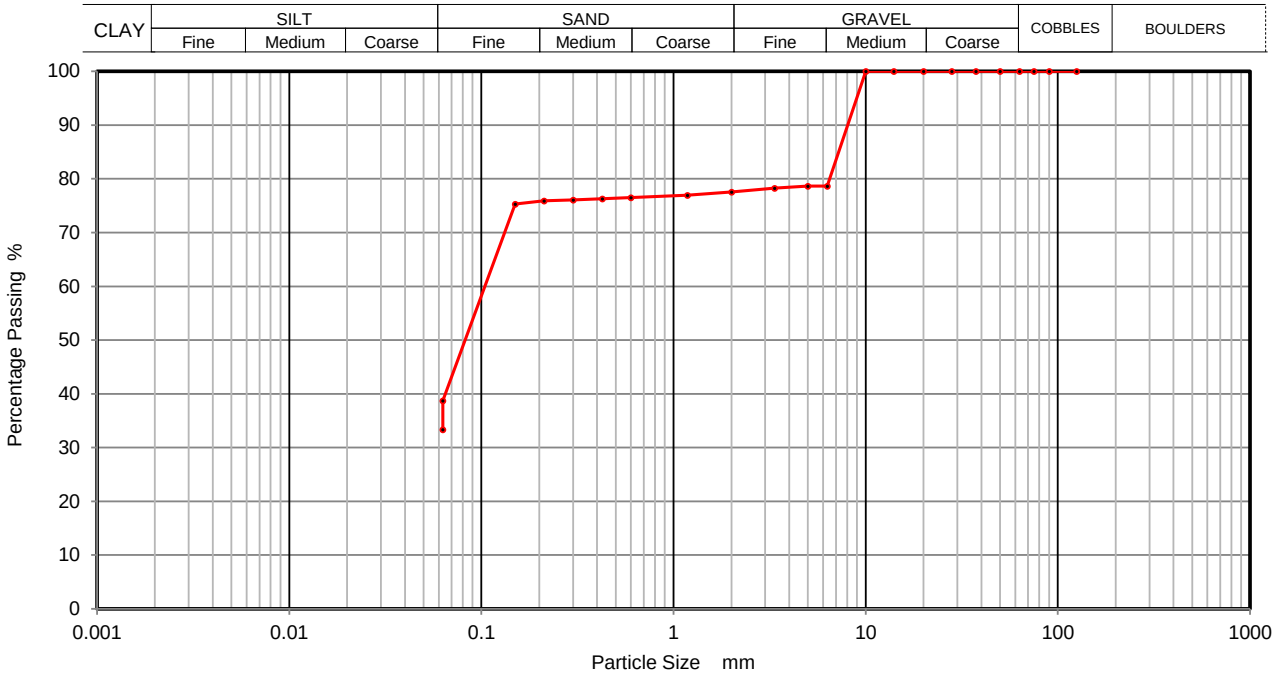
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to medium gravely silty clayey fine to coarse SAND.	Depth Top	3.30
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	79		
5	79		
3.35	78		
2	78		
1.18	77		
0.6	76		
0.425	76		
0.3	76		
0.212	76		
0.15	75		
0.063	39		

Sample Proportions	% dry mass
Cobbles	0
Gravel	22
Sand	39
Silt and Clay	39

Grading Analysis	
Uniformity Coefficient	

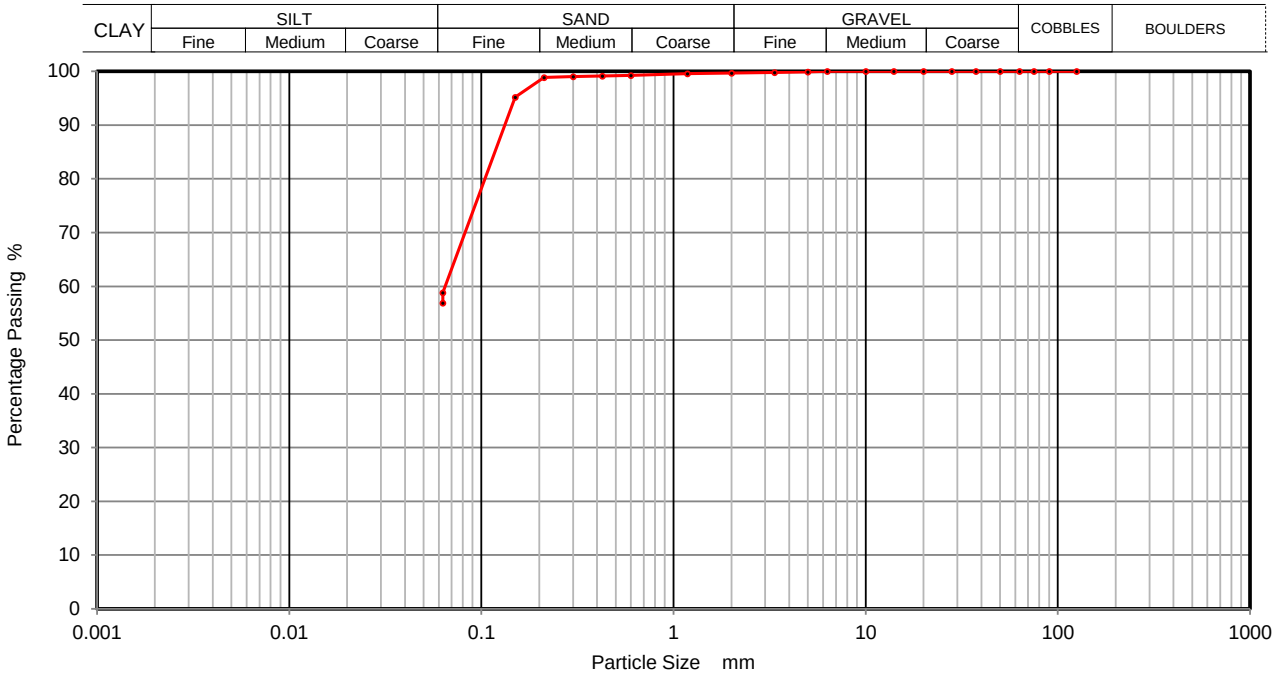
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to medium sandy SILT/CLAY.	Depth Top	5.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	95		
0.063	59		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	41
Silt and Clay	59

Grading Analysis	
Uniformity Coefficient	

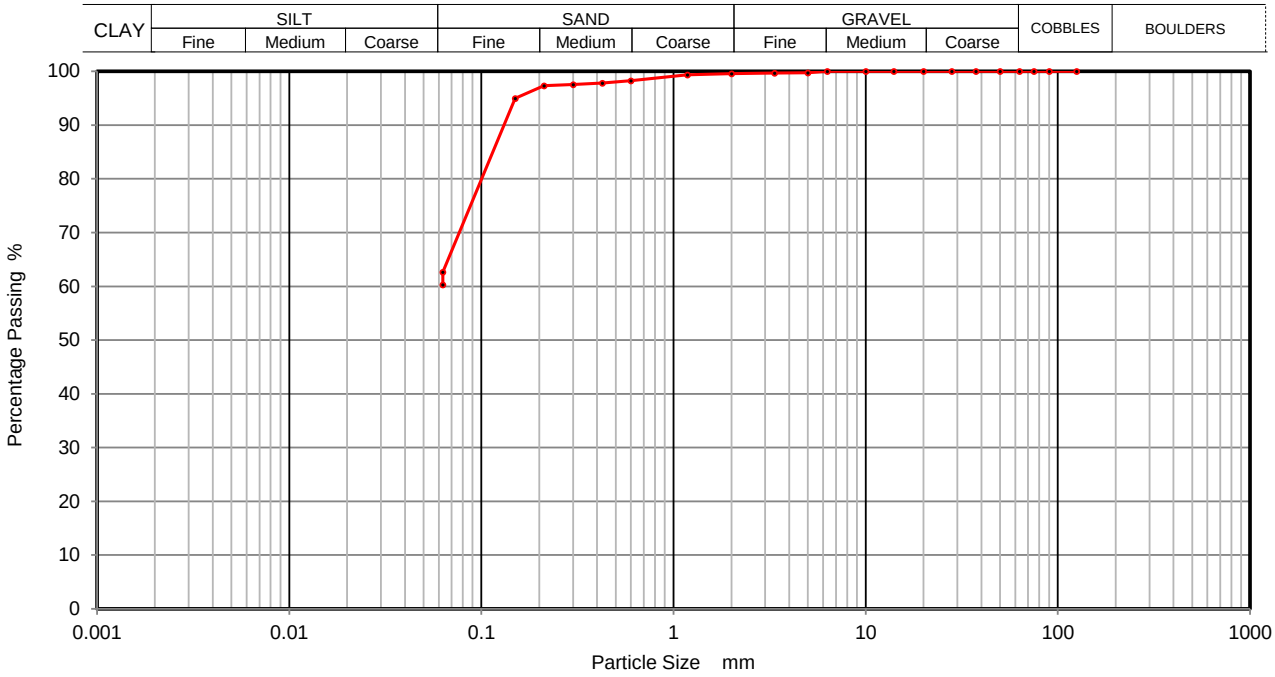
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to medium sandy SILT/CLAY.	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	98		
0.212	97		
0.15	95		
0.063	63		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	37
Silt and Clay	63

Grading Analysis	
Uniformity Coefficient	

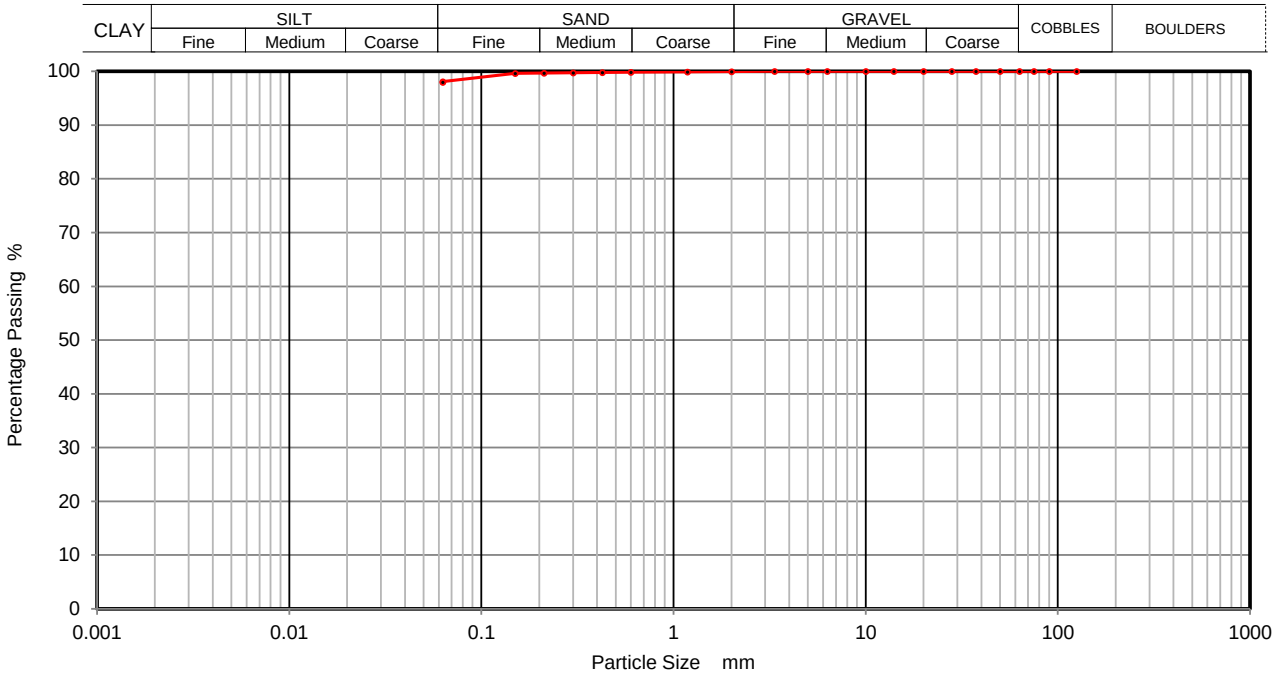
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine sandy CLAY/SILT.	Depth Top	9.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	98		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	2
Silt and Clay	98

Grading Analysis	
Uniformity Coefficient	

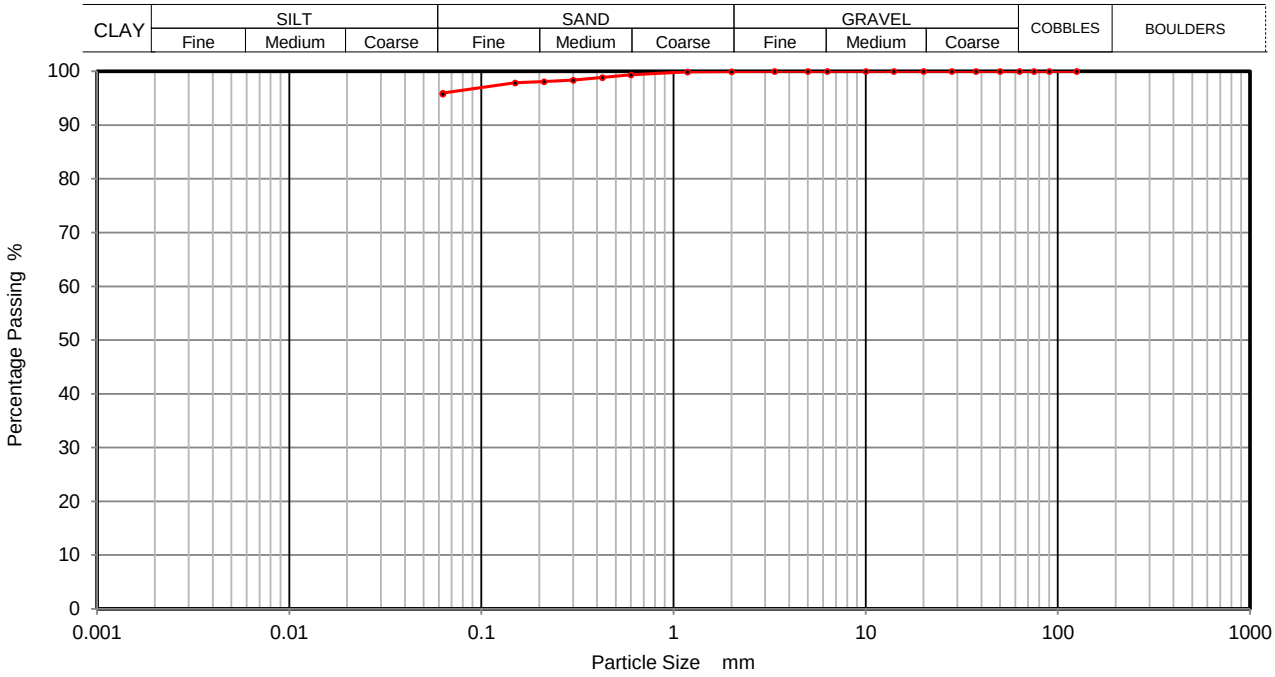
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine sandy SILT/CLAY.	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	98		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	4
Silt and Clay	96

Grading Analysis	
Uniformity Coefficient	

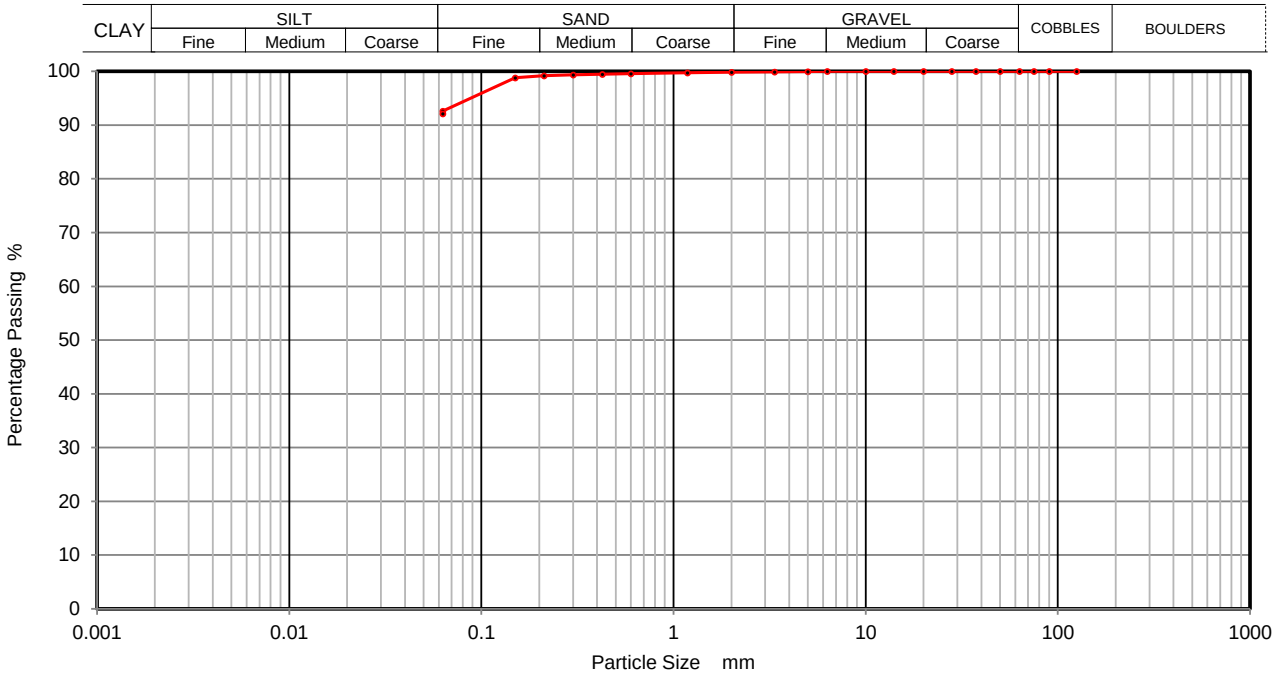
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine sandy CLAY/SILT.	Depth Top	12.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	7
Silt and Clay	93

Grading Analysis	
Uniformity Coefficient	

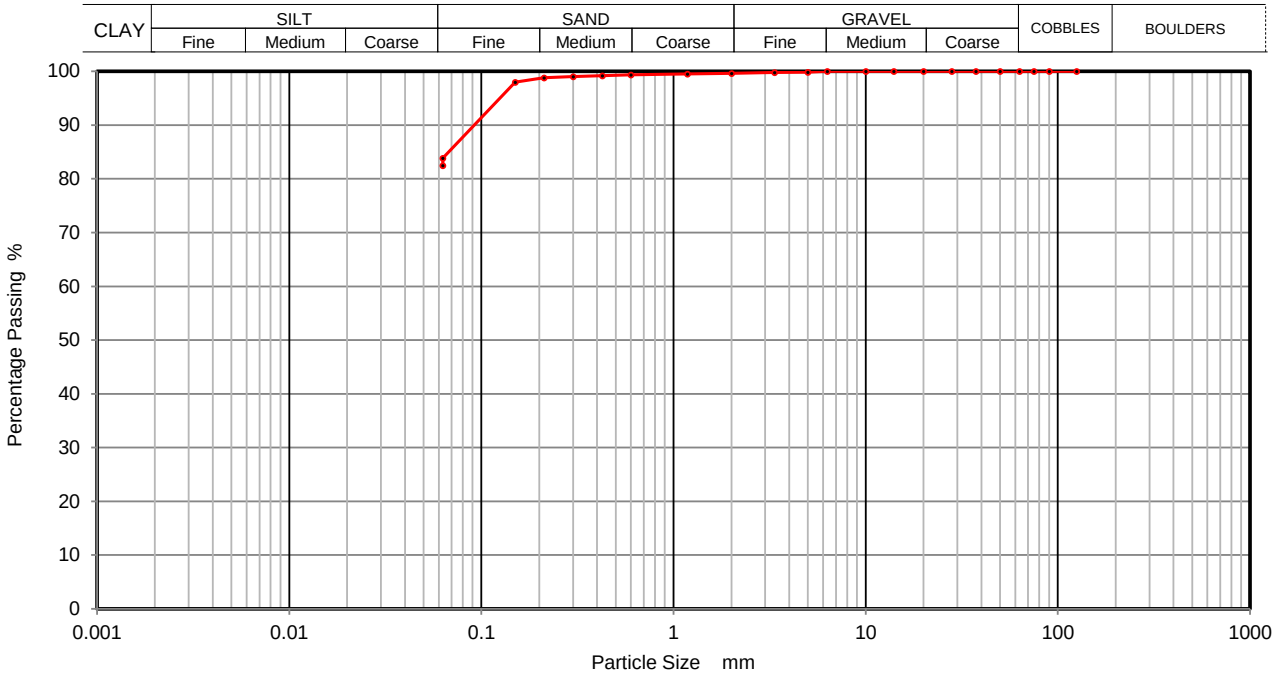
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

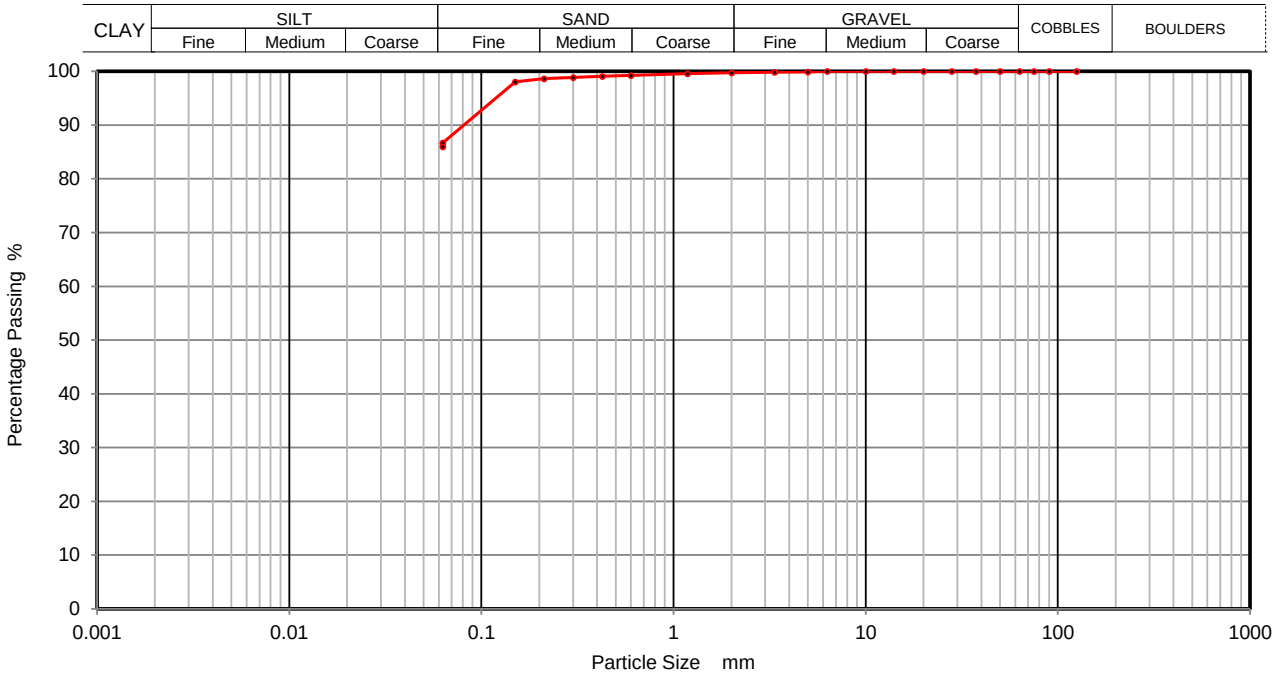
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L02
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to medium sandy SILT/CLAY.	Depth Top	16.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

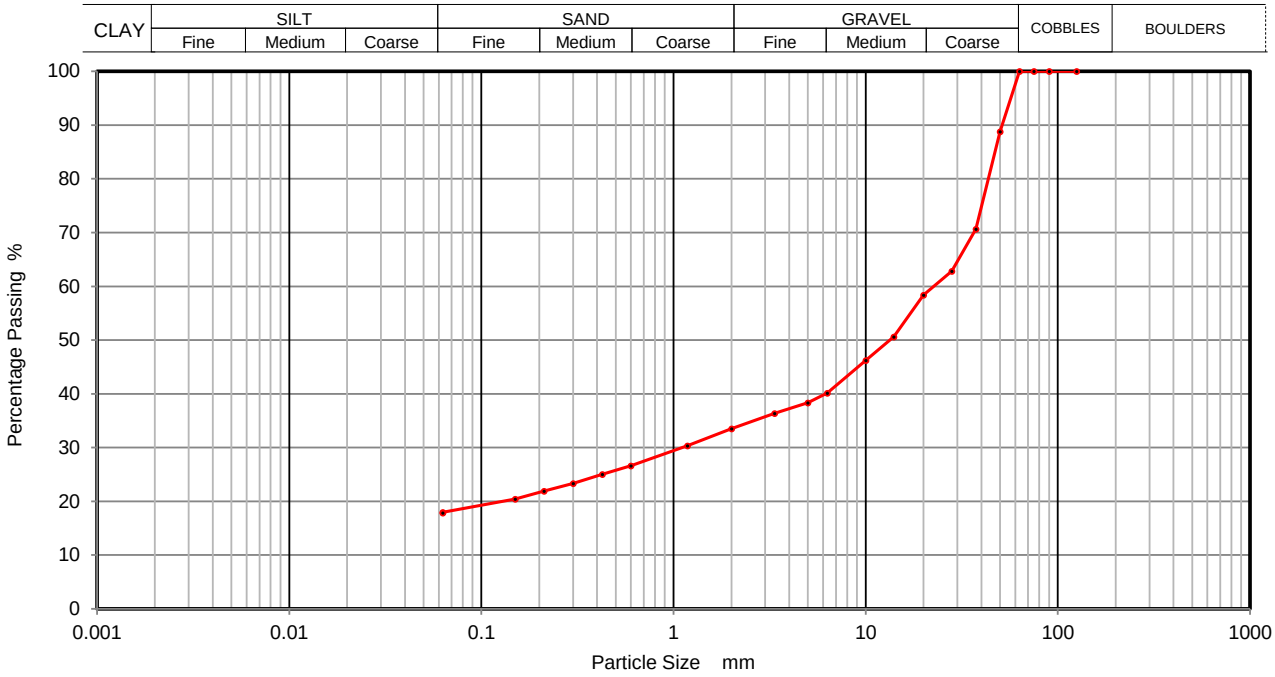
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Dark brown fine to coarse sandy silty clayey fine to coarse GRAVEL.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	89		
37.5	71		
28	63		
20	58		
14	51		
10	46		
6.3	40		
5	38		
3.35	36		
2	34		
1.18	30		
0.6	27		
0.425	25		
0.3	23		
0.212	22		
0.15	20		
0.063	18		

Sample Proportions	% dry mass
Cobbles	0
Gravel	66
Sand	16
Silt and Clay	18

Grading Analysis	
Uniformity Coefficient	

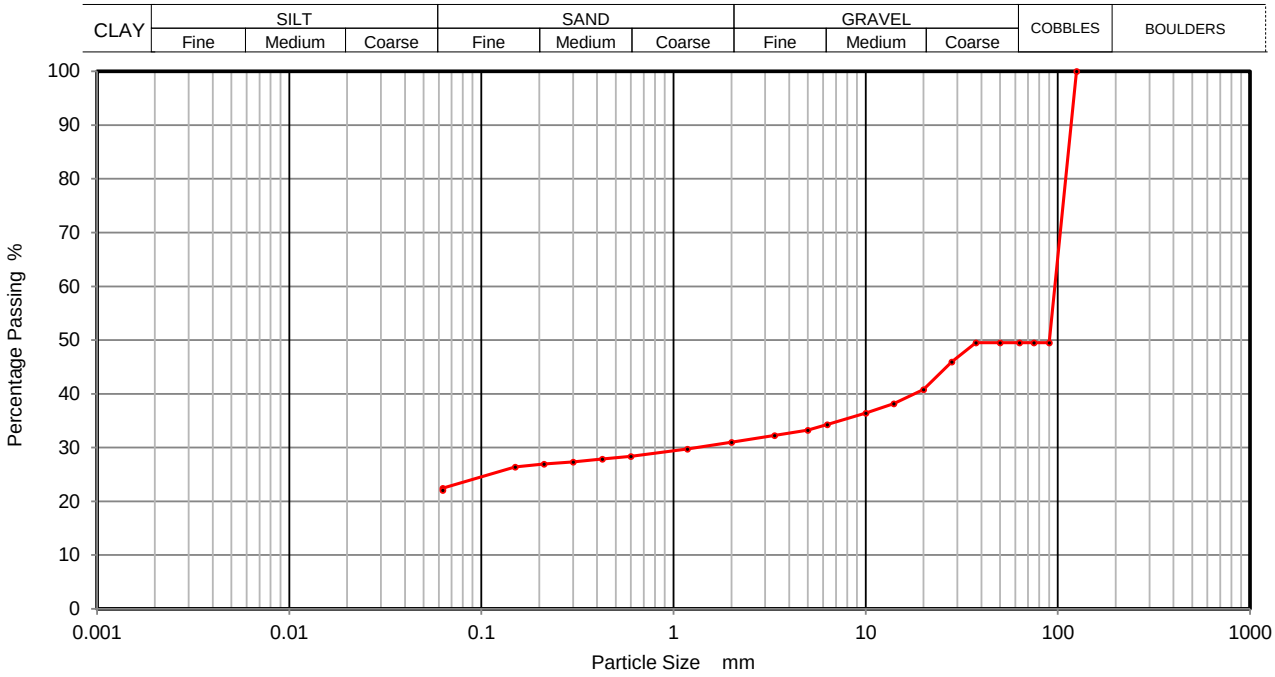
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY with many cobbles.	Depth Top	4.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	50	0.0060	
75	50	0.0019	
63	50		
50	50		
37.5	50		
28	46		
20	41		
14	38		
10	36		
6.3	34		
5	33		
3.35	32		
2	31		
1.18	30		
0.6	28		
0.425	28		
0.3	27		
0.212	27		
0.15	26		
0.063	22		

Sample Proportions	% dry mass
Cobbles	50
Gravel	19
Sand	9
Silt and Clay	22

Grading Analysis	
Uniformity Coefficient	

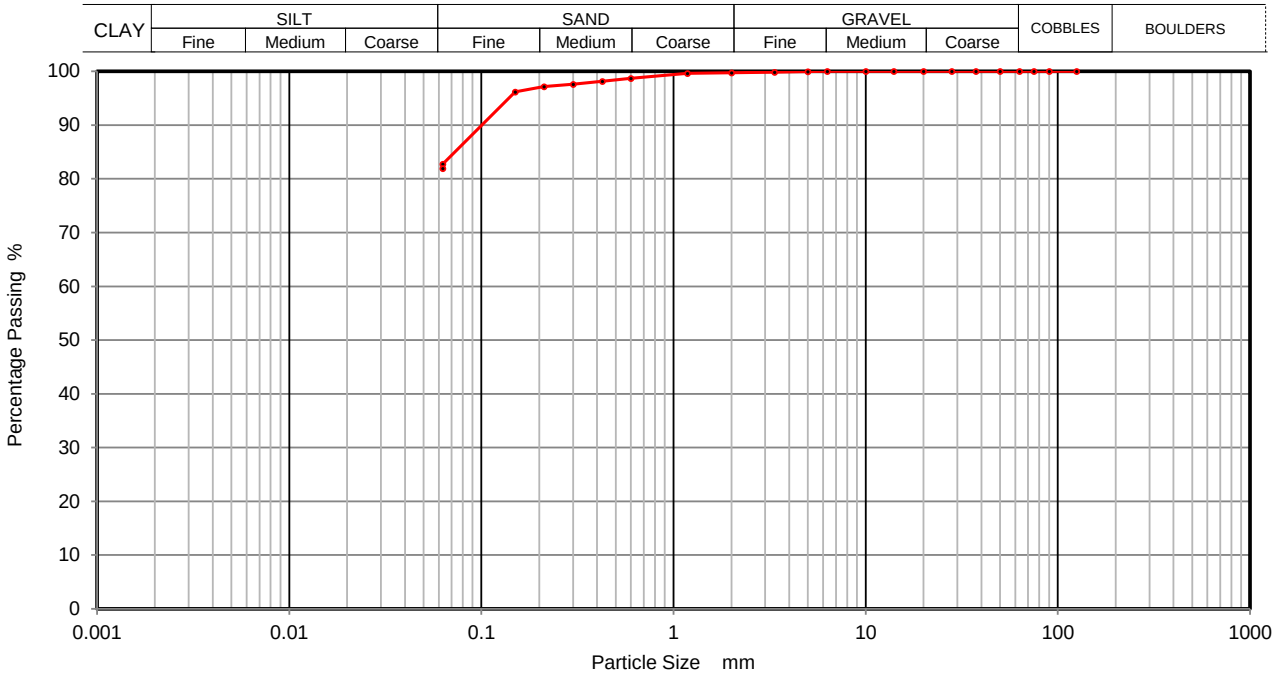
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY.	Depth Top	5.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

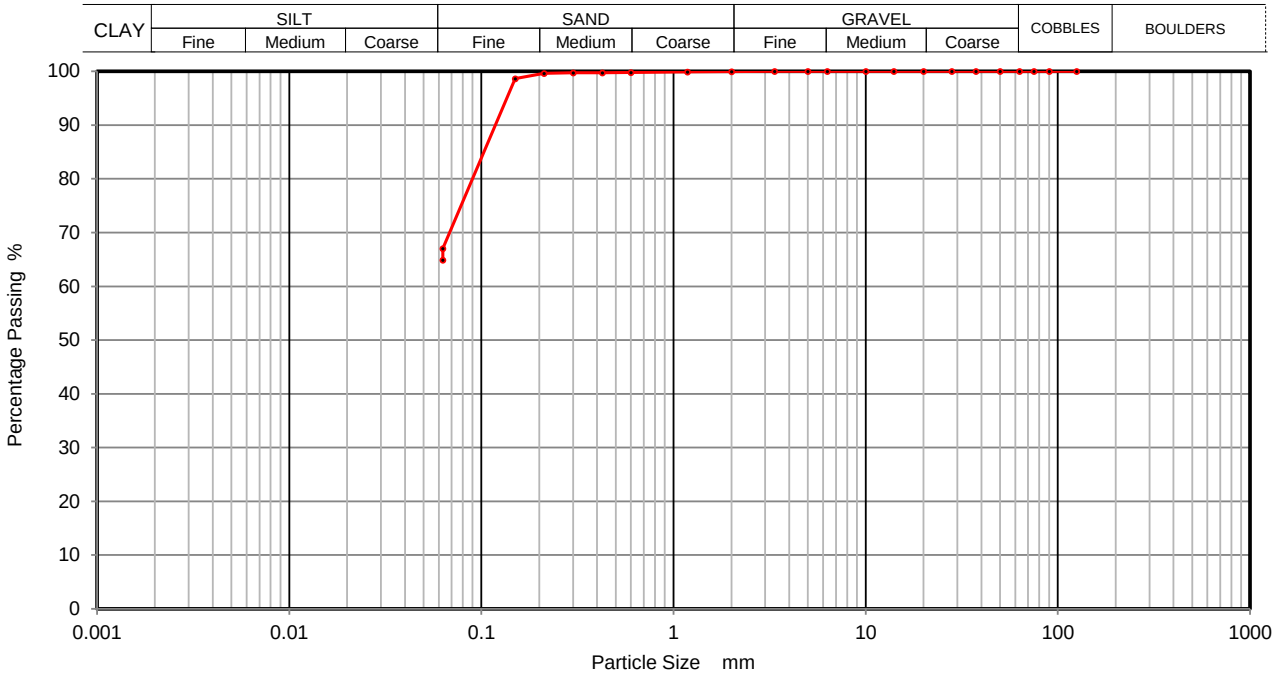
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY.	Depth Top	6.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	99		
0.063	67		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	33
Silt and Clay	67

Grading Analysis	
Uniformity Coefficient	

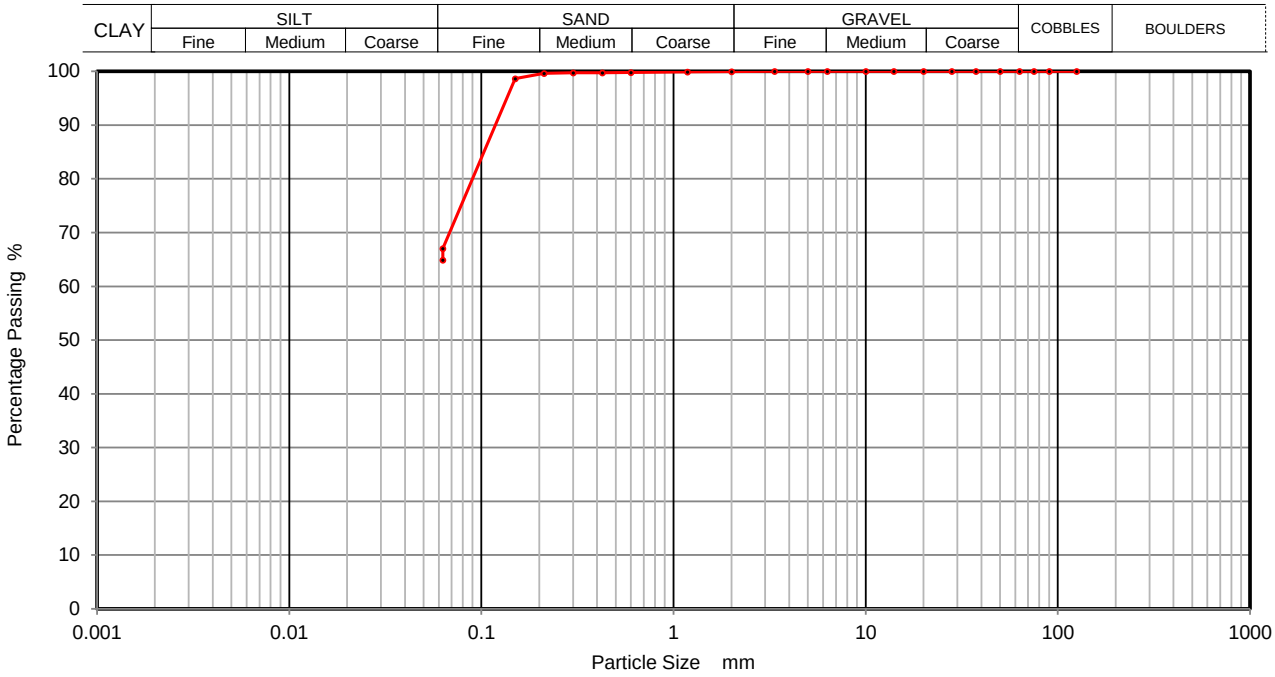
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY.	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	99		
0.063	67		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	33
Silt and Clay	67

Grading Analysis	
Uniformity Coefficient	

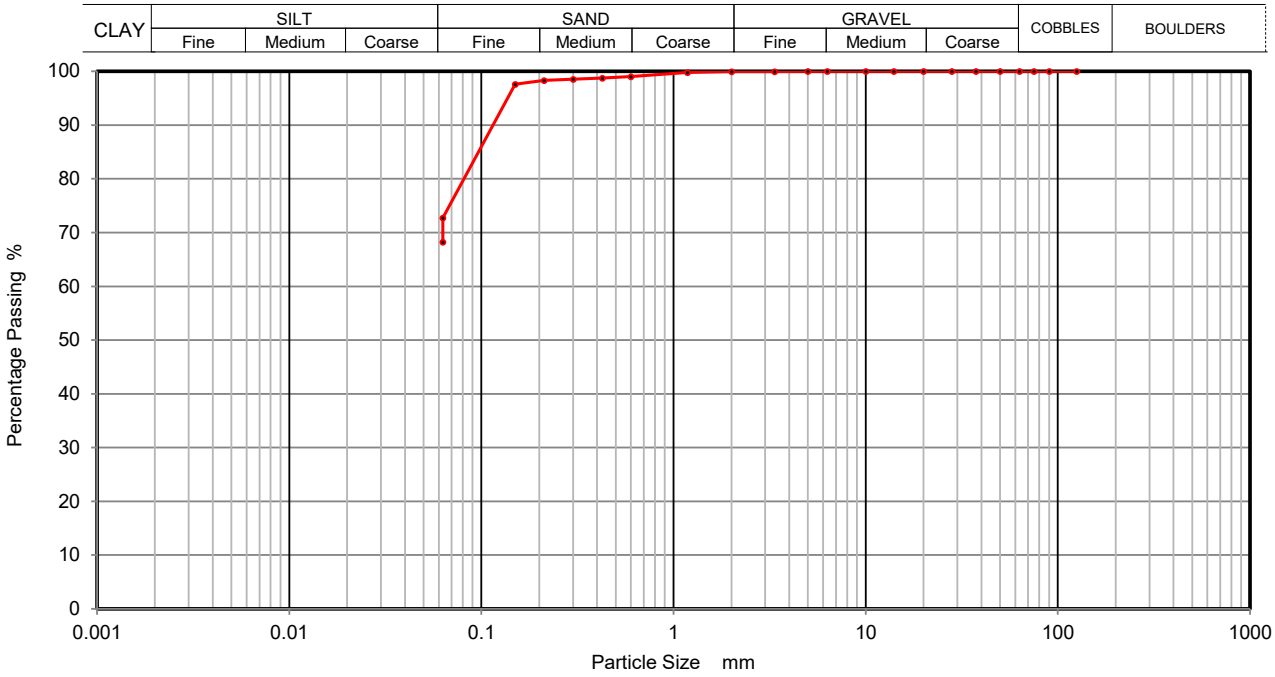
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy CLAY/SILT.	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	73		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	27
Silt and Clay	73

Grading Analysis	
Uniformity Coefficient	

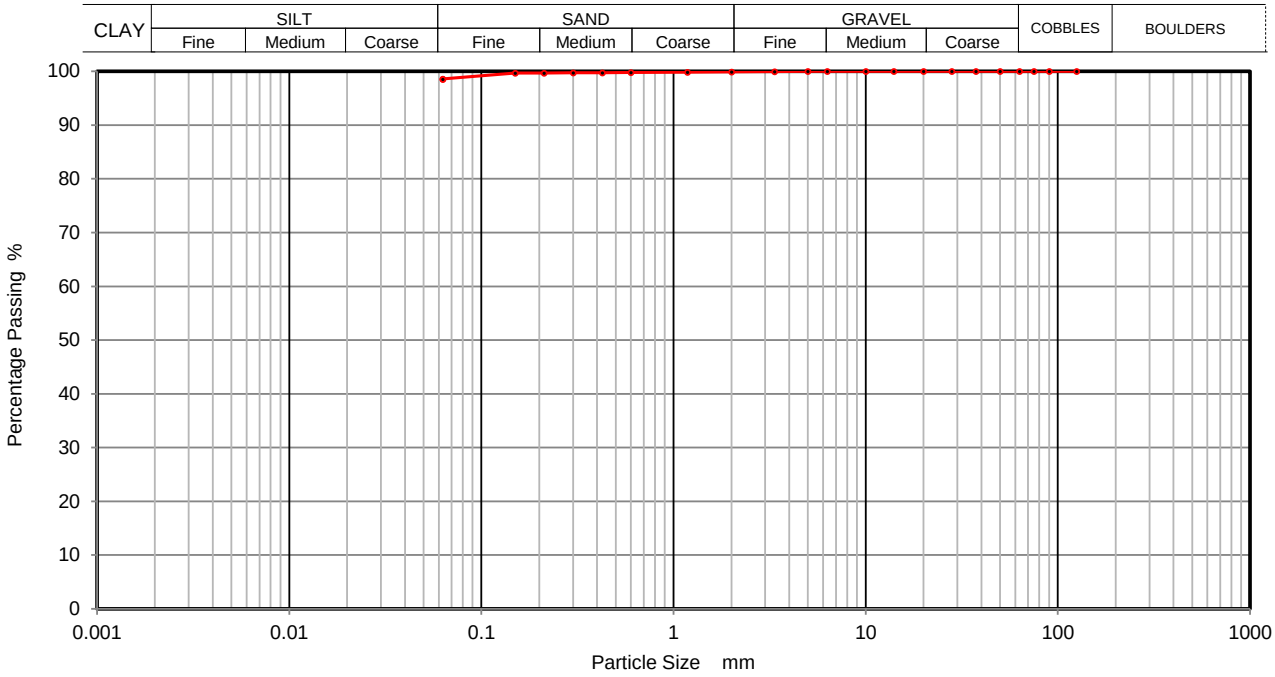
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine slightly sandy CLAY/SILT	Depth Top	12.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

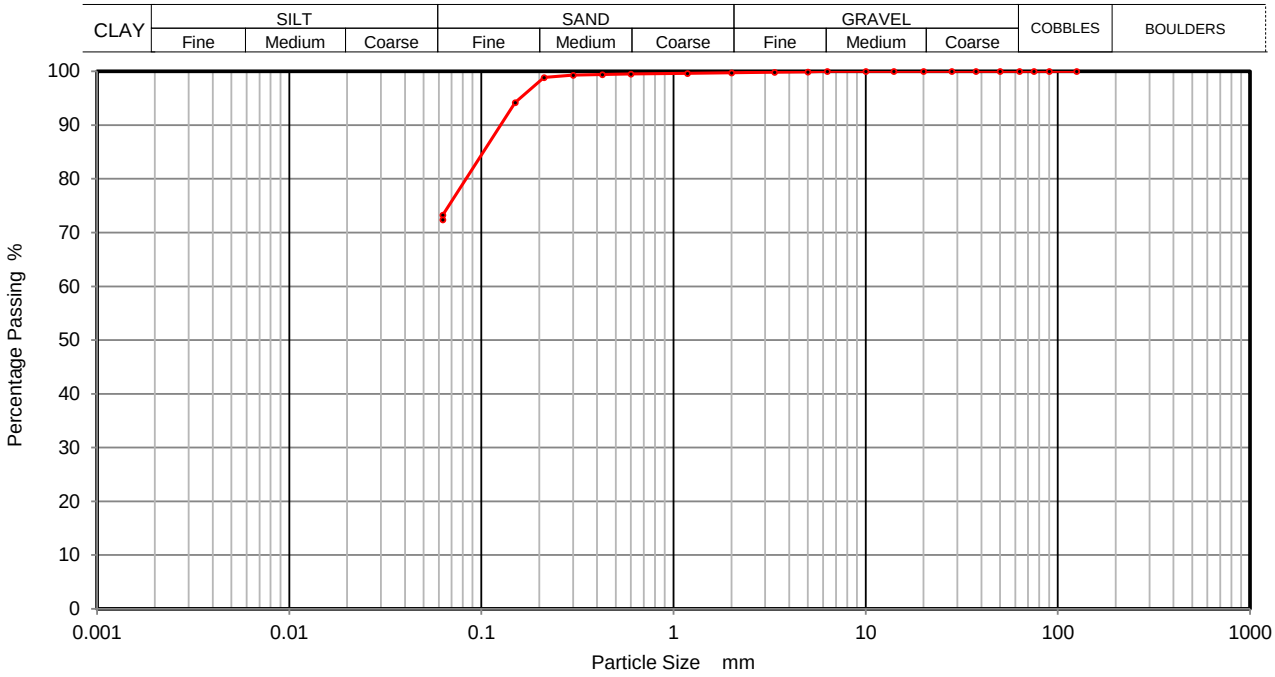
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	**Foyne Port**	Sample No.	
Soil Description	Grey fine to medium sandy CLAY/SILT	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	94		
0.063	73		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	27
Silt and Clay	73

Grading Analysis	
Uniformity Coefficient	

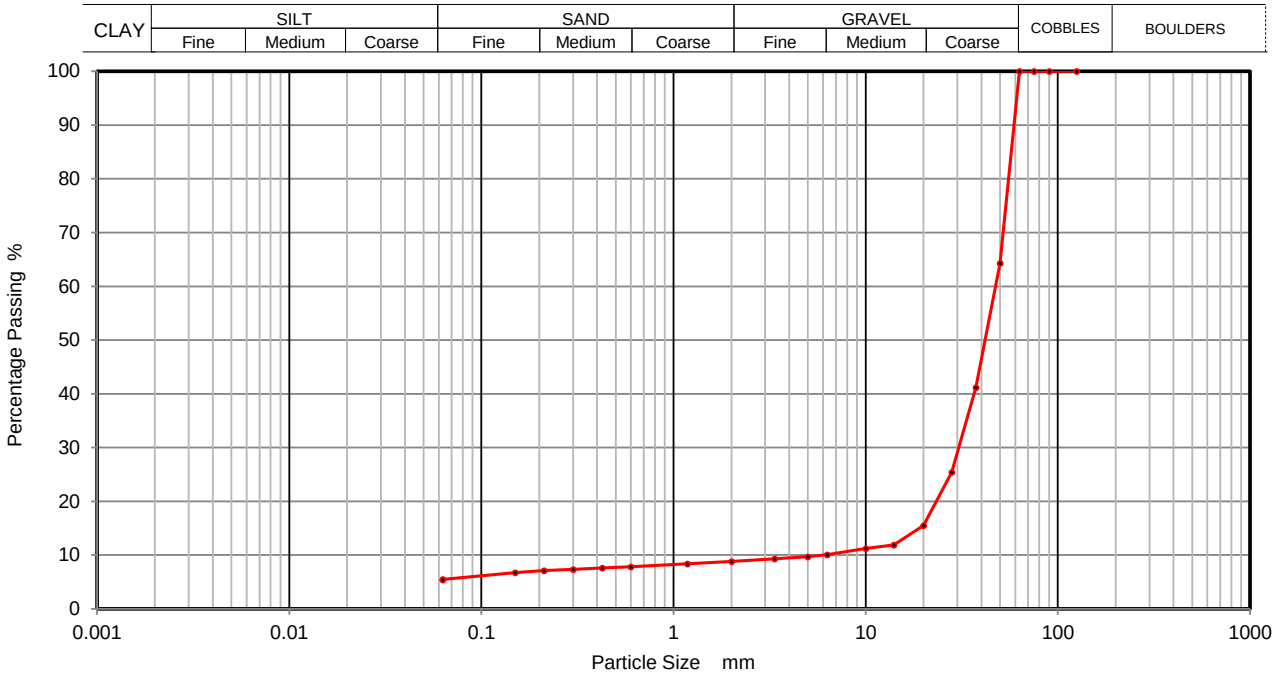
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L03
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to coarse slightly sandy silty fine to coarse GRAVEL.	Depth Top	18.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	64		
37.5	41		
28	25		
20	15		
14	12		
10	11		
6.3	10		
5	10		
3.35	9		
2	9		
1.18	8		
0.6	8		
0.425	8		
0.3	7		
0.212	7		
0.15	7		
0.063	5		

Sample Proportions	% dry mass
Cobbles	0
Gravel	91
Sand	4
Silt and Clay	5

Grading Analysis	
Uniformity Coefficient	

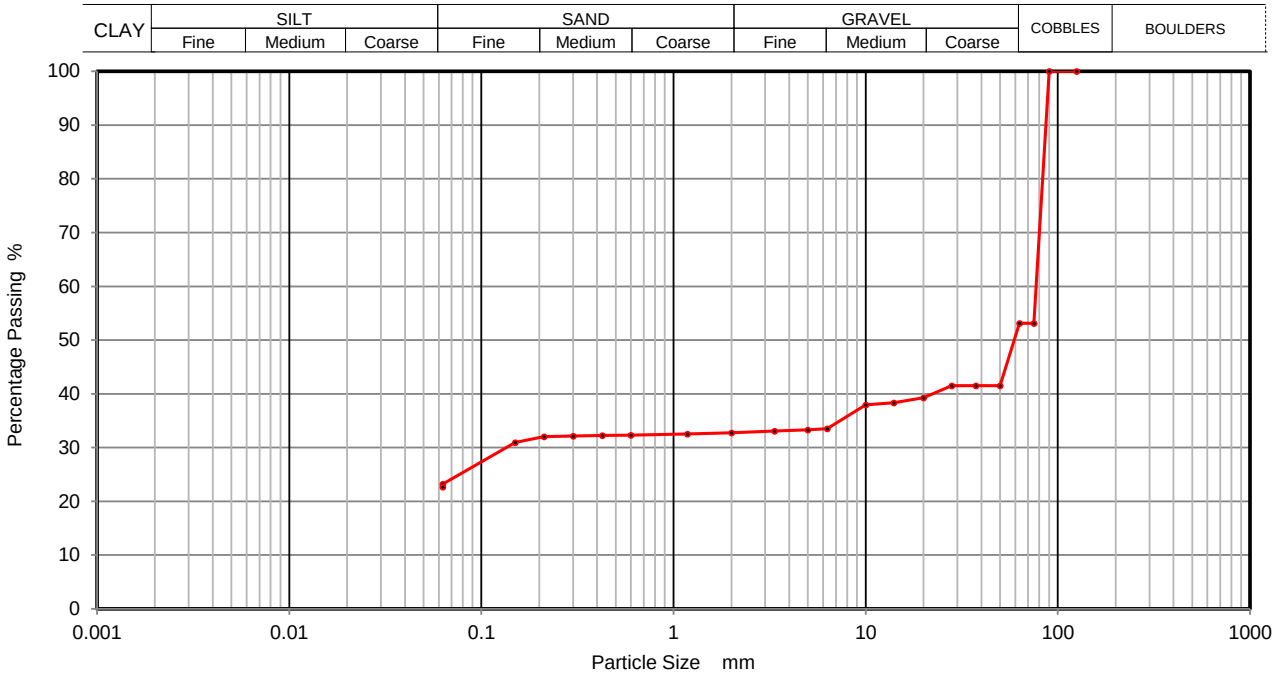
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly CLAY/SILT with many cobbles.	Depth Top	9.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	53	0.0019	
63	53		
50	42		
37.5	42		
28	42		
20	39		
14	38		
10	38		
6.3	34		
5	33		
3.35	33		
2	33		
1.18	33		
0.6	32		
0.425	32		
0.3	32		
0.212	32		
0.15	31		
0.063	23		

Sample Proportions	% dry mass
Cobbles	47
Gravel	20
Sand	10
Silt and Clay	23

Grading Analysis	
Uniformity Coefficient	

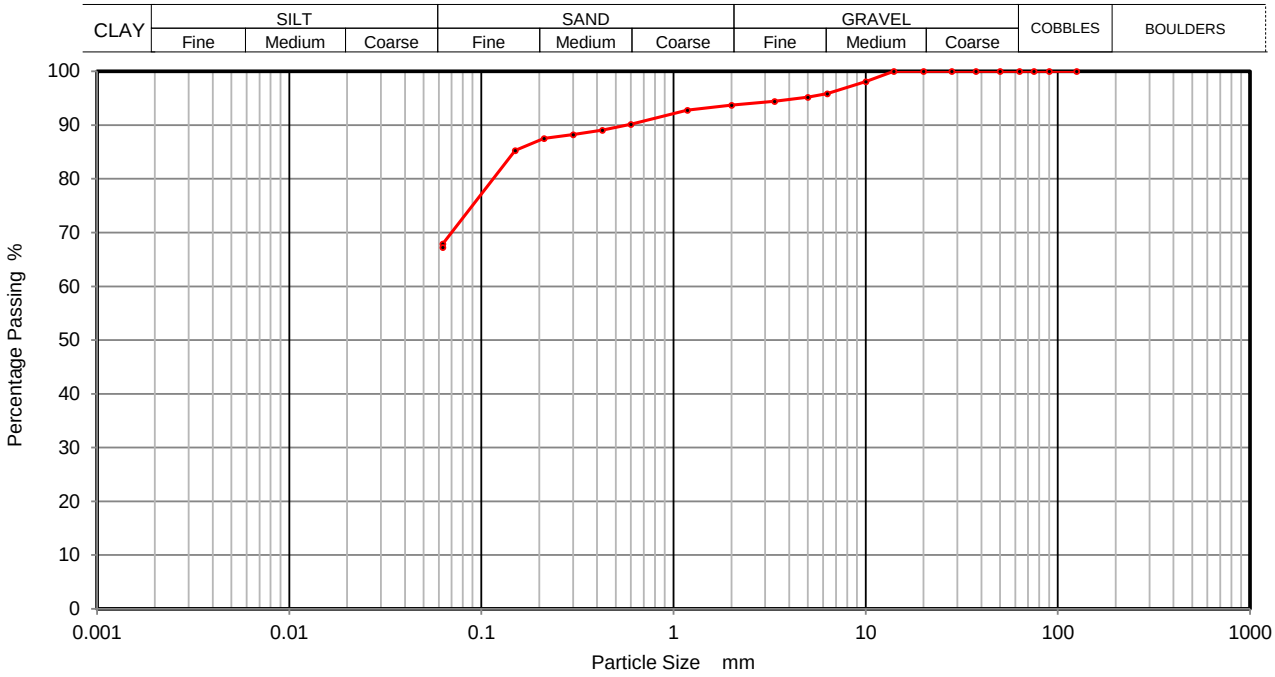
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium gravelly fine to coarse sandy CLAY/SILT.	Depth Top	11.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	96		
5	95		
3.35	94		
2	94		
1.18	93		
0.6	90		
0.425	89		
0.3	88		
0.212	88		
0.15	85		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	6
Sand	26
Silt and Clay	68

Grading Analysis	
Uniformity Coefficient	

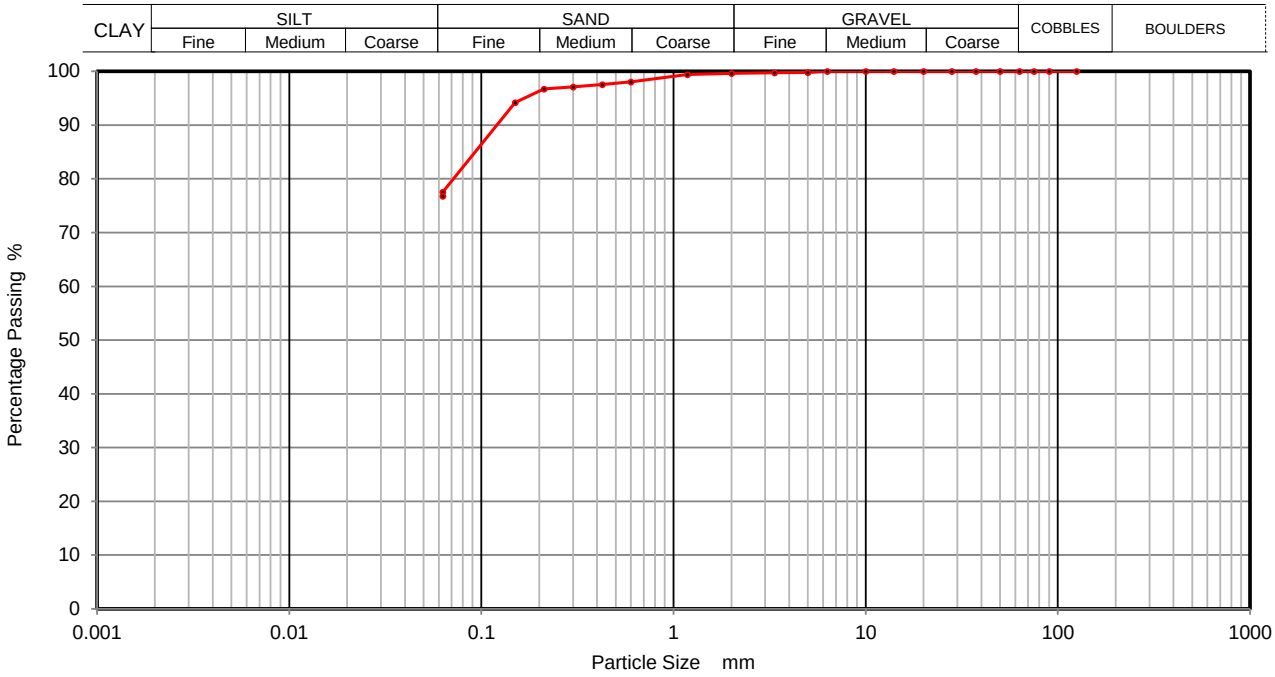
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy SILT/CLAY.	Depth Top	13.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	97		
0.15	94		
0.063	78		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	22
Silt and Clay	78

Grading Analysis	
Uniformity Coefficient	

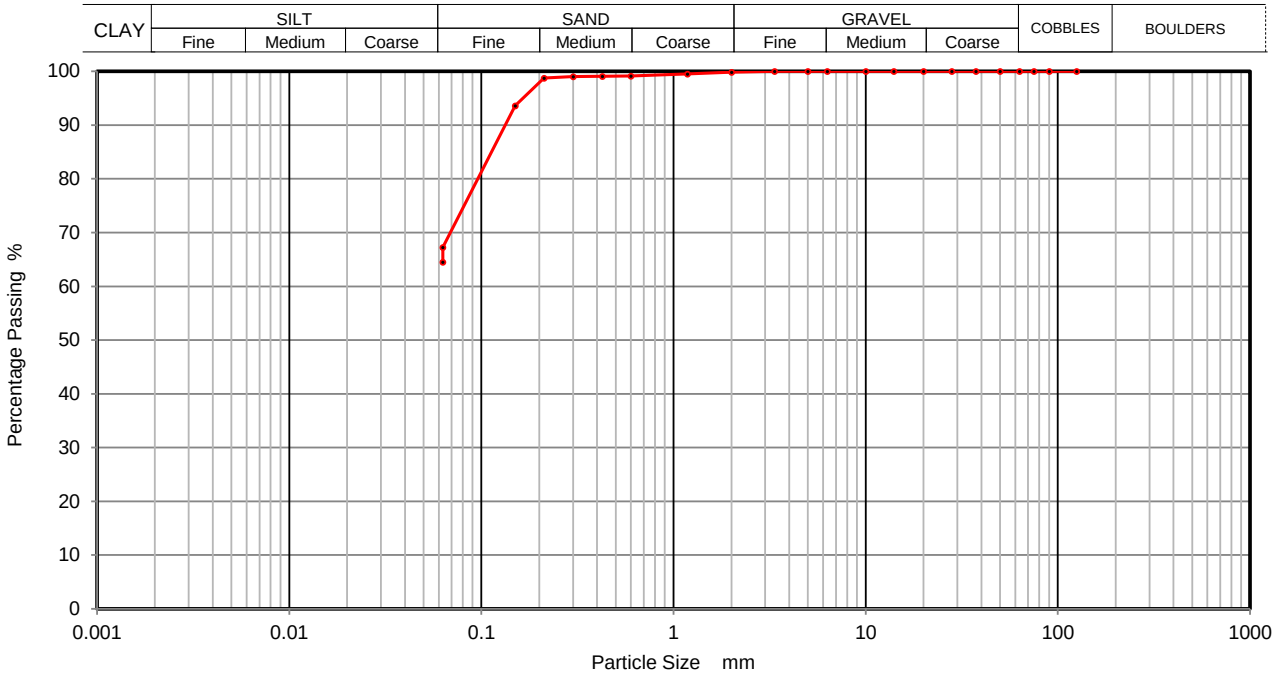
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	15.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	94		
0.063	67		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	33
Silt and Clay	67

Grading Analysis	
Uniformity Coefficient	

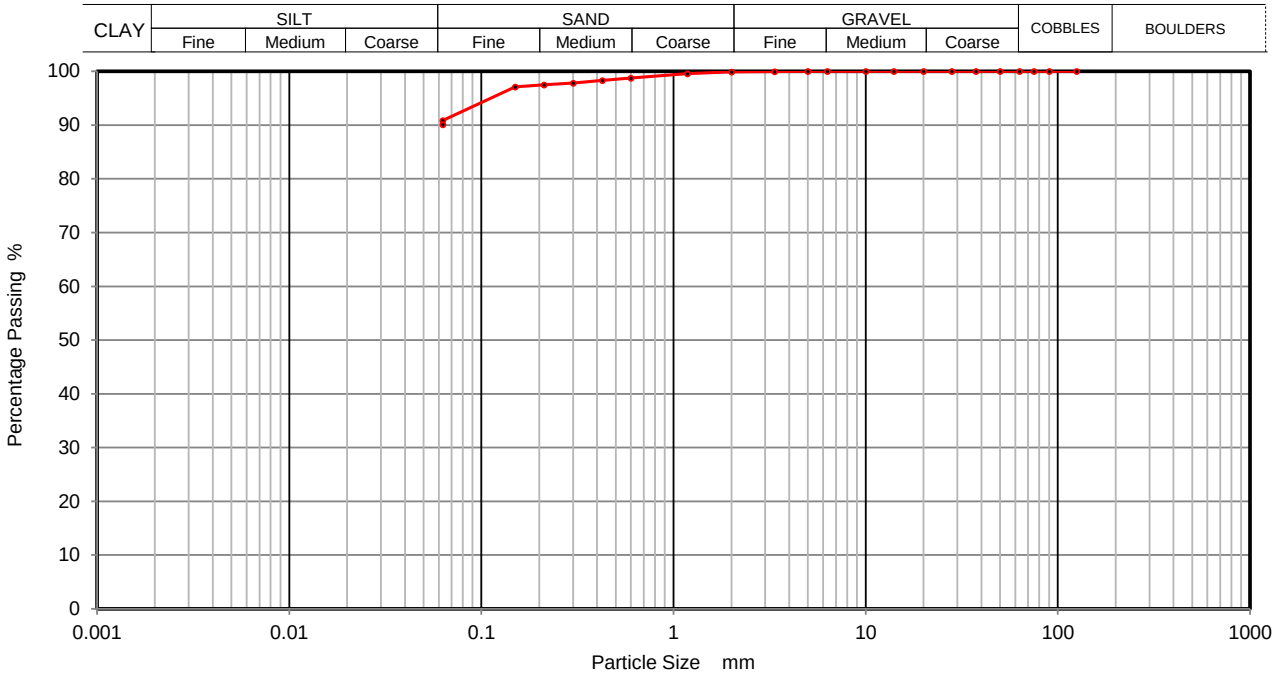
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium slightly sandy CLAY/SILT.	Depth Top	17.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	97		
0.063	91		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	9
Silt and Clay	91

Grading Analysis	
Uniformity Coefficient	

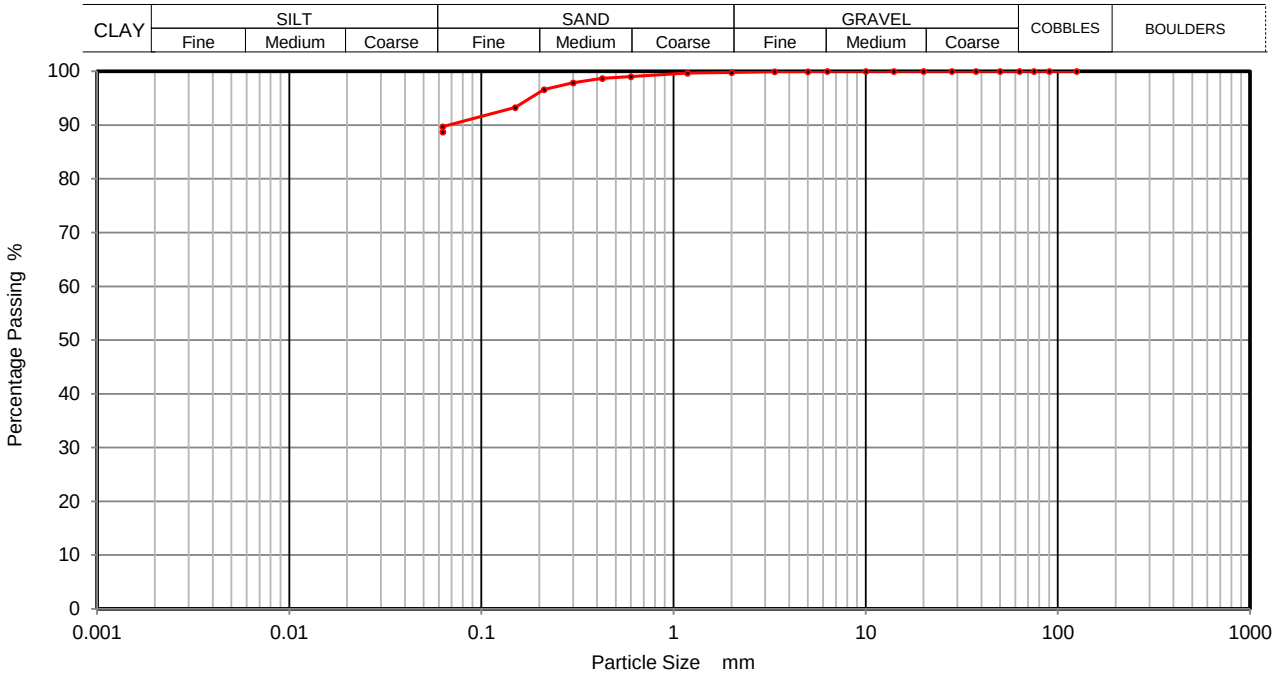
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium slightly sandy CLAY/SILT.	Depth Top	19.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	97		
0.15	93		
0.063	90		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	10
Silt and Clay	90

Grading Analysis	
Uniformity Coefficient	

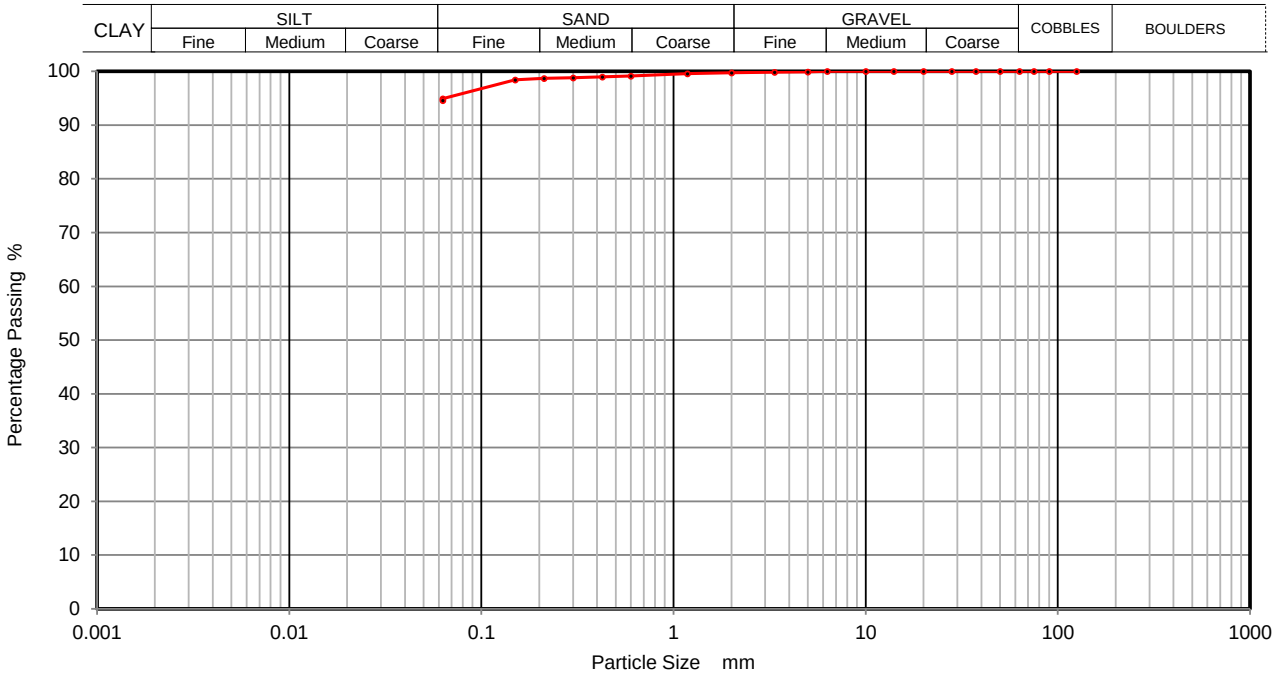
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium slightly sandy CLAY/SILT.	Depth Top	21.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	95		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	5
Silt and Clay	95

Grading Analysis	
Uniformity Coefficient	

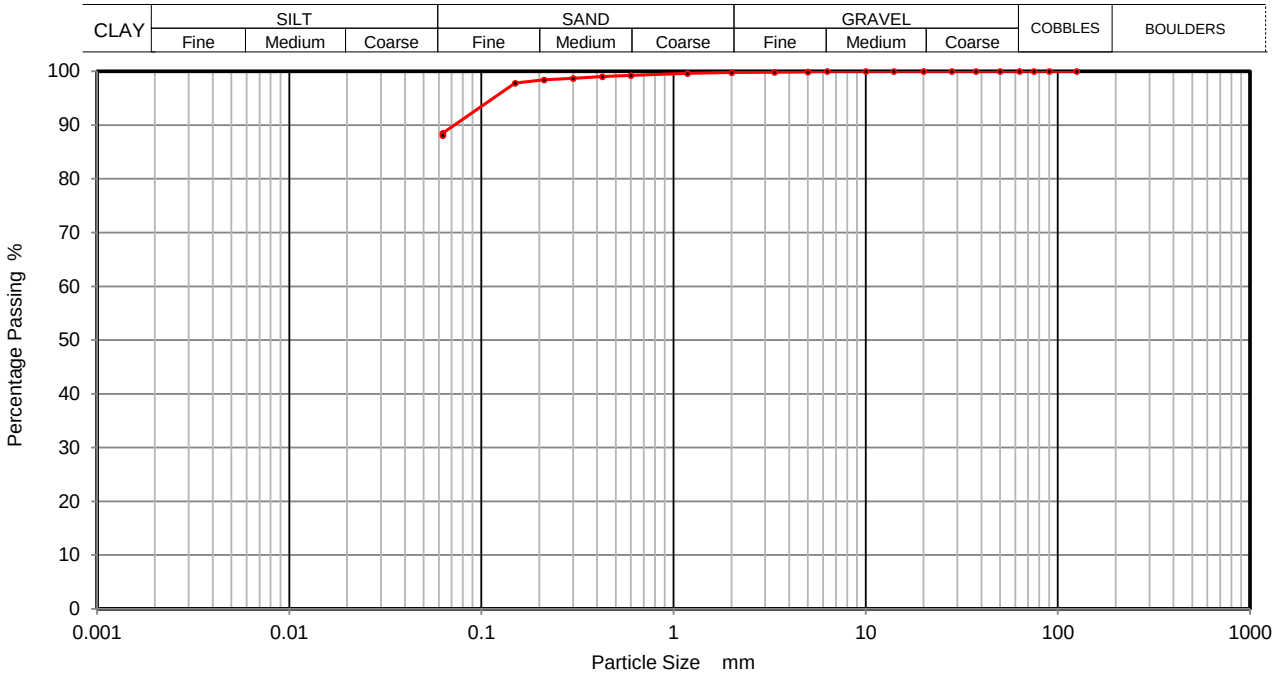
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L07
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	98		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	11
Silt and Clay	89

Grading Analysis	
Uniformity Coefficient	

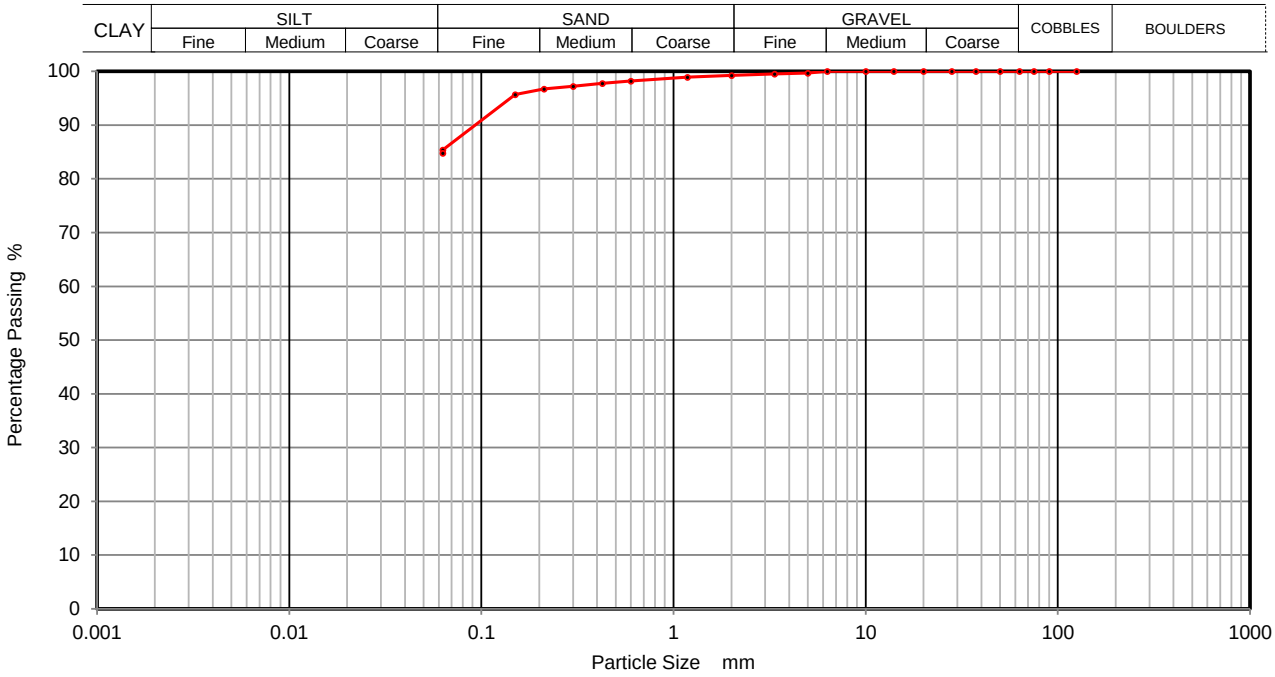
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L07
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine slightly gravelly fine to coarse sandy CLAY/SILT.	Depth Top	2.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	98		
0.3	97		
0.212	97		
0.15	96		
0.063	85		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	14
Silt and Clay	85

Grading Analysis	
Uniformity Coefficient	

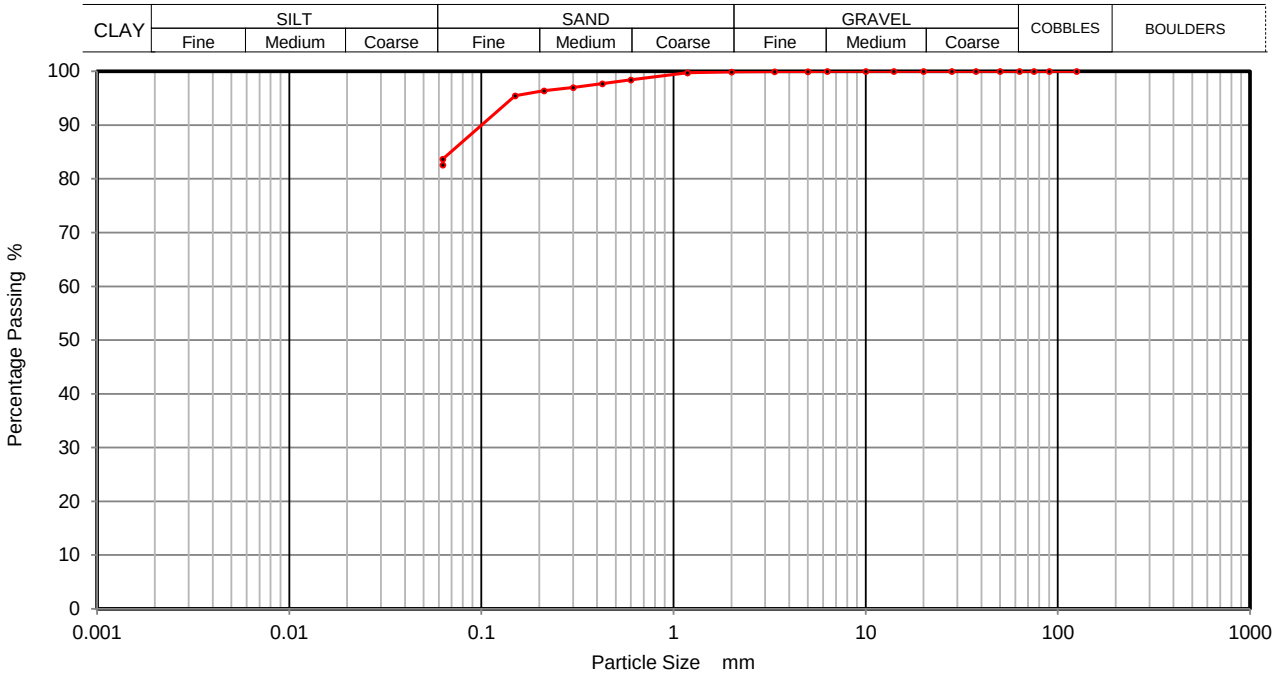
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L07
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy CLAY/SILT.	Depth Top	5.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	98		
0.3	97		
0.212	96		
0.15	95		
0.063	84		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	16
Silt and Clay	84

Grading Analysis	
Uniformity Coefficient	

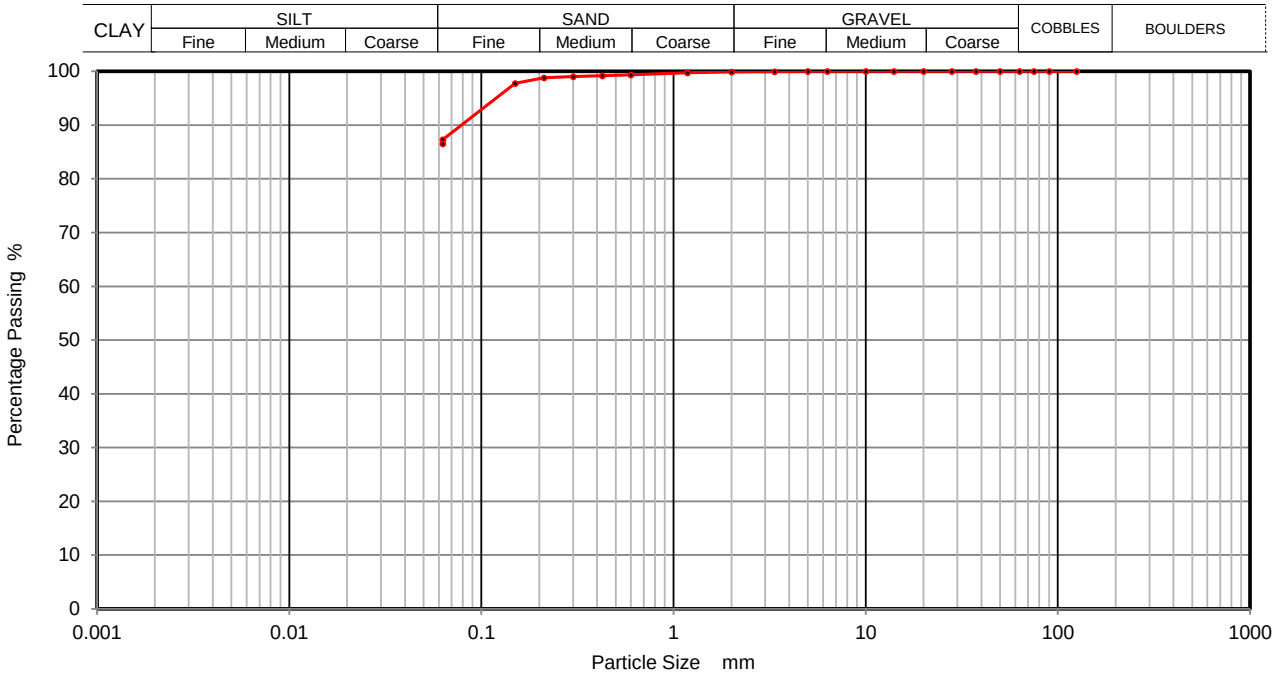
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	L08
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy SILT/CLAY.	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt and Clay	87

Grading Analysis	
Uniformity Coefficient	

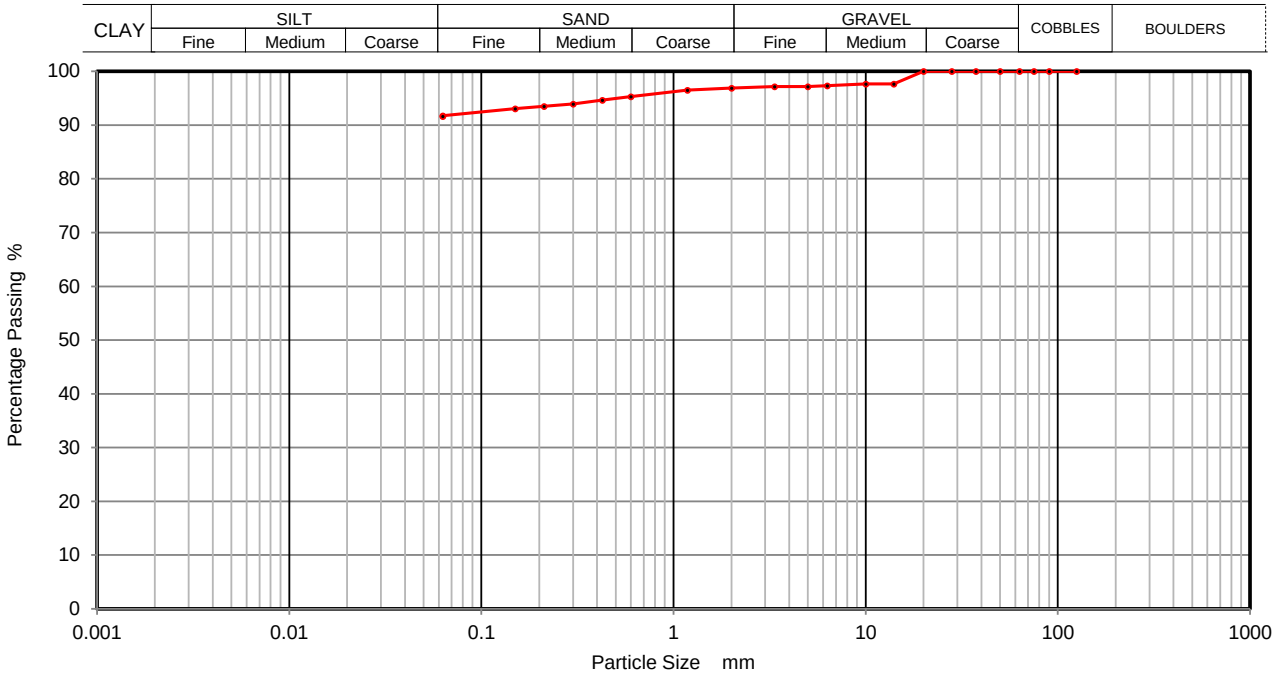
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD01
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown slightly fine to medium gravelly slightly fine to coarse sandy CLAY/SILT.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	97		
5	97		
3.35	97		
2	97		
1.18	96		
0.6	95		
0.425	95		
0.3	94		
0.212	93		
0.15	93		
0.063	92		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	5
Silt and Clay	92

Grading Analysis	
Uniformity Coefficient	

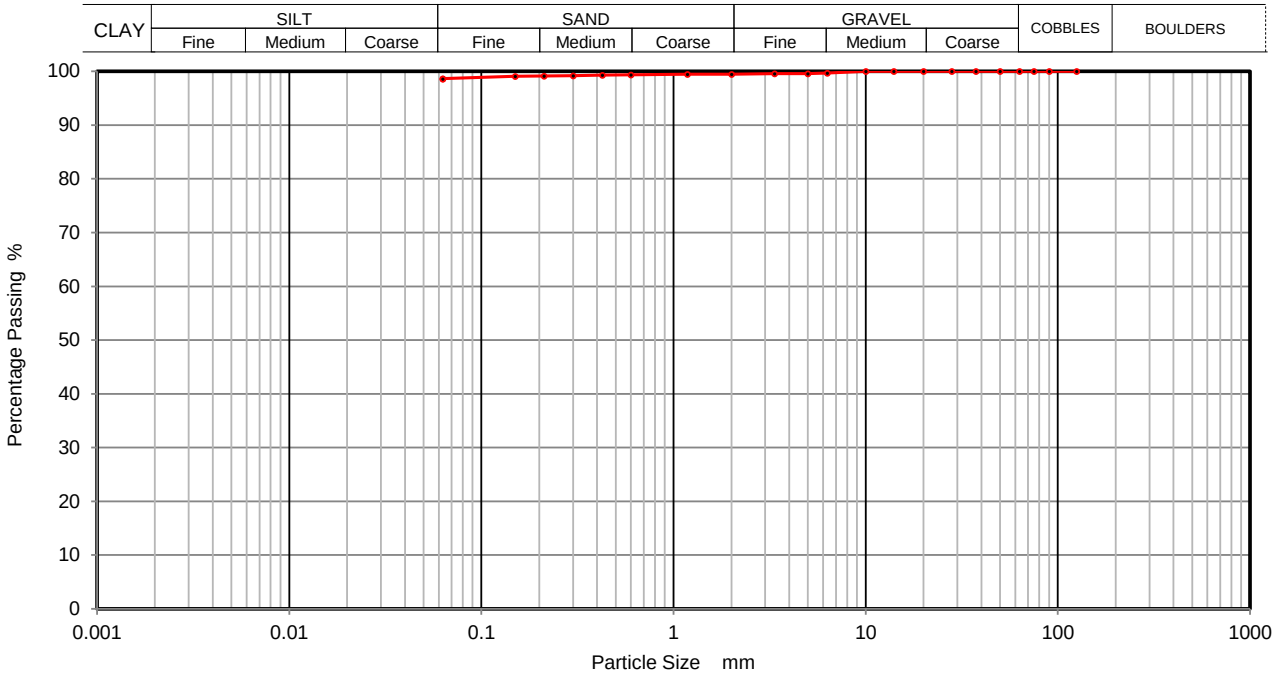
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD01
Site Name	Foyne Port	Sample No.	
Soil Description	Brown slightly fine gravelly SILT/CLAY.	Depth Top	4.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	0
Silt and Clay	99

Grading Analysis	
Uniformity Coefficient	

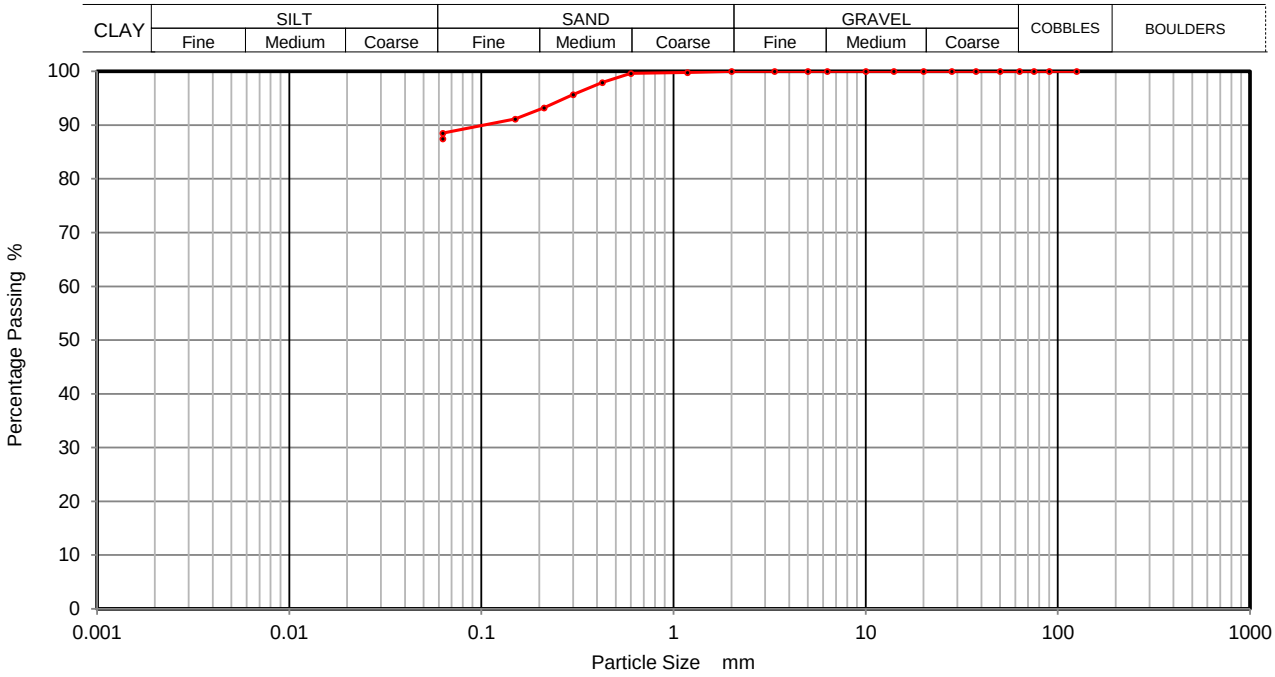
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD01
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown slightly fine sandy SILT/CLAY.	Depth Top	6.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	98		
0.3	96		
0.212	93		
0.15	91		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	11
Silt and Clay	89

Grading Analysis	
Uniformity Coefficient	

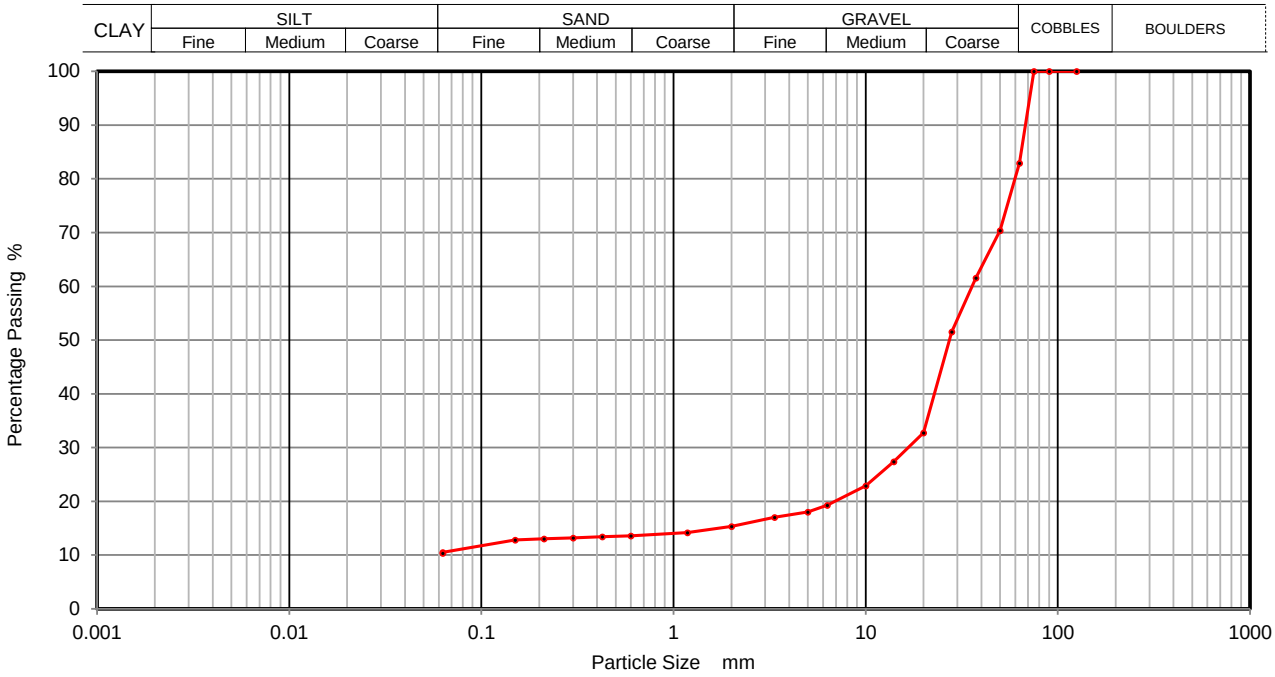
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD01
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coasre sandy silty clayey fine to coarse GRAVEL with many cobbles.	Depth Top	8.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	83		
50	70		
37.5	62		
28	52		
20	33		
14	27		
10	23		
6.3	19		
5	18		
3.35	17		
2	15		
1.18	14		
0.6	14		
0.425	13		
0.3	13		
0.212	13		
0.15	13		
0.063	10		

Sample Proportions	% dry mass
Cobbles	17
Gravel	68
Sand	5
Silt and Clay	10

Grading Analysis	
Uniformity Coefficient	

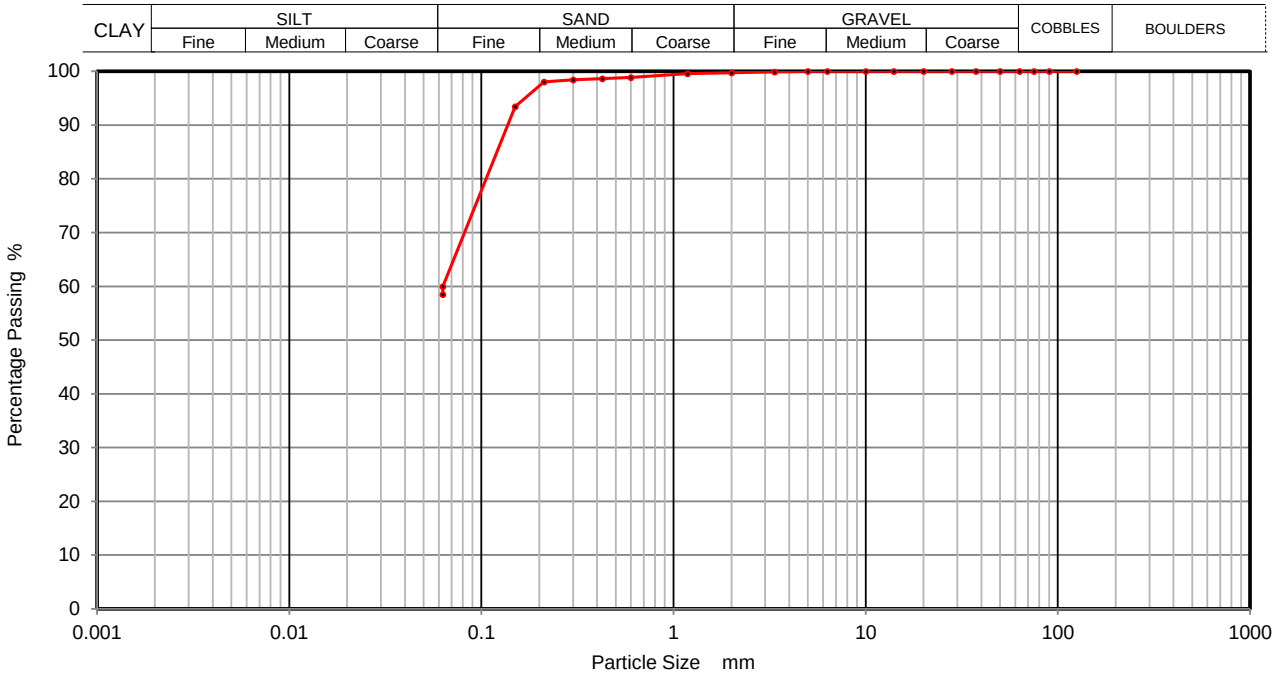
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	5.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	93		
0.063	60		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	40
Silt and Clay	60

Grading Analysis	
Uniformity Coefficient	

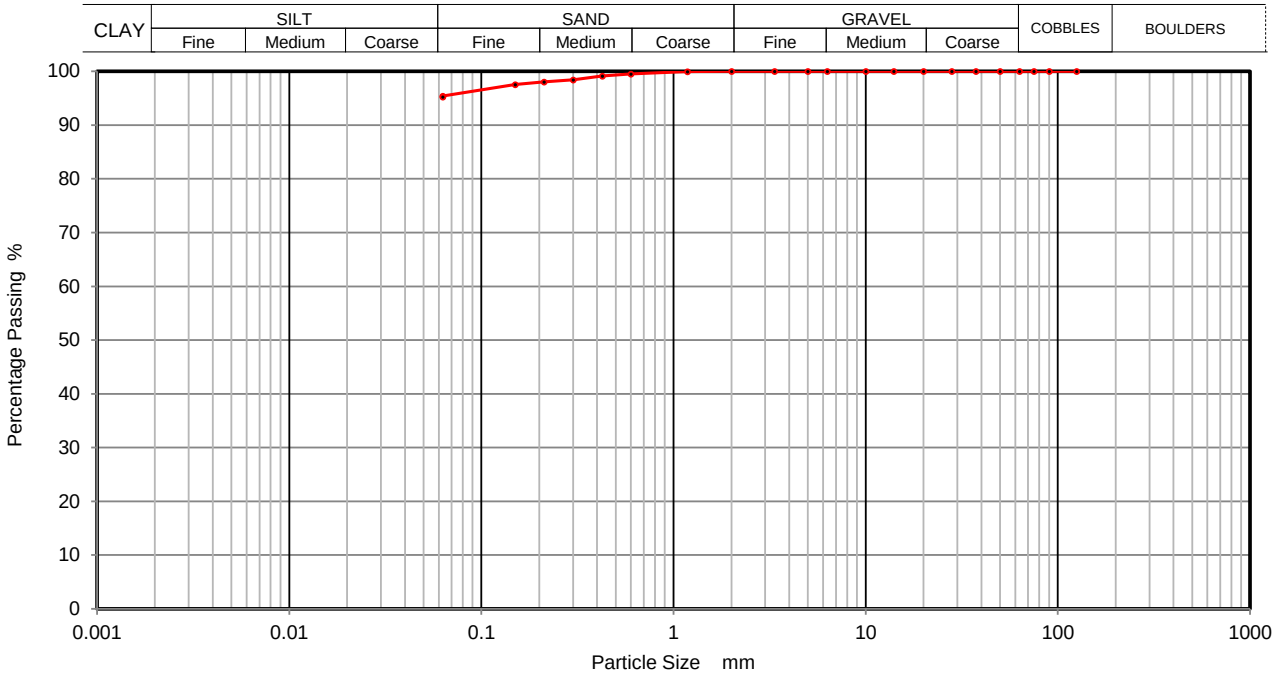
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to medium slightly sandy SILT/CLAY.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	98		
0.212	98		
0.15	98		
0.063	95		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	5
Silt and Clay	95

Grading Analysis	
Uniformity Coefficient	

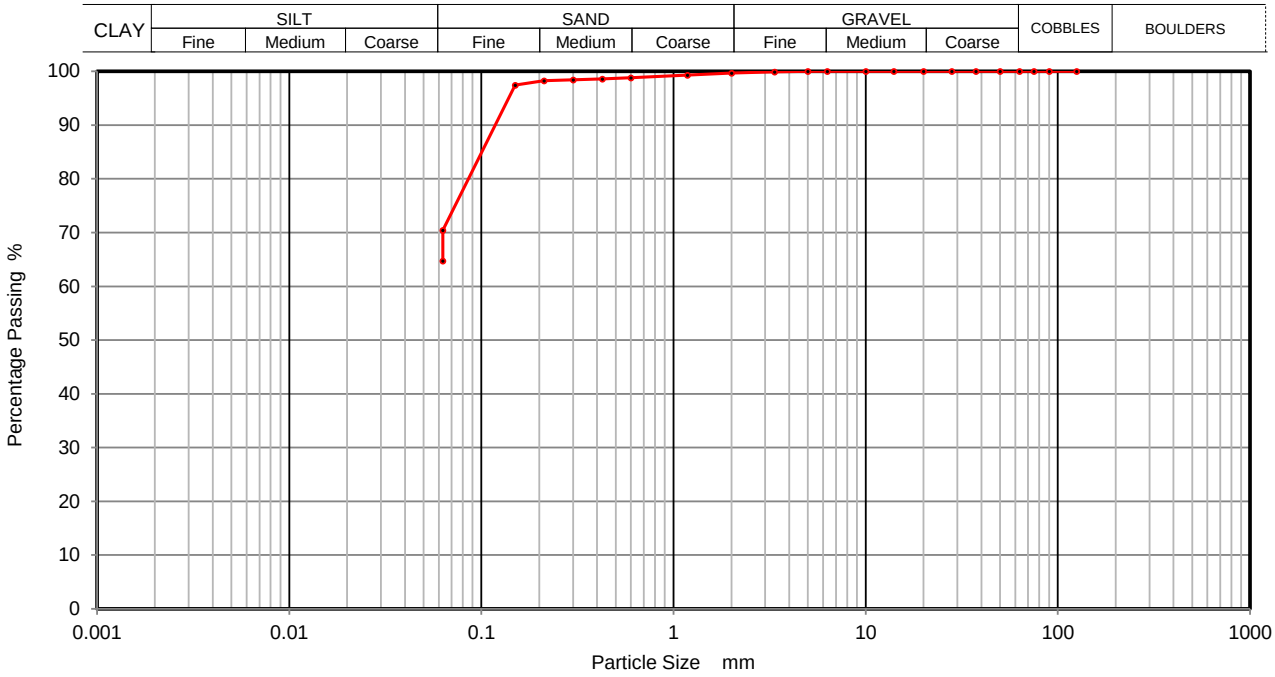
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to medium sandy SILT/CLAY.	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	97		
0.063	70		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	30
Silt and Clay	70

Grading Analysis	
Uniformity Coefficient	

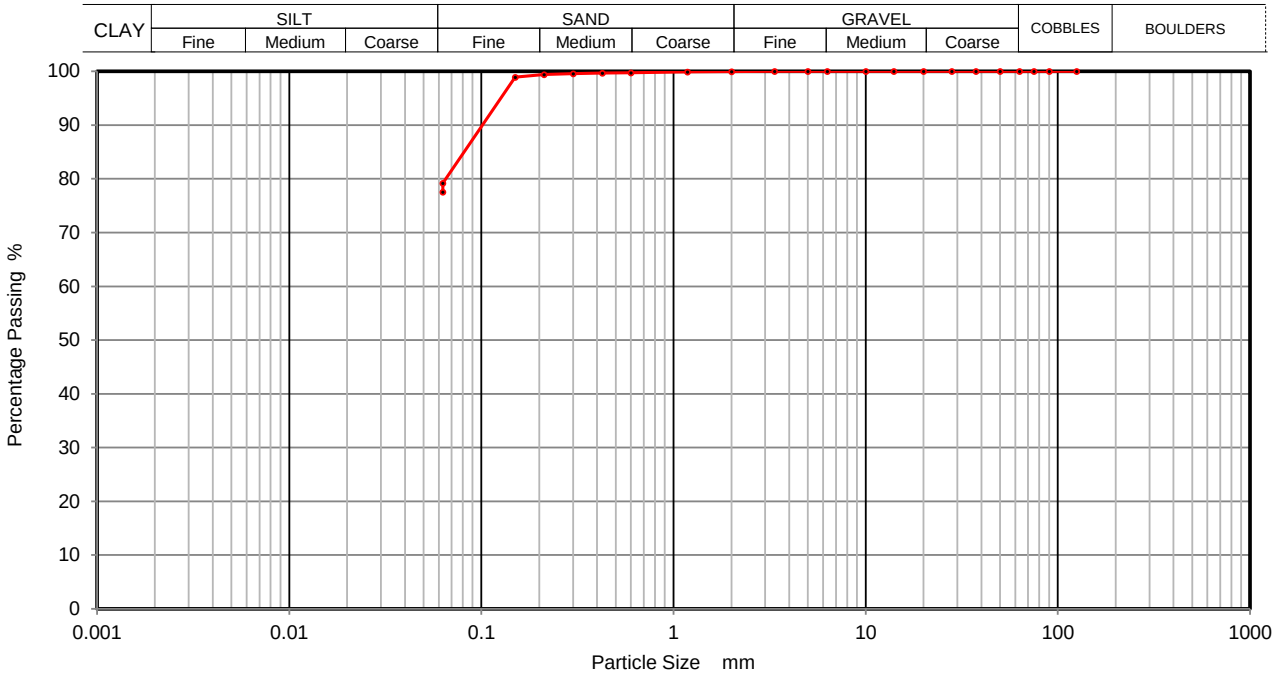
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	99		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	21
Silt and Clay	79

Grading Analysis	
Uniformity Coefficient	

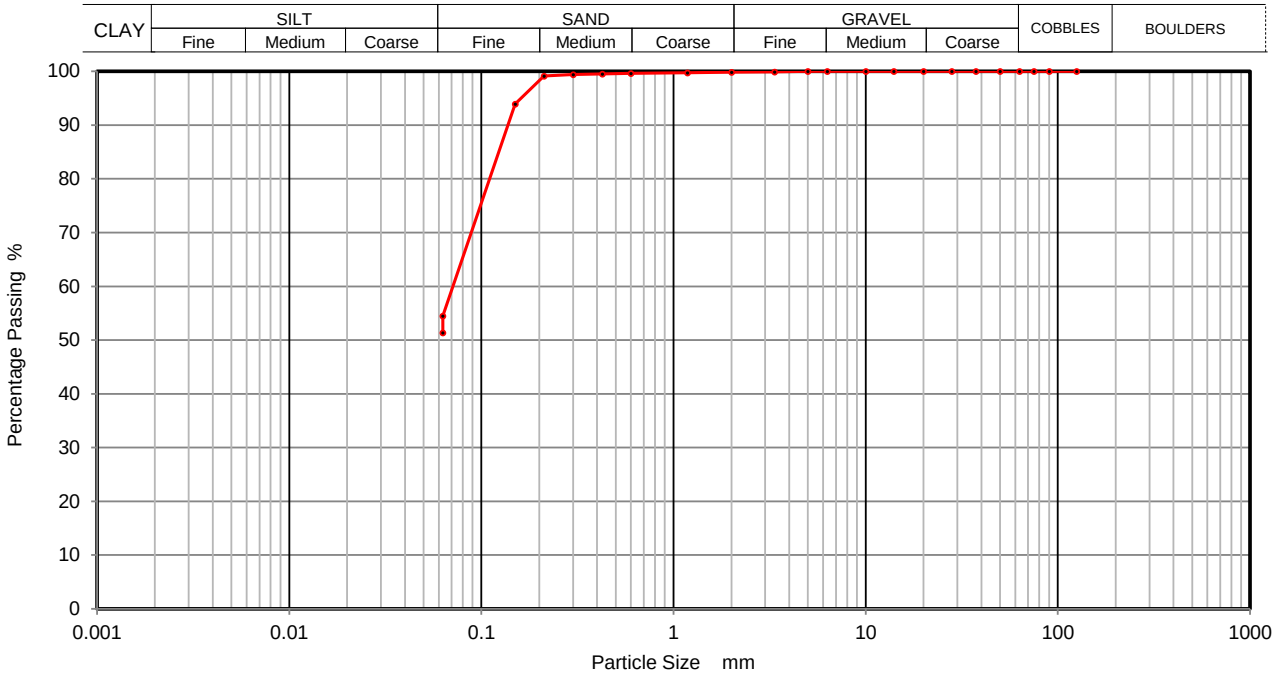
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	7.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	94		
0.063	54		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	46
Silt and Clay	54

Grading Analysis	
Uniformity Coefficient	

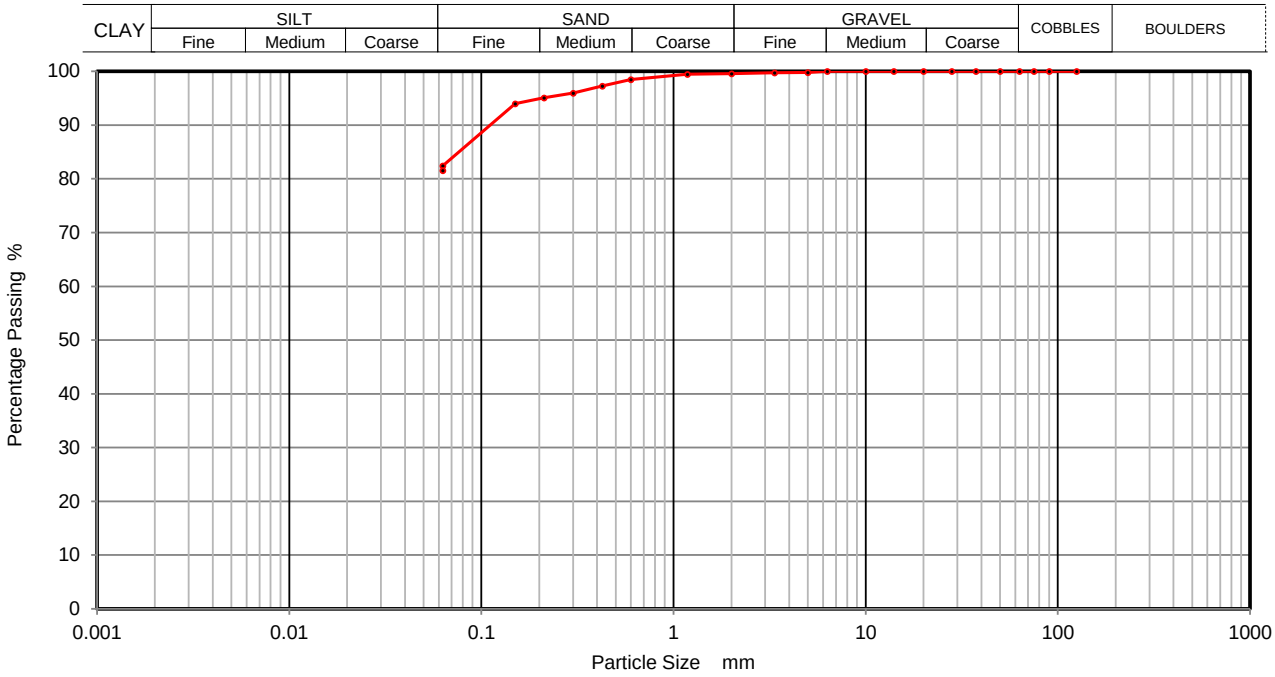
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	**Foyne Port**	Sample No.	
Soil Description	Brown fine to medium sandy CLAY/SILT.	Depth Top	**9.00**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97		
0.3	96		
0.212	95		
0.15	94		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	18
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

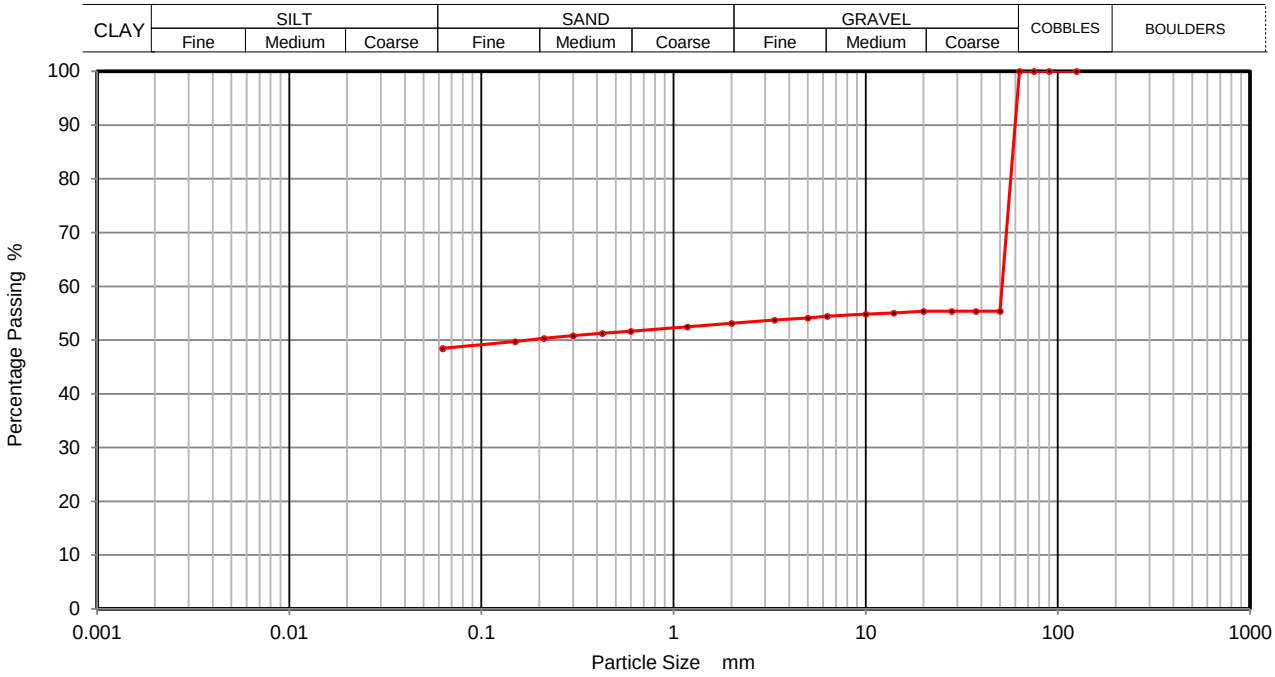
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD04
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy fine to coarse gravelly SILT/CLAY.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	55		
37.5	55		
28	55		
20	55		
14	55		
10	55		
6.3	54		
5	54		
3.35	54		
2	53		
1.18	52		
0.6	52		
0.425	51		
0.3	51		
0.212	50		
0.15	50		
0.063	48		

Sample Proportions	% dry mass
Cobbles	0
Gravel	47
Sand	5
Silt and Clay	48

Grading Analysis	
Uniformity Coefficient	

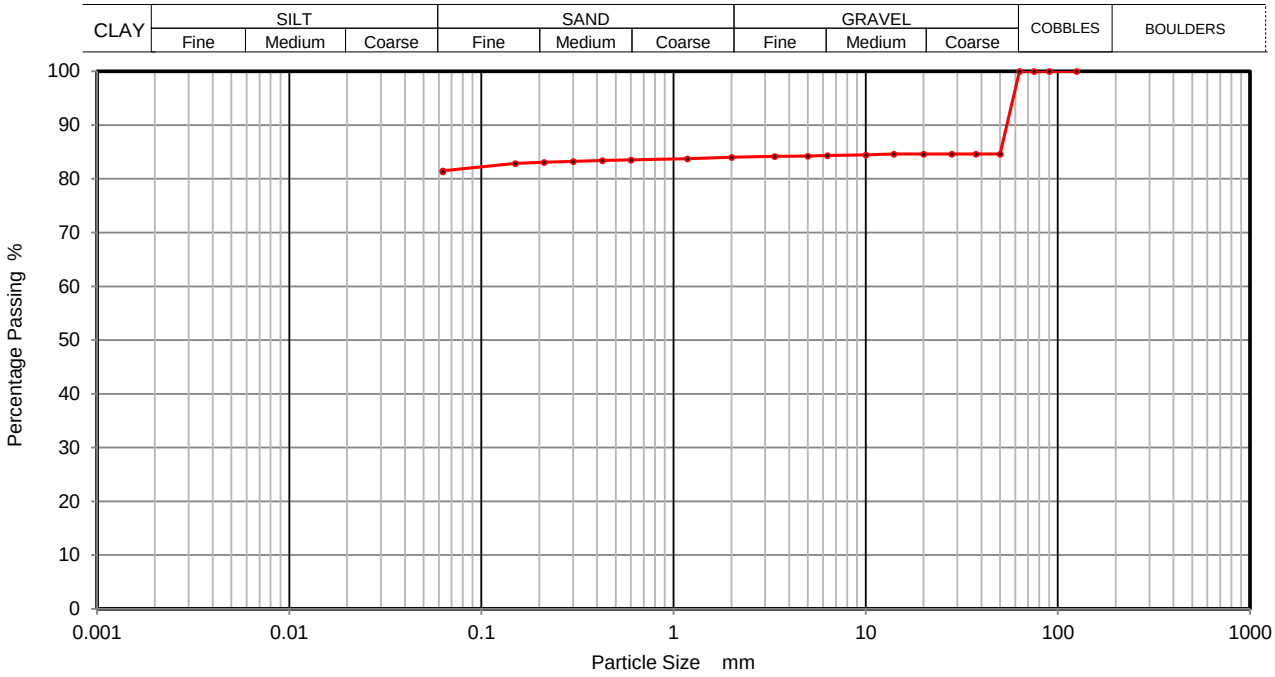
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD04
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse slightly sandy fine to coarse gravelly SILT/CLAY.	Depth Top	3.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	85		
37.5	85		
28	85		
20	85		
14	85		
10	84		
6.3	84		
5	84		
3.35	84		
2	84		
1.18	84		
0.6	84		
0.425	83		
0.3	83		
0.212	83		
0.15	83		
0.063	82		

Sample Proportions	% dry mass
Cobbles	0
Gravel	16
Sand	2
Silt and Clay	82

Grading Analysis	
Uniformity Coefficient	

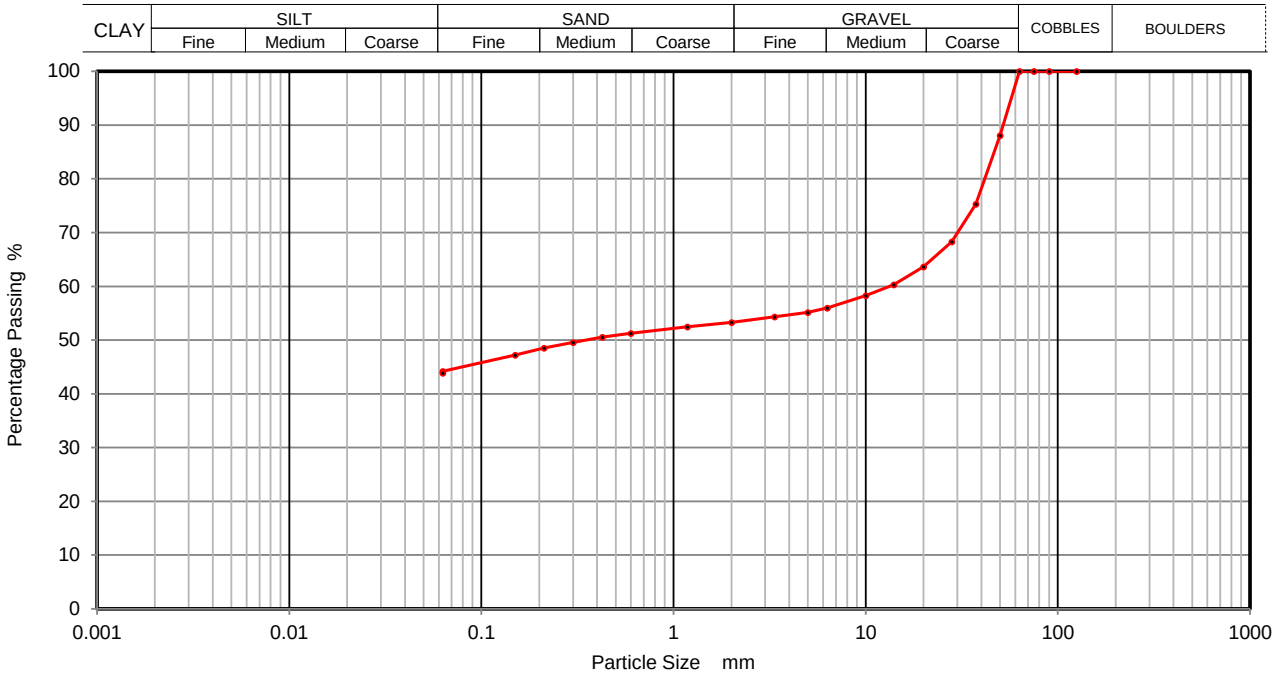
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD06
Site Name	Foyne Port	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL.	Depth Top	1.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	88		
37.5	75		
28	68		
20	64		
14	60		
10	58		
6.3	56		
5	55		
3.35	54		
2	53		
1.18	52		
0.6	51		
0.425	51		
0.3	50		
0.212	49		
0.15	47		
0.063	44		

Sample Proportions	% dry mass
Cobbles	0
Gravel	47
Sand	9
Silt and Clay	44

Grading Analysis	
Uniformity Coefficient	

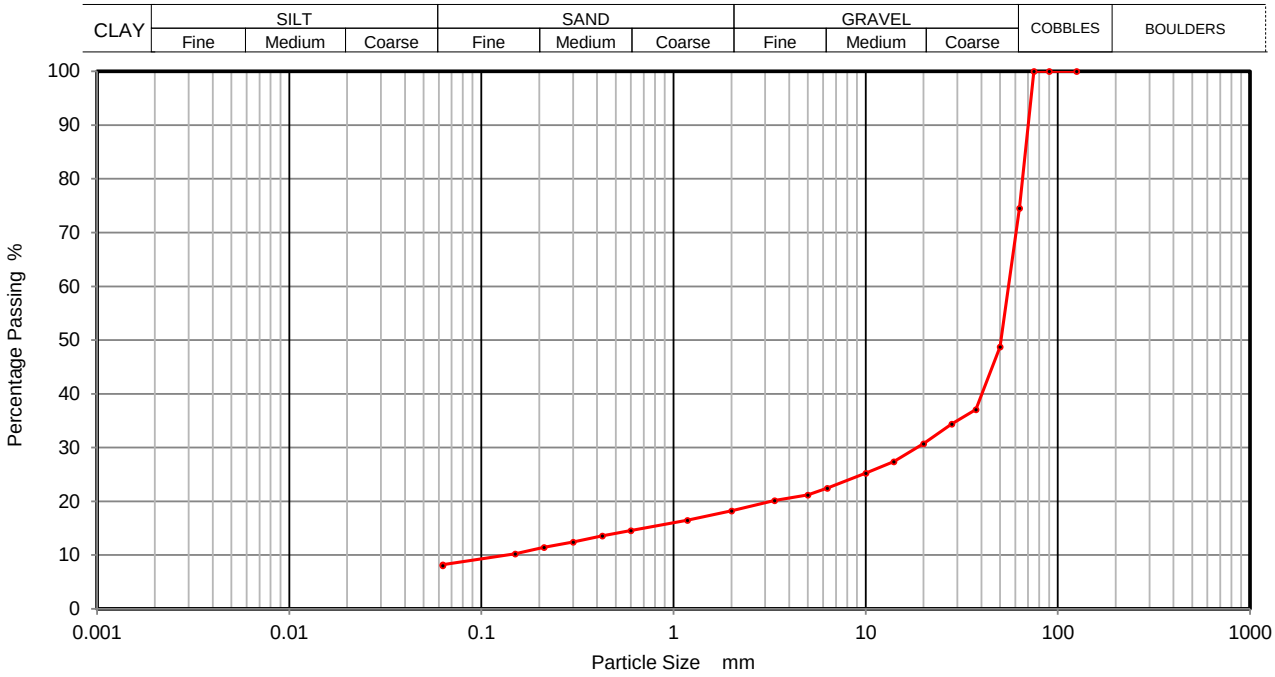
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD06
Site Name	**Foyne Port**	Sample No.	
Soil Description	Grey slightly silty fine to coarse sandy fine to coarse GRAVEL with many cobbles.	Depth Top	2.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	75		
50	49		
37.5	37		
28	34		
20	31		
14	27		
10	25		
6.3	22		
5	21		
3.35	20		
2	18		
1.18	16		
0.6	15		
0.425	14		
0.3	12		
0.212	11		
0.15	10		
0.063	8		

Sample Proportions	% dry mass
Cobbles	25
Gravel	57
Sand	10
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

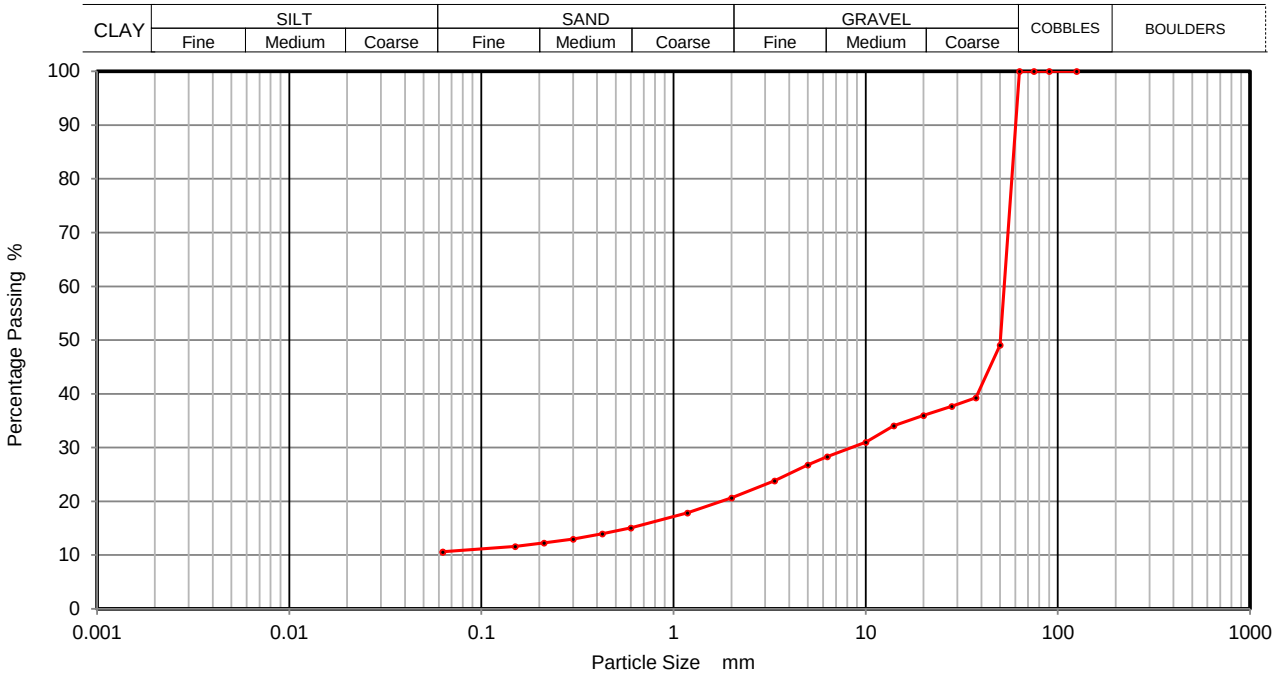
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	LD06
Site Name	**Foyne Port**	Sample No.	
Soil Description	Grey fine to coarse sandy silty clayey fine to coarse GRAVEL.	Depth Top	3.40
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	49		
37.5	39		
28	38		
20	36		
14	34		
10	31		
6.3	28		
5	27		
3.35	24		
2	21		
1.18	18		
0.6	15		
0.425	14		
0.3	13		
0.212	12		
0.15	12		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	79
Sand	10
Silt and Clay	11

Grading Analysis	
Uniformity Coefficient	

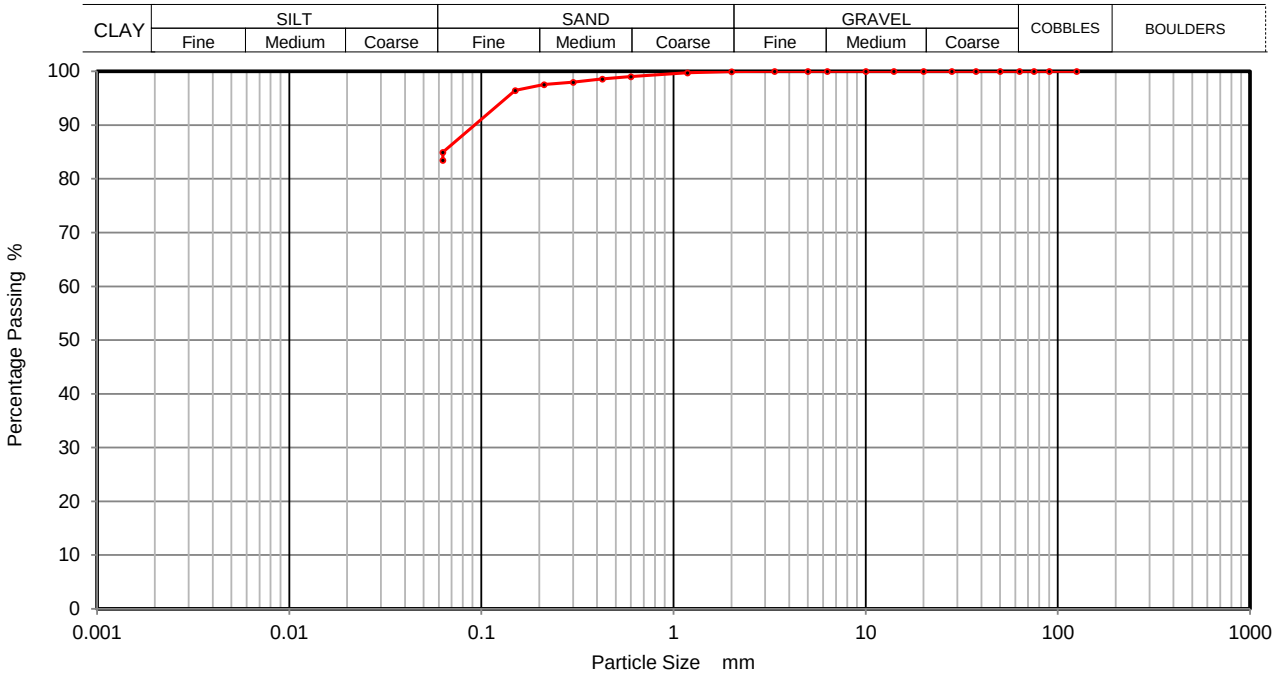
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19-09-17	Emma Sharp	
RO/MH	Approved	20-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy CLAY/SILT.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	96		
0.063	85		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	15
Silt and Clay	85

Grading Analysis	
Uniformity Coefficient	

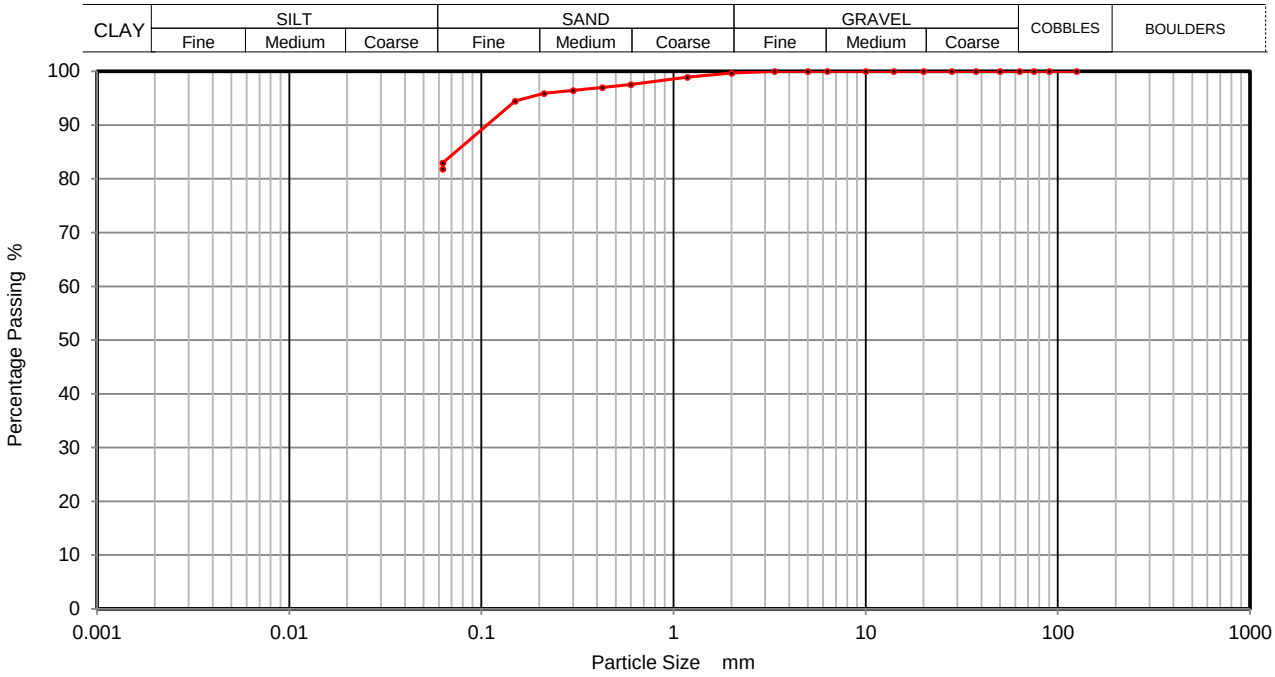
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy CLAY/SILT.	Depth Top	4.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97		
0.3	96		
0.212	96		
0.15	94		
0.063	83		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	17
Silt and Clay	83

Grading Analysis	
Uniformity Coefficient	

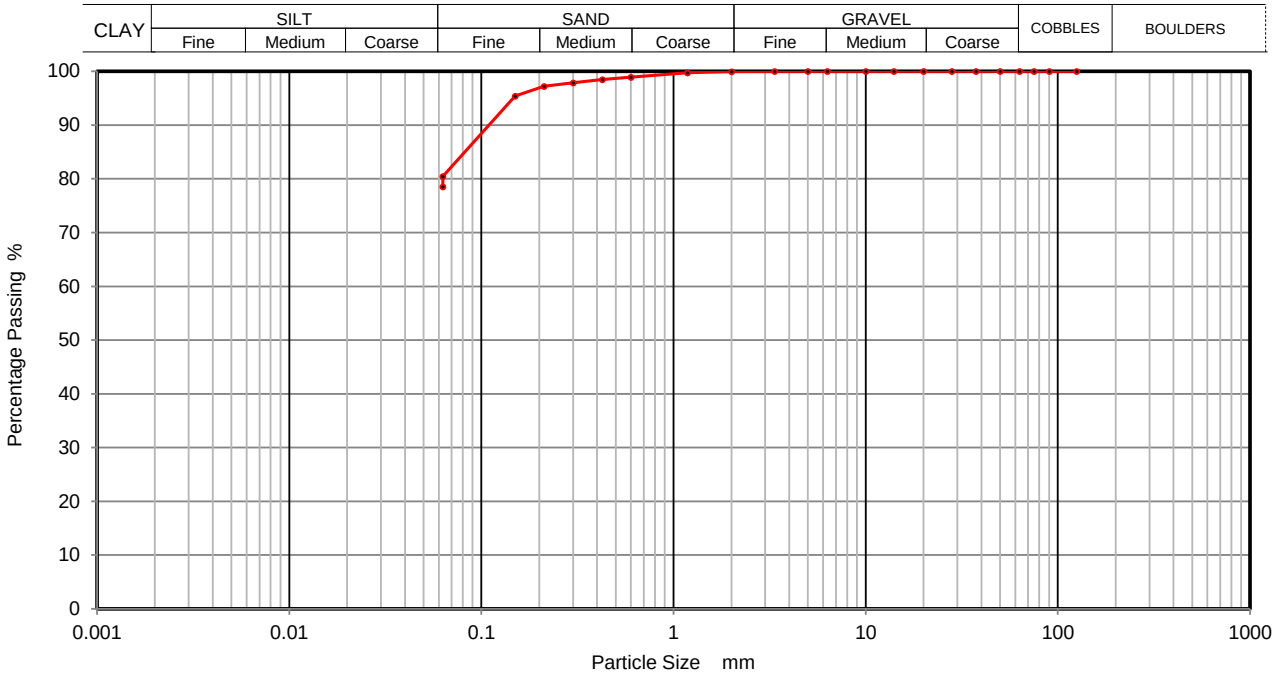
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy CLAY/SILT.	Depth Top	6.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	95		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	20
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

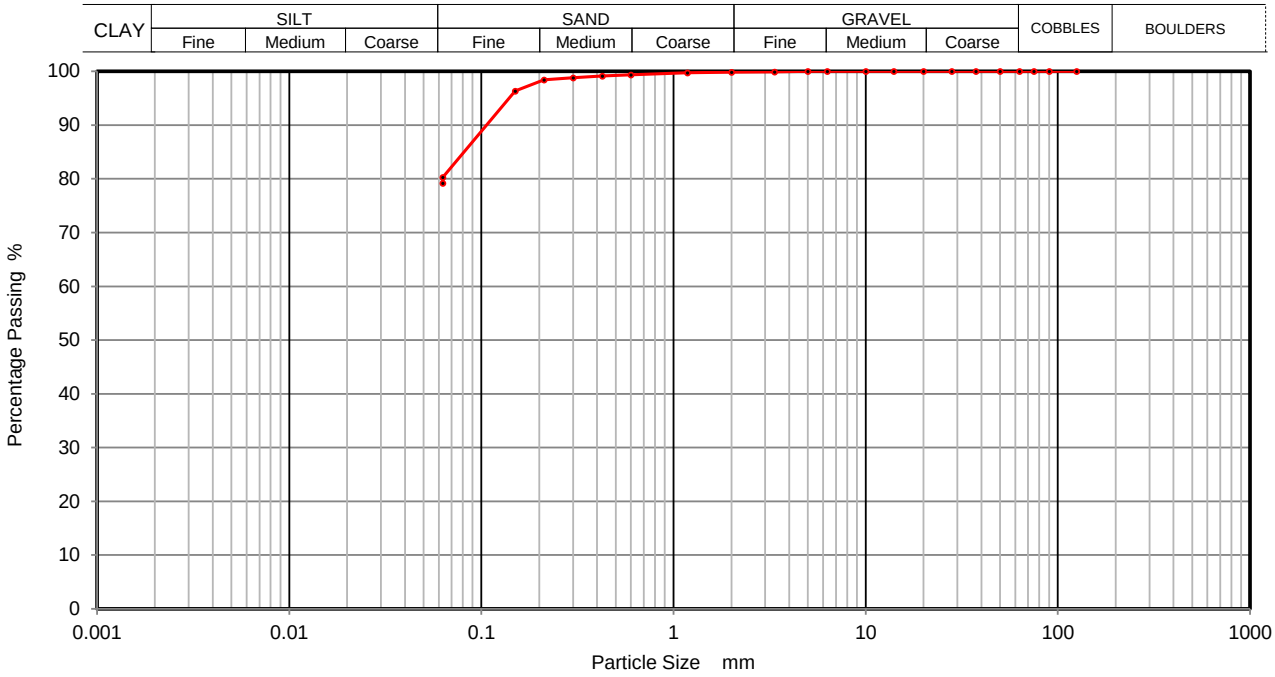
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to medium sandy CLAY/SILT.	Depth Top	8.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	96		
0.063	80		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	20
Silt and Clay	80

Grading Analysis	
Uniformity Coefficient	

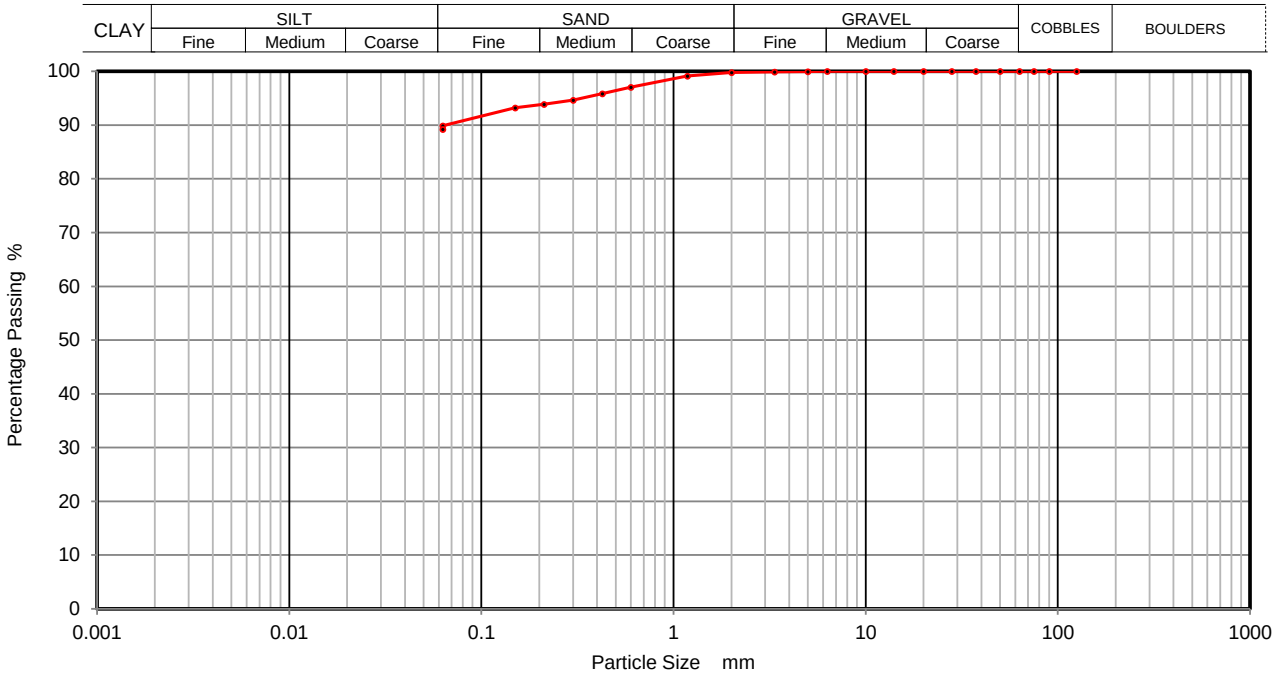
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey fine to coarse sandy CLAY/SILT.	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	96		
0.3	95		
0.212	94		
0.15	93		
0.063	90		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	10
Silt and Clay	90

Grading Analysis	
Uniformity Coefficient	

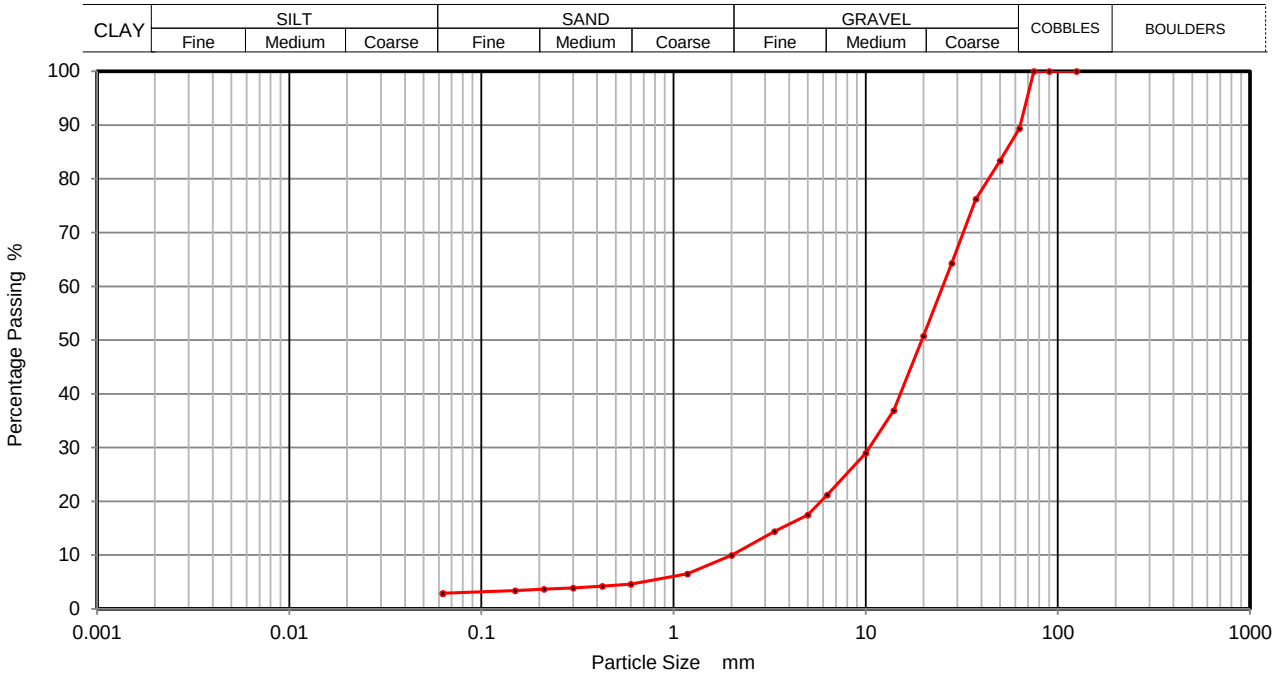
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse slightly sandy fine to coarse GRAVEL with few cobbles.	Depth Top	14.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	89		
50	83		
37.5	76		
28	64		
20	51		
14	37		
10	29		
6.3	21		
5	17		
3.35	14		
2	10		
1.18	7		
0.6	5		
0.425	4		
0.3	4		
0.212	4		
0.15	3		
0.063	3		

Sample Proportions	% dry mass
Cobbles	11
Gravel	79
Sand	7
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

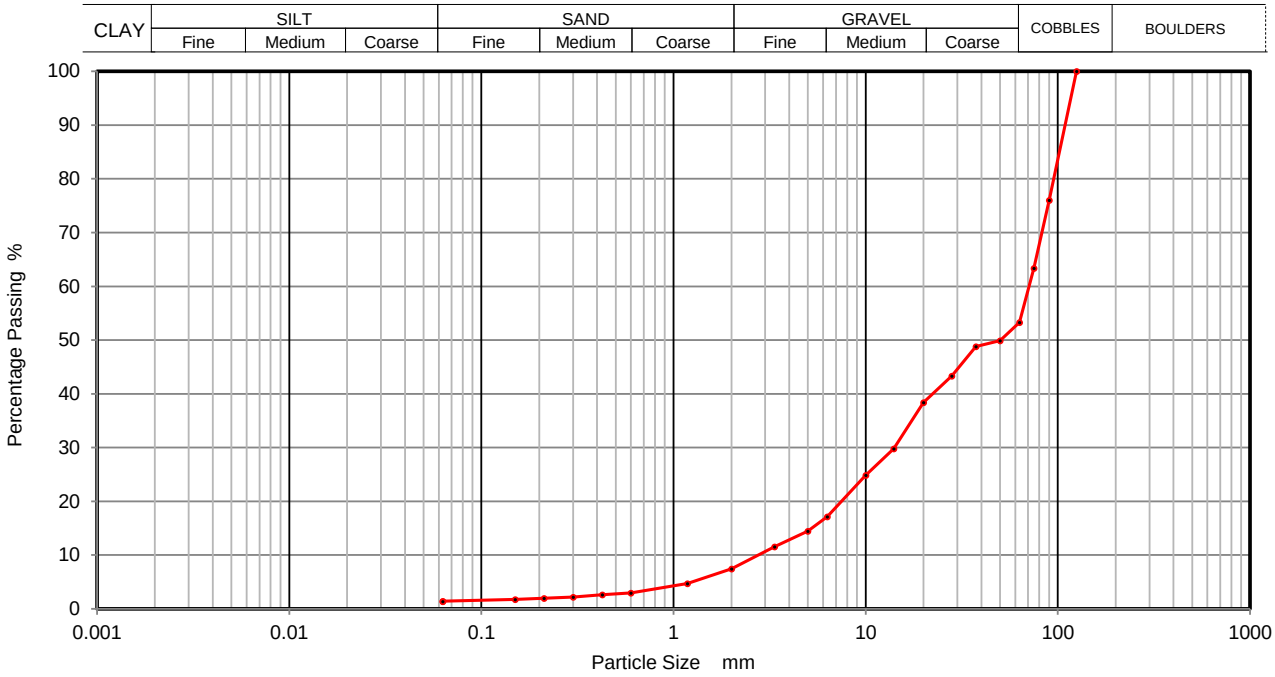
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse slightly sandy fine to coarse GRAVEL with many cobbles.	Depth Top	17.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	76	0.0060	
75	63	0.0019	
63	53		
50	50		
37.5	49		
28	43		
20	38		
14	30		
10	25		
6.3	17		
5	14		
3.35	12		
2	7		
1.18	5		
0.6	3		
0.425	3		
0.3	2		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Cobbles	47
Gravel	46
Sand	6
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

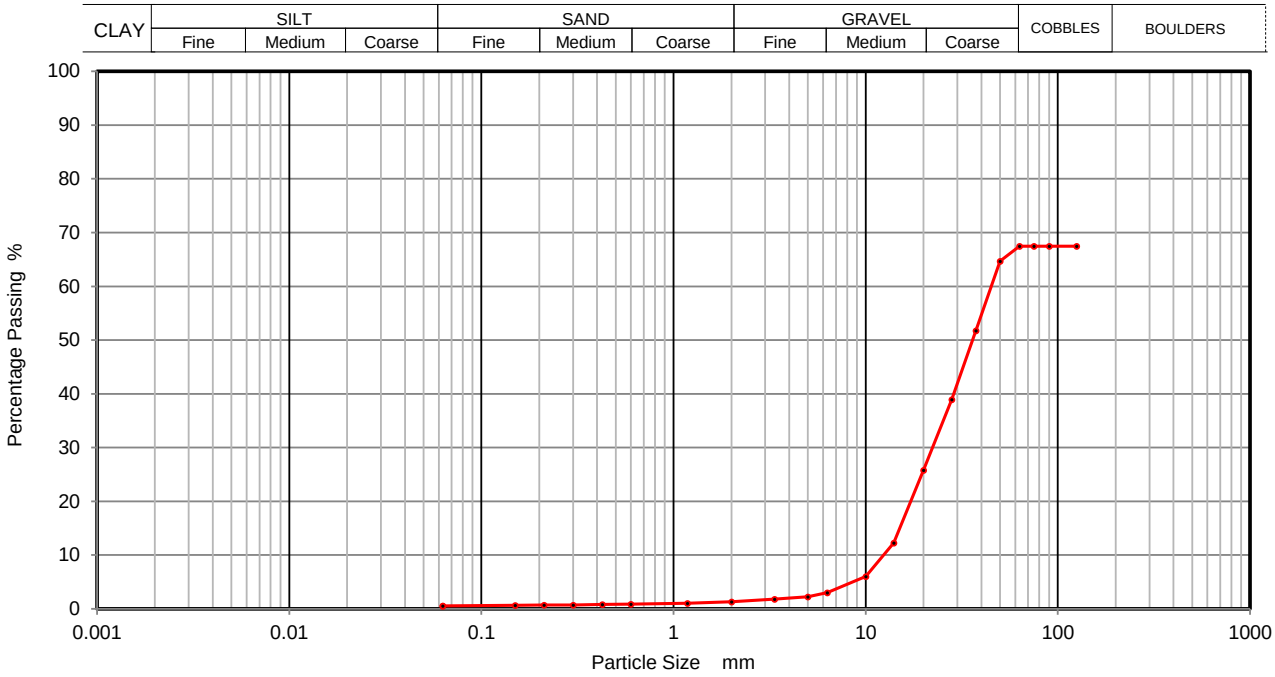
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Brown slightly silty fine to coarse GRAVEL with many cobbles.	Depth Top	18.70
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	67	0.0200	
90	67	0.0060	
75	67	0.0019	
63	67		
50	65		
37.5	52		
28	39		
20	26		
14	12		
10	6		
6.3	3		
5	2		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	33
Gravel	66
Sand	0
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

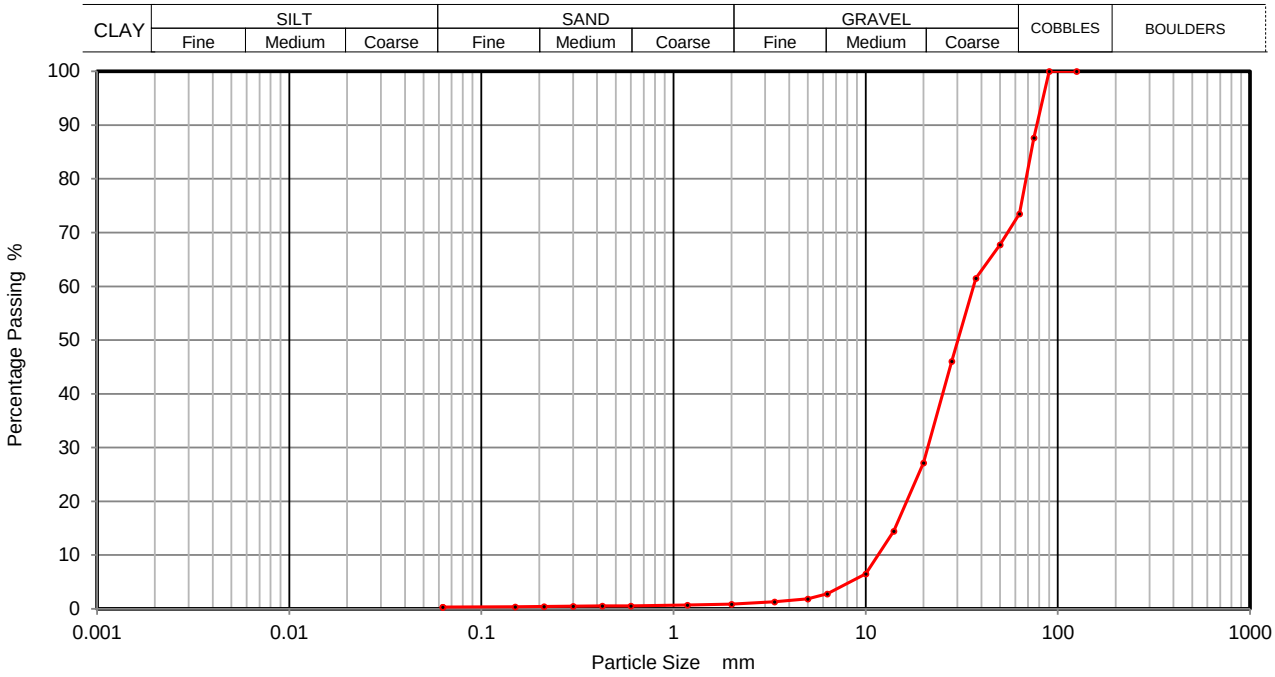
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foyne Port	Sample No.	
Soil Description	Grey slightly fine to coarse sandy fine to coarse GRAVEL with many cobbles.	Depth Top	21.70
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	88	0.0019	
63	74		
50	68		
37.5	61		
28	46		
20	27		
14	14		
10	7		
6.3	3		
5	2		
3.35	1		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	26
Gravel	73
Sand	1
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

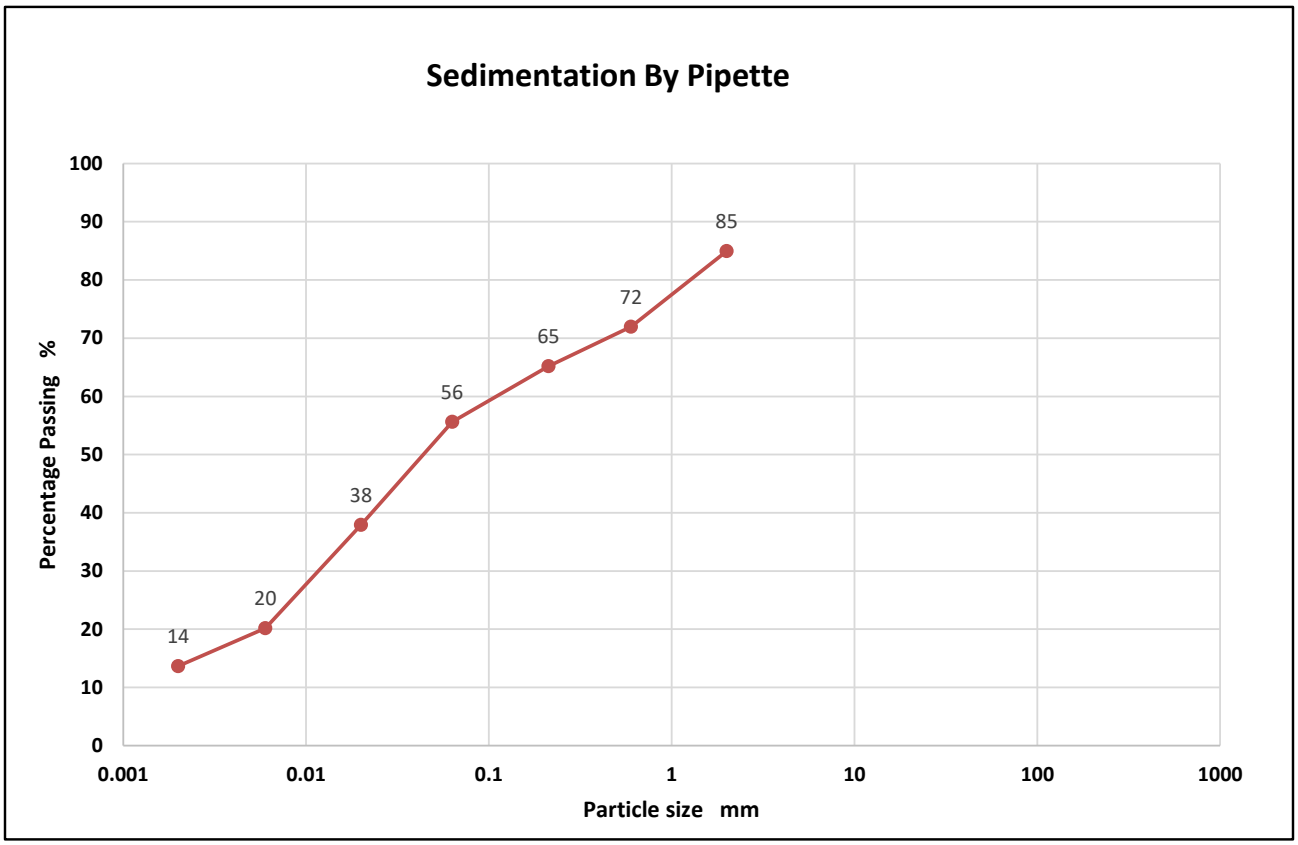
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	21-09-17	Emma Sharp	
RO/MH	Approved	22-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey clayey gravelly sandy SILT.	Depth Top	2.70
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	85
0.60	72
0.212	65
0.063	56

Sedimentation Analysis

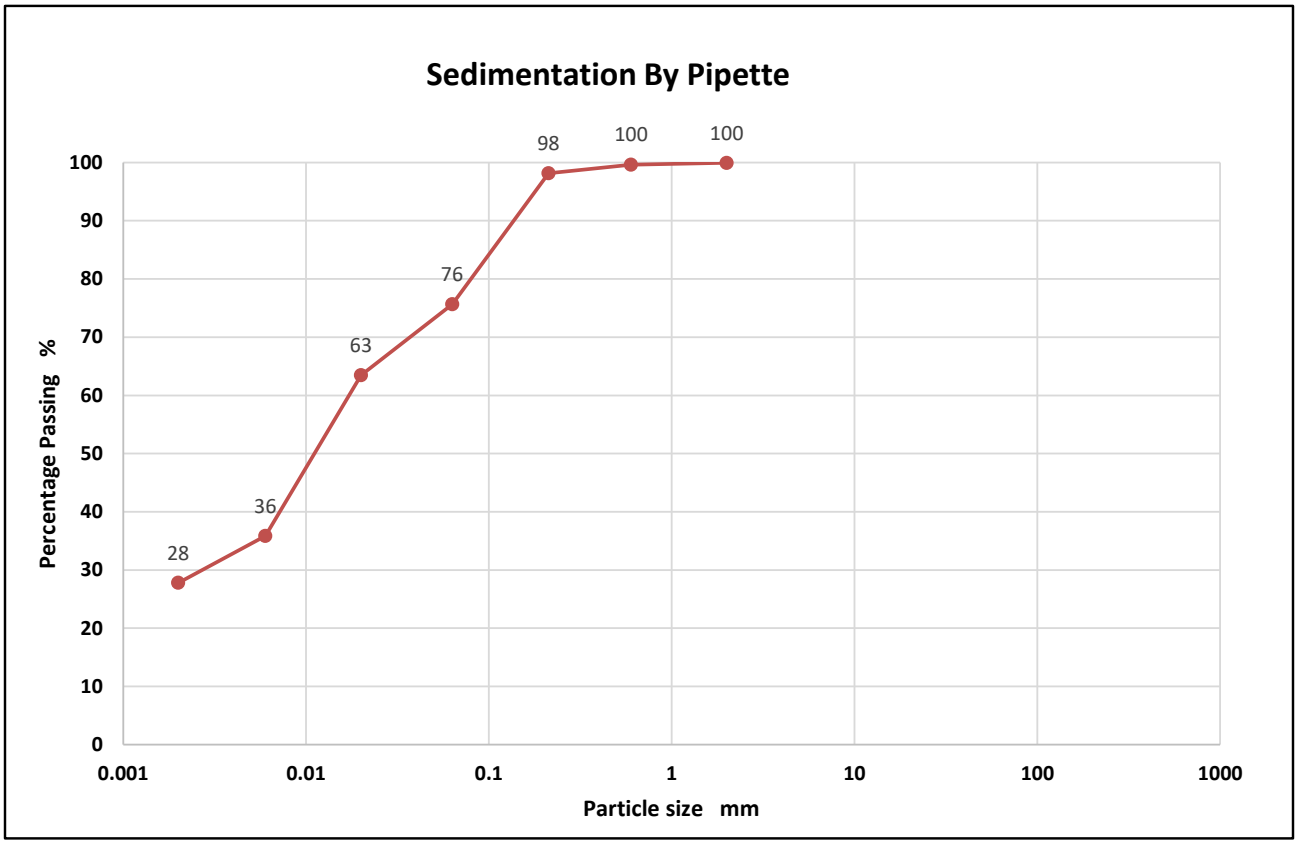
Particle Diameter	Percentage Passing
0.02	38
0.006	20
0.002	14

Soil Fraction	Total Percentage
Gravel	15
Sand	29
Silt	42
Clay	14

Operators	Checked	18-09-17	Emma Sharp	
RO	Approved	19-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey sandy clayey SILT.	Depth Top	4.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	98
0.063	76

Sedimentation Analysis

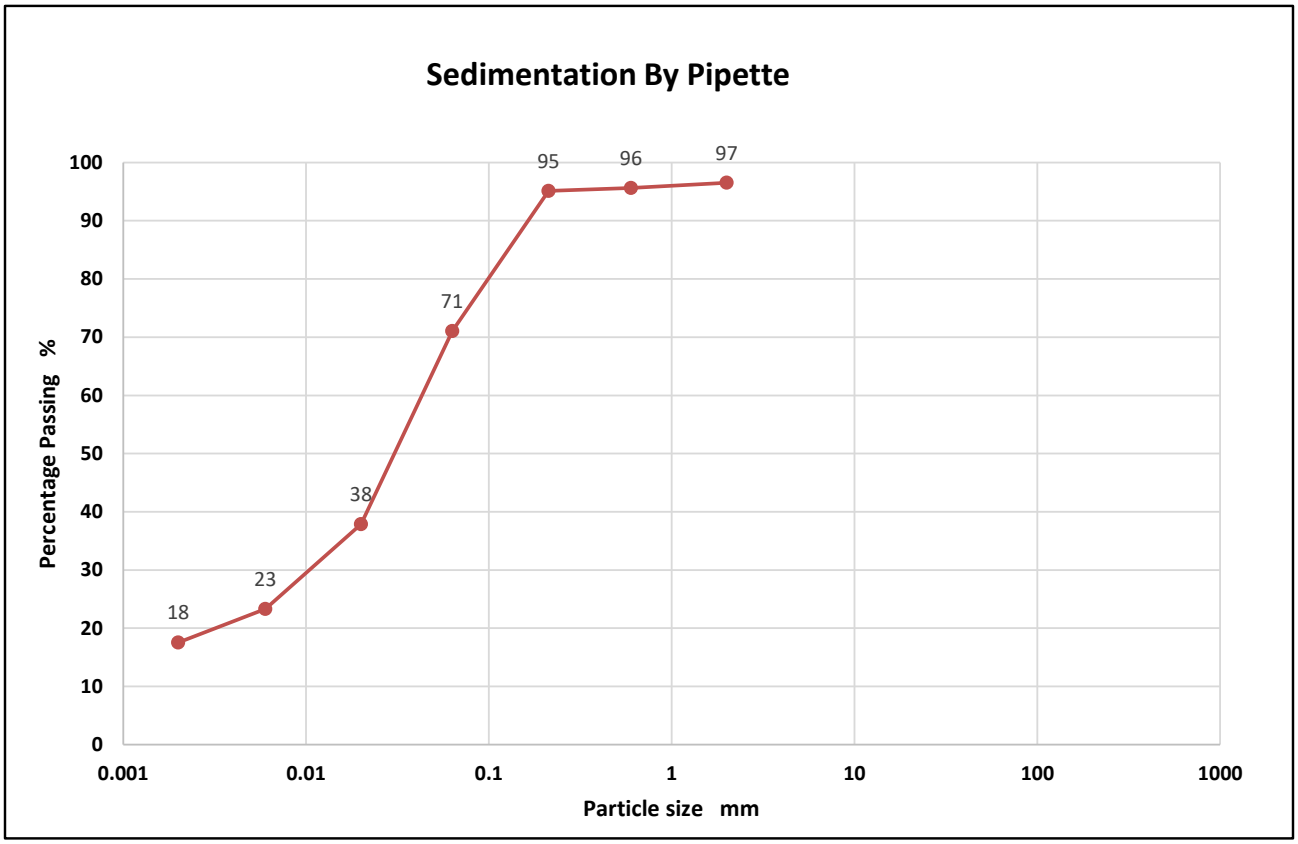
Particle Diameter	Percentage Passing
0.02	63
0.006	36
0.002	28

Soil Fraction	Total Percentage
Gravel	0
Sand	24
Silt	48
Clay	28

Operators	Checked	19-09-17	Emma Sharp	
RO	Approved	20-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey gravelly clayey sandy SILT.	Depth Top	10.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	97
0.60	96
0.212	95
0.063	71

Sedimentation Analysis

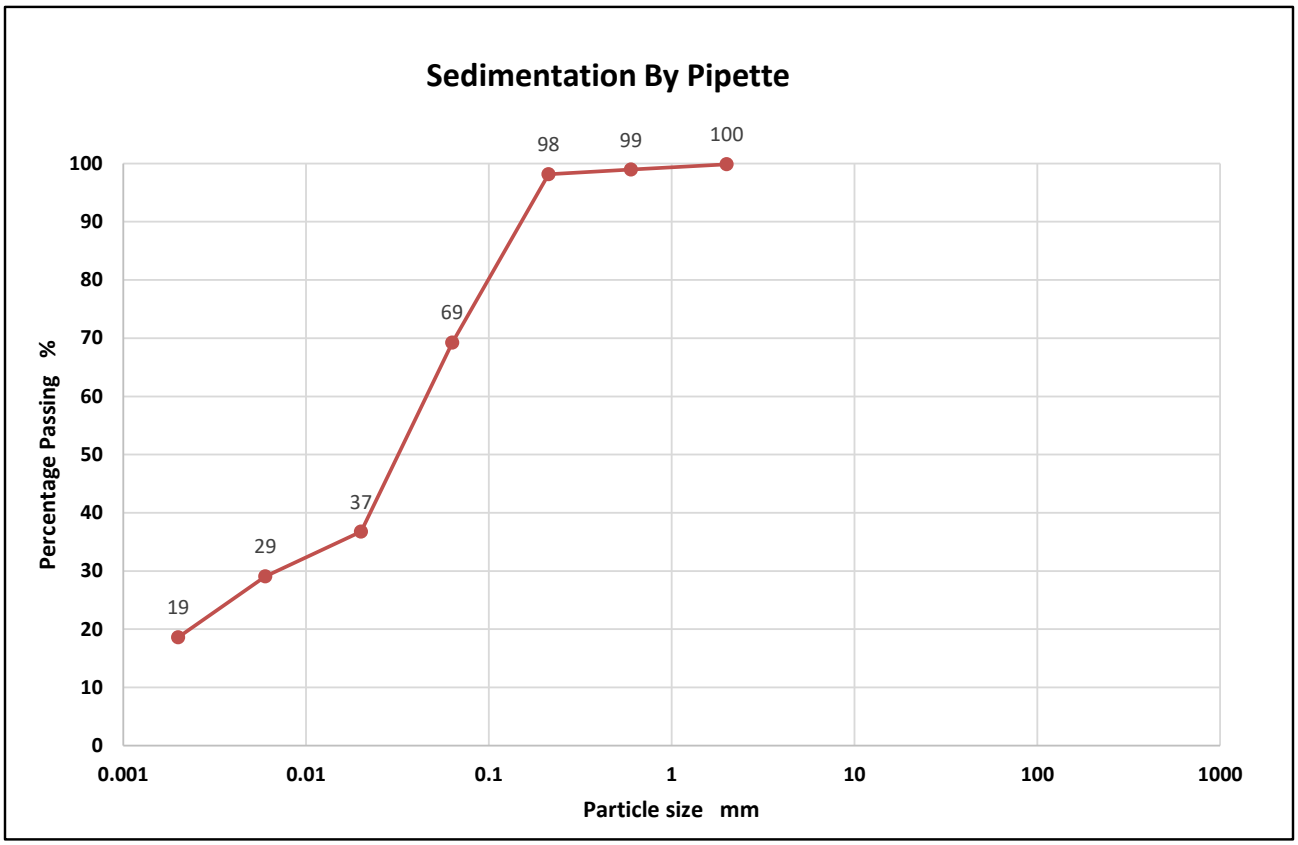
Particle Diameter	Percentage Passing
0.02	38
0.006	23
0.002	18

Soil Fraction	Total Percentage
Gravel	3
Sand	25
Silt	53
Clay	18

Operators	Checked	18-09-17	Emma Sharp	
RO	Approved	19-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey clayey sandy SILT.	Depth Top	14.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	99
0.212	98
0.063	69

Sedimentation Analysis

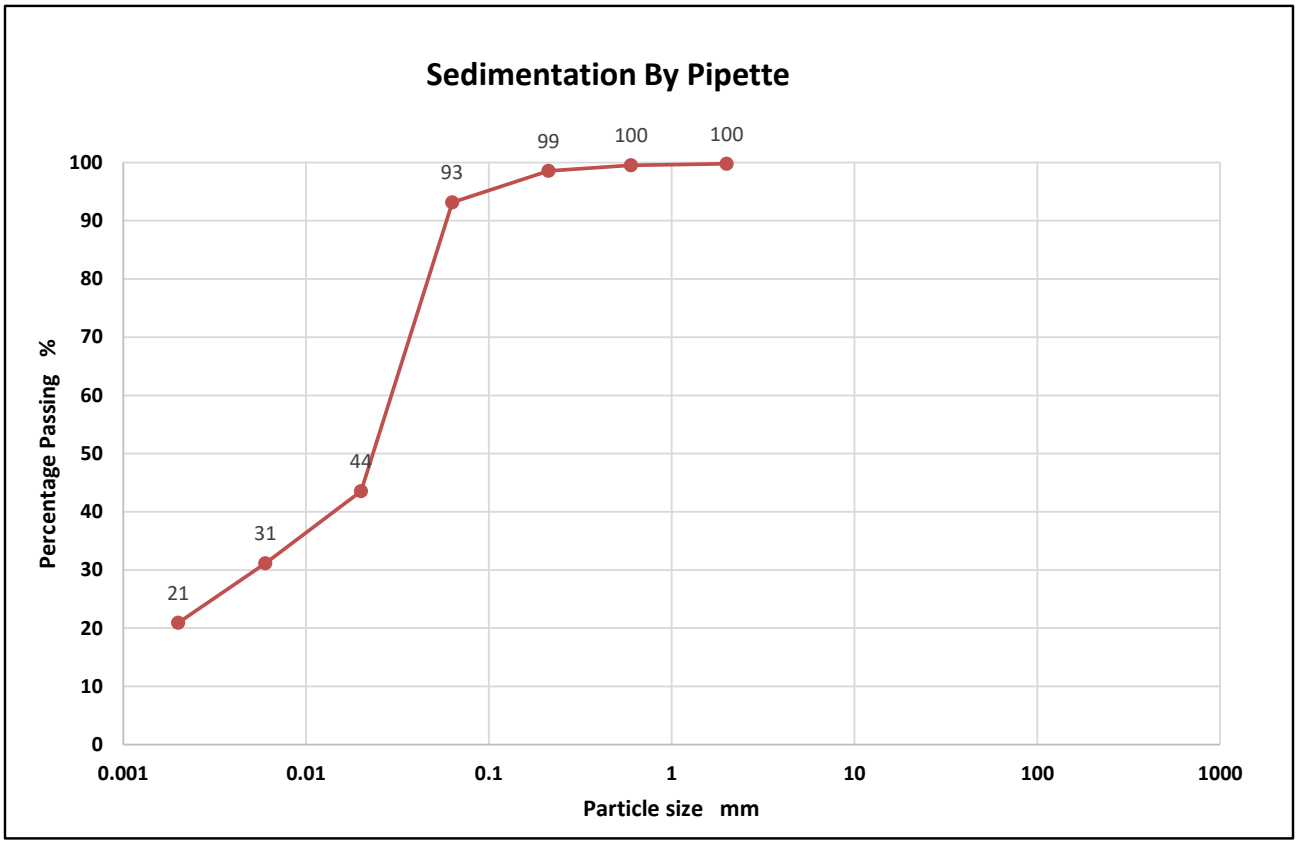
Particle Diameter	Percentage Passing
0.02	37
0.006	29
0.002	19

Soil Fraction	Total Percentage
Gravel	0
Sand	31
Silt	51
Clay	19

Operators	Checked	18-09-17	Emma Sharp	
RO	Approved	19-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	L07
Site Name	Foynes Port	Sample No.	
Soil Description	Grey sandy clayey SILT.	Depth Top	4.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	99
0.063	93

Sedimentation Analysis

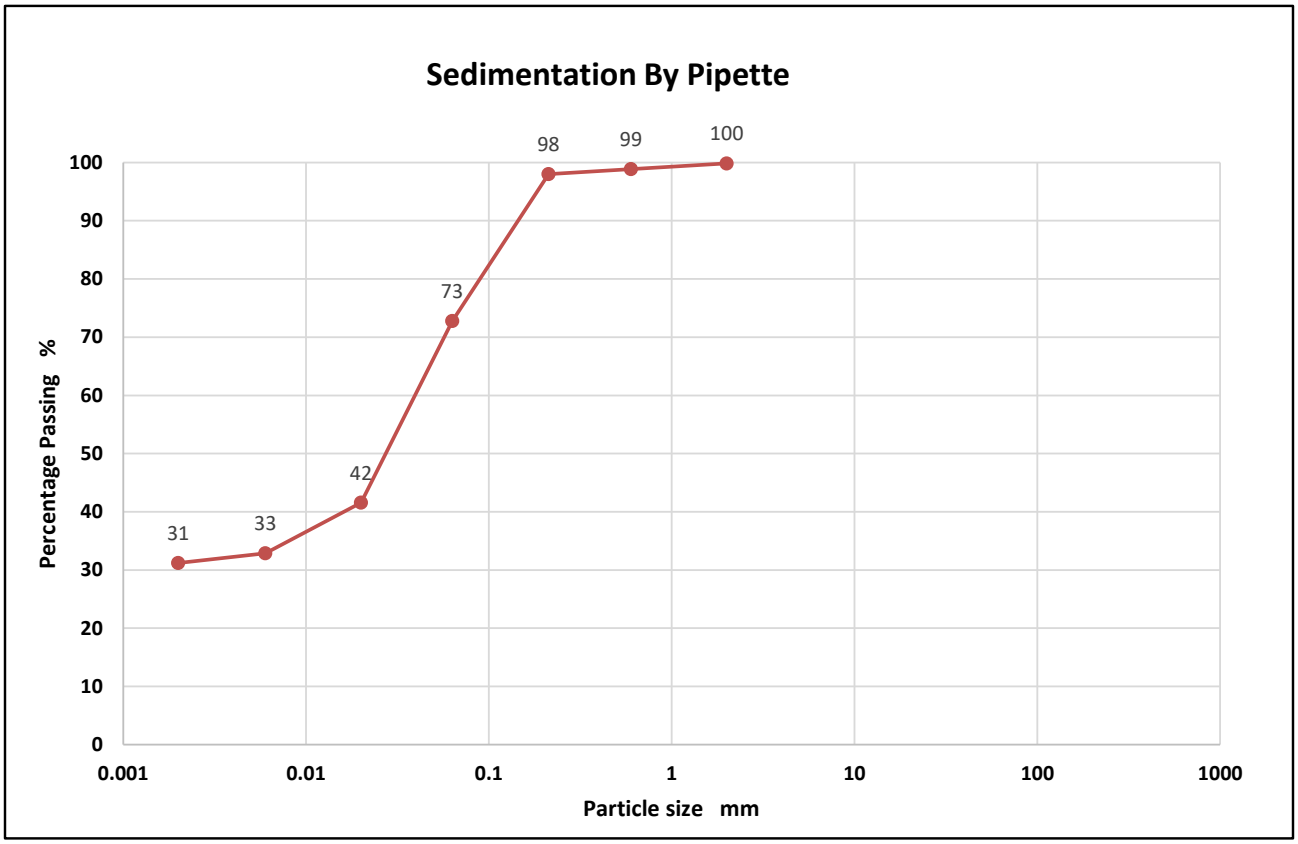
Particle Diameter	Percentage Passing
0.02	44
0.006	31
0.002	21

Soil Fraction	Total Percentage
Gravel	0
Sand	7
Silt	72
Clay	21

Operators	Checked	18-09-17	Emma Sharp	
RO	Approved	19-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	LD01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey sandy clayey SILT.	Depth Top	3.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	99
0.212	98
0.063	73

Sedimentation Analysis

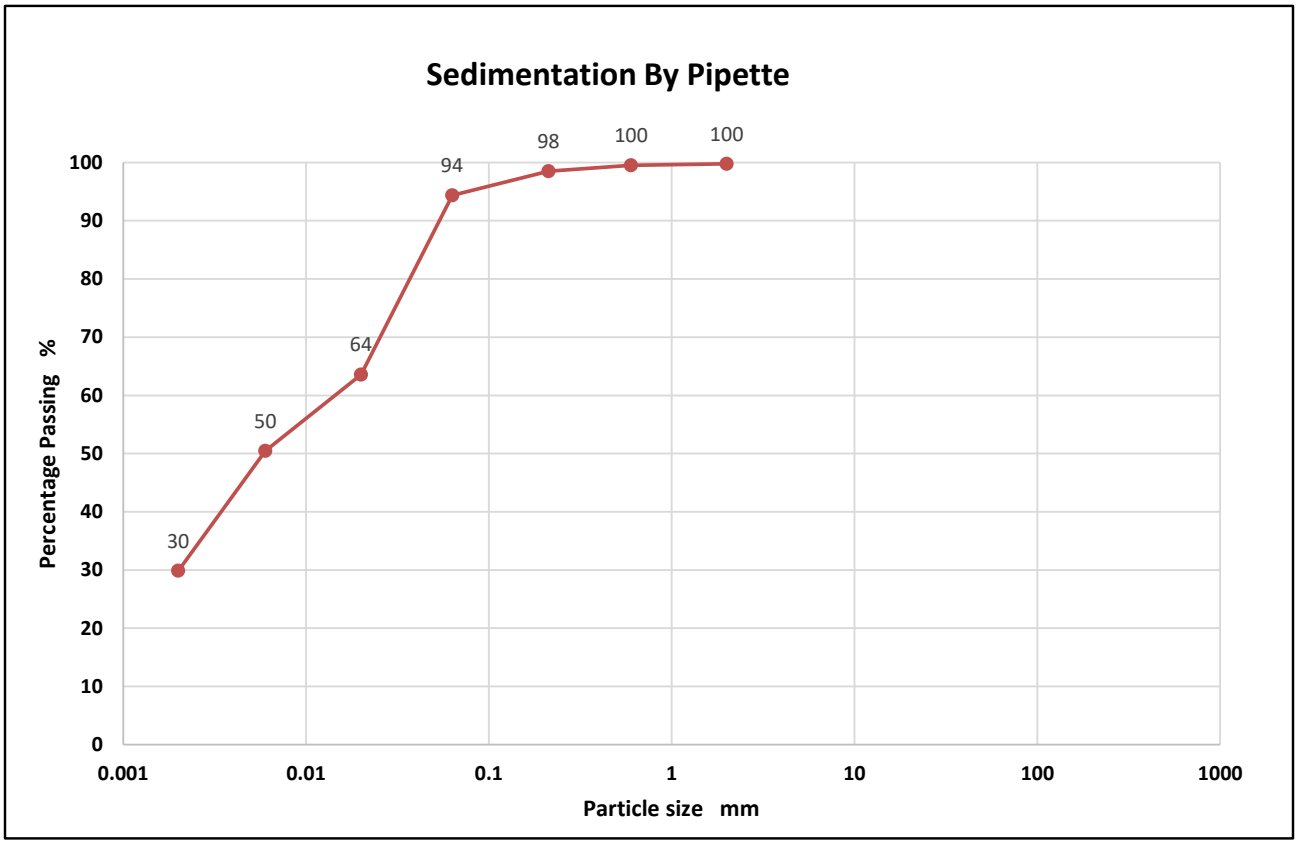
Particle Diameter	Percentage Passing
0.02	42
0.006	33
0.002	31

Soil Fraction	Total Percentage
Gravel	0
Sand	27
Silt	42
Clay	31

Operators	Checked	19-09-17	Emma Sharp	
RO	Approved	20-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey sandy clayey SILT.	Depth Top	8.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	98
0.063	94

Sedimentation Analysis

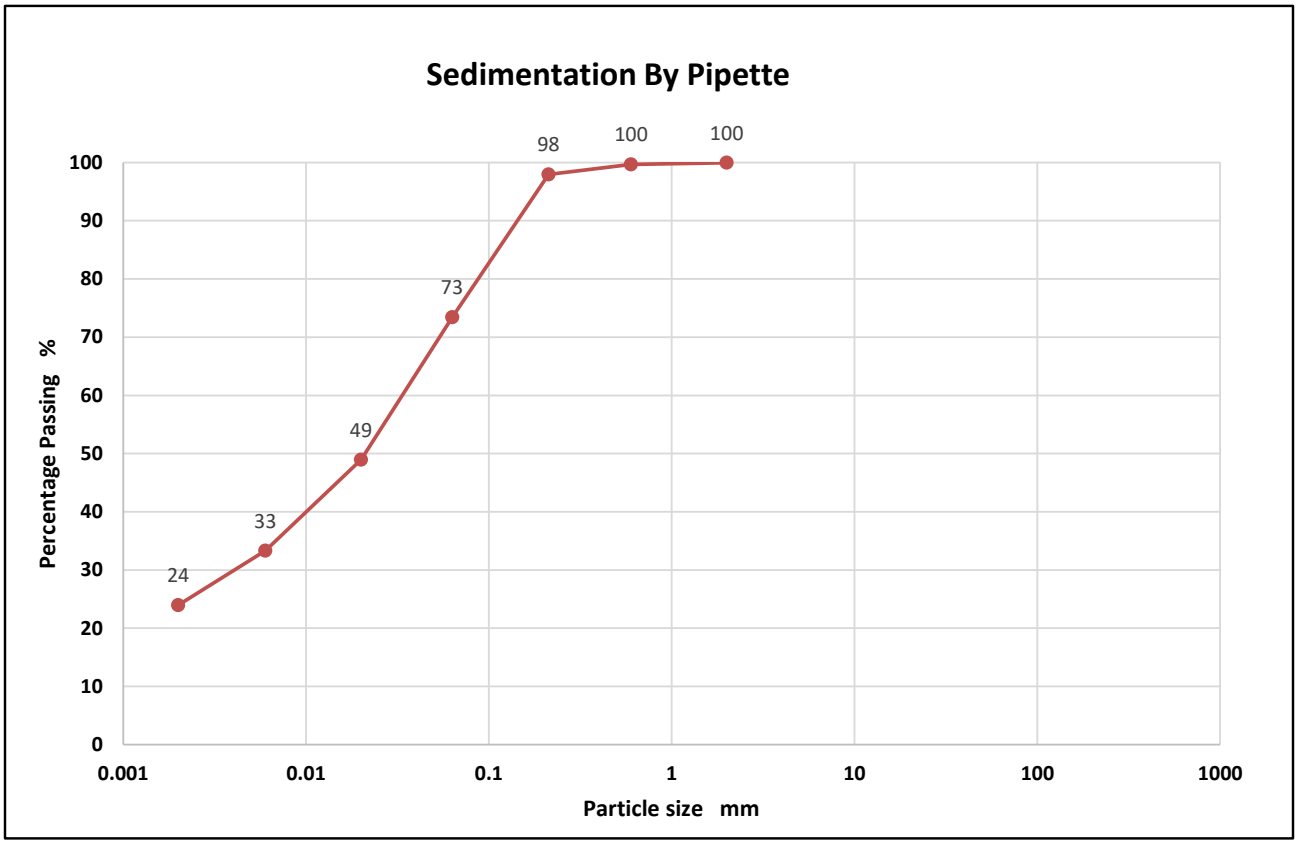
Particle Diameter	Percentage Passing
0.02	64
0.006	50
0.002	30

Soil Fraction	Total Percentage
Gravel	0
Sand	5
Silt	65
Clay	30

Operators	Checked	19-09-17	Emma Sharp	
RO	Approved	20-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foynes Port	Sample No.	
Soil Description	Grey clayey sandy SILT.	Depth Top	3.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	98
0.063	73

Sedimentation Analysis

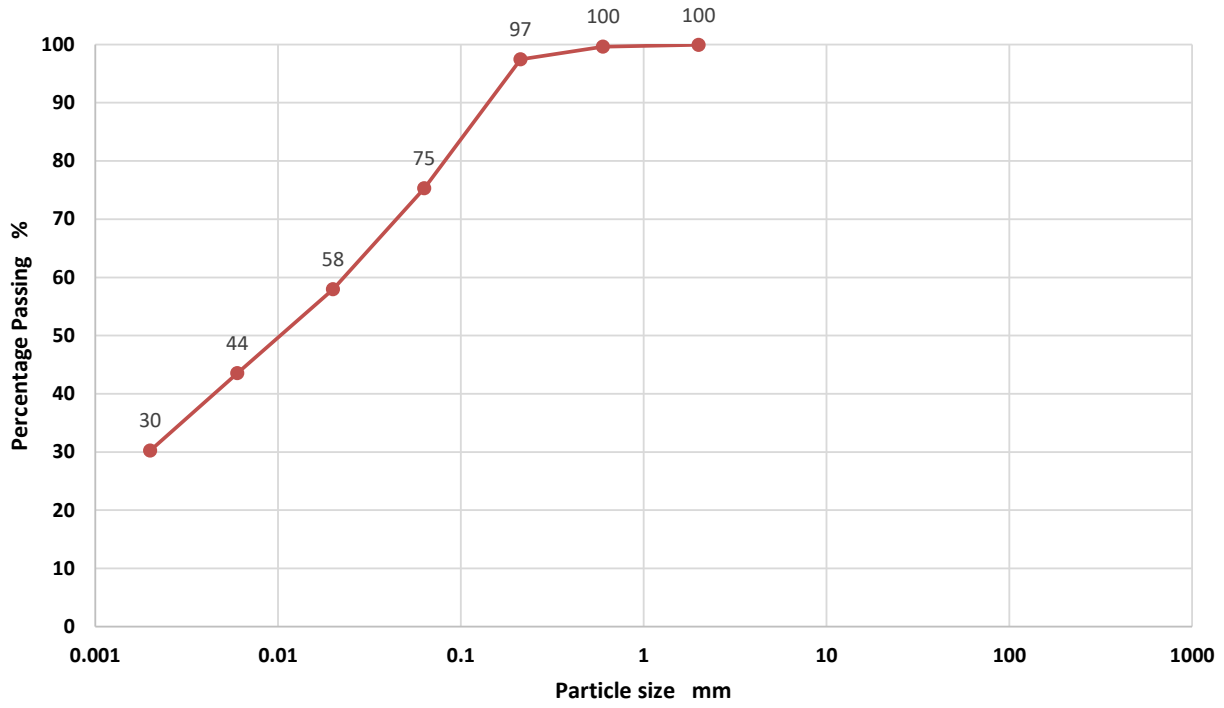
Particle Diameter	Percentage Passing
0.02	49
0.006	33
0.002	24

Soil Fraction	Total Percentage
Gravel	0
Sand	27
Silt	49
Clay	24

Operators	Checked	18-09-17	Emma Sharp	
RO	Approved	19-09-17	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foynes Port	Sample No.	
Soil Description	Grey sandy clayey SILT.	Depth Top	20.20
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	97
0.063	75

Sedimentation Analysis

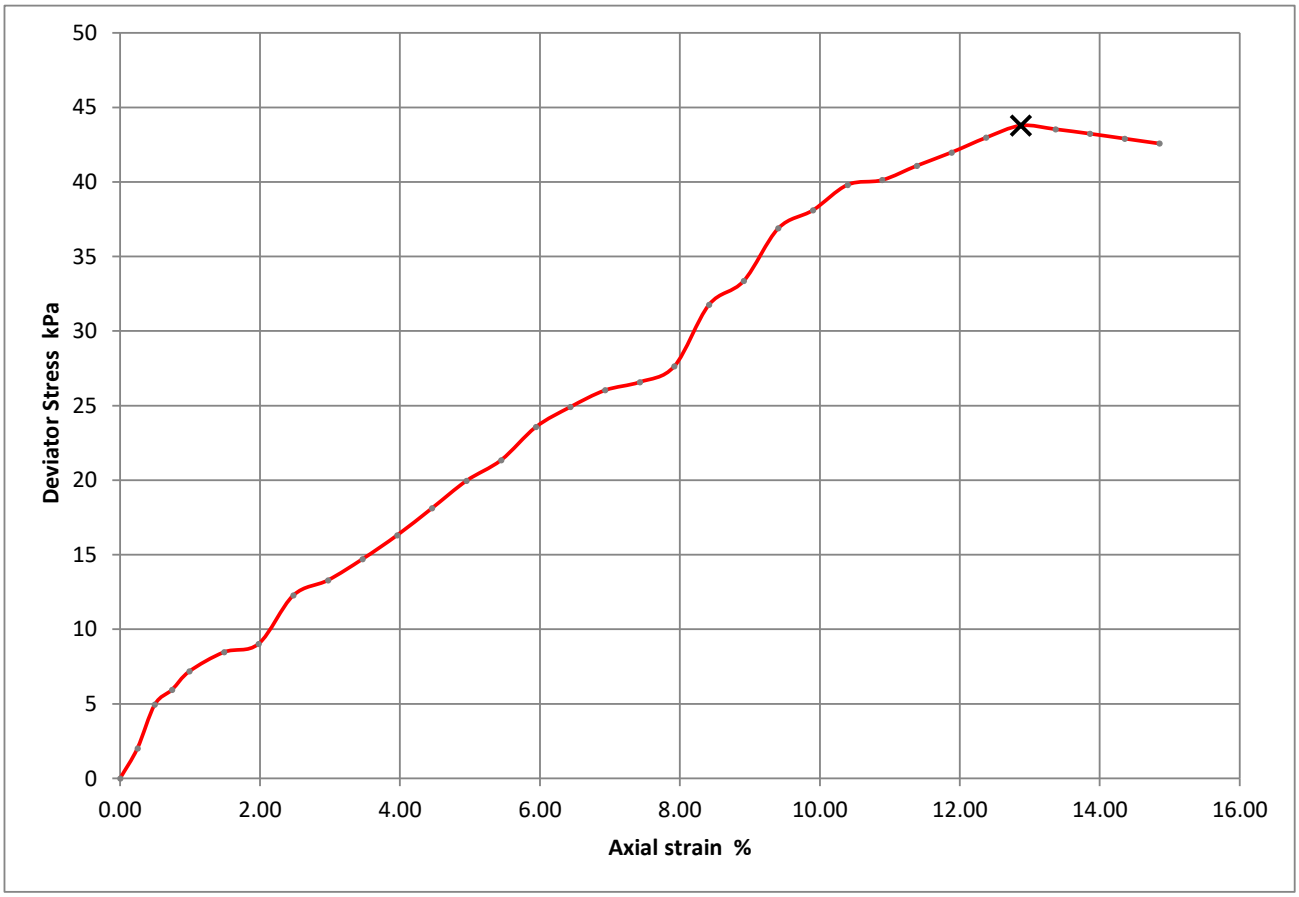
Particle Diameter	Percentage Passing
0.02	58
0.006	44
0.002	30

Soil Fraction	Total Percentage
Gravel	0
Sand	25
Silt	45
Clay	30

Operators	Checked	19-09-17	Emma Sharp	
RO	Approved	20-09-17	Ben Sharp	

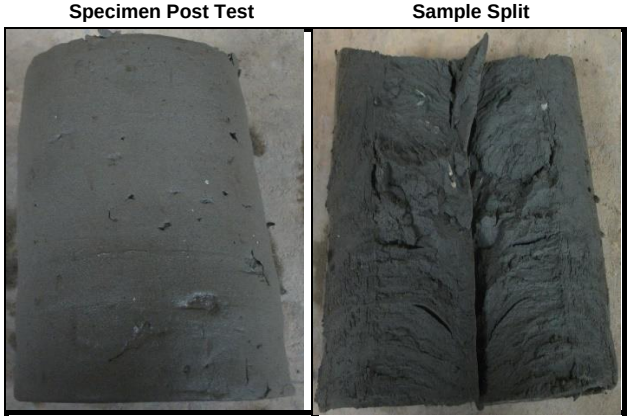
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	L01
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	4.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	28
Bulk Density (Mg/m^3)	1.78
Dry Density (Mg/m^3)	1.38
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	80
Deviator Stress (kPa)	44
Undrained Shear Strength (kPa)	22
Failure Strain (%)	12.87
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

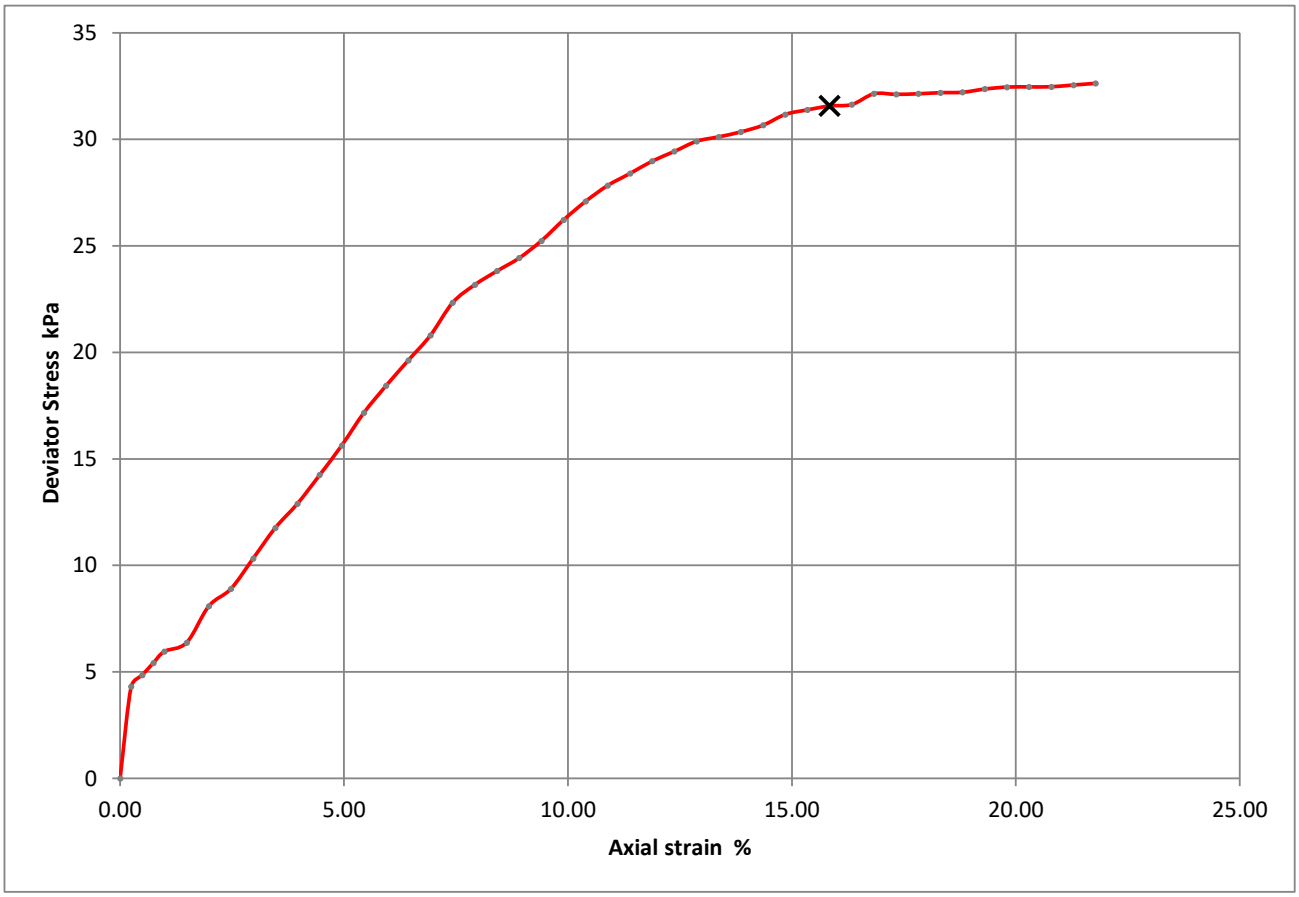
Specimen Post Test **Sample Split**



Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	13.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	35
Bulk Density (Mg/m^3)	1.85
Dry Density (Mg/m^3)	1.37
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	260
Deviator Stress (kPa)	32
Undrained Shear Strength (kPa)	16
Failure Strain (%)	15.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

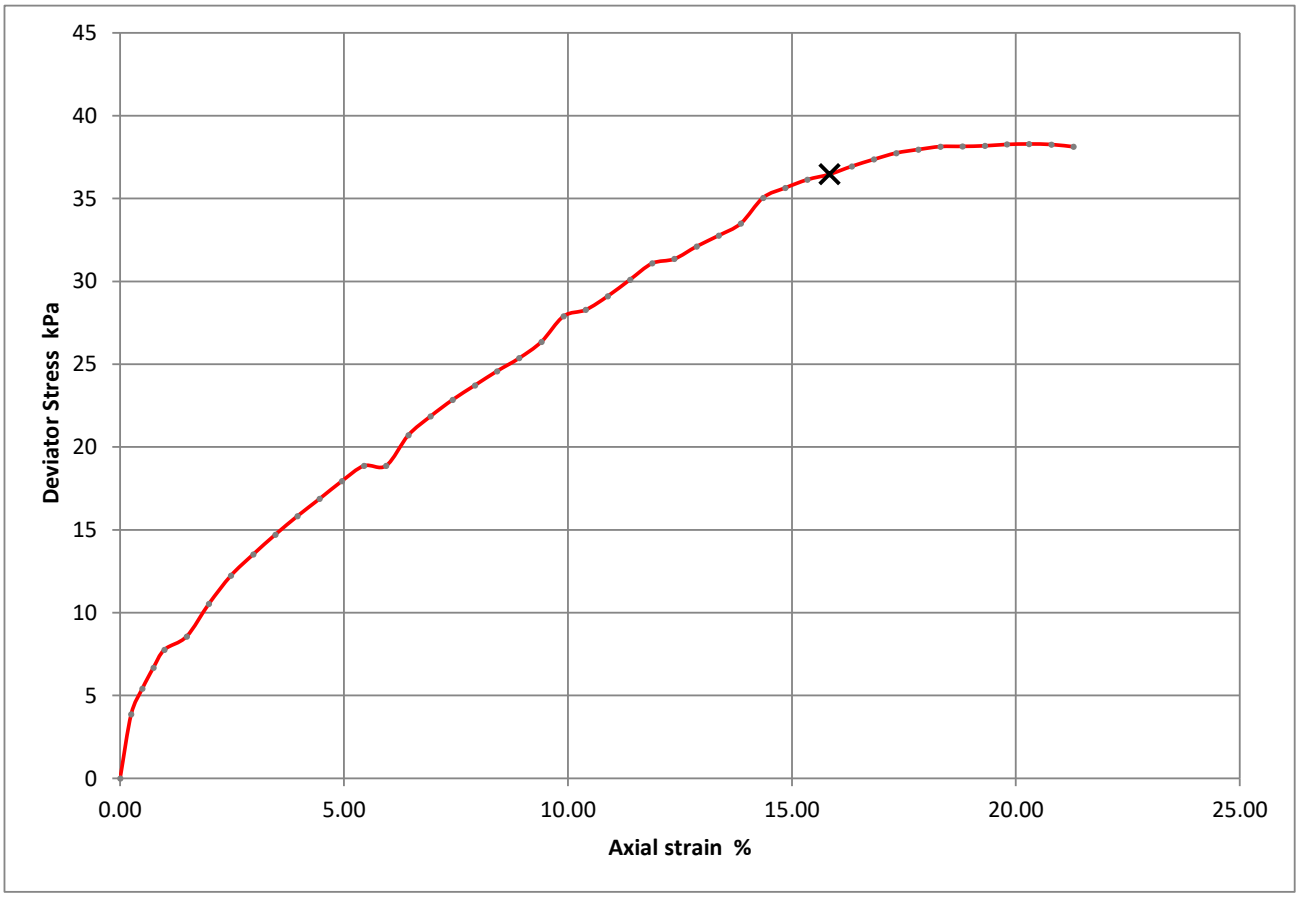
Specimen Post Test

Sample Split

Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

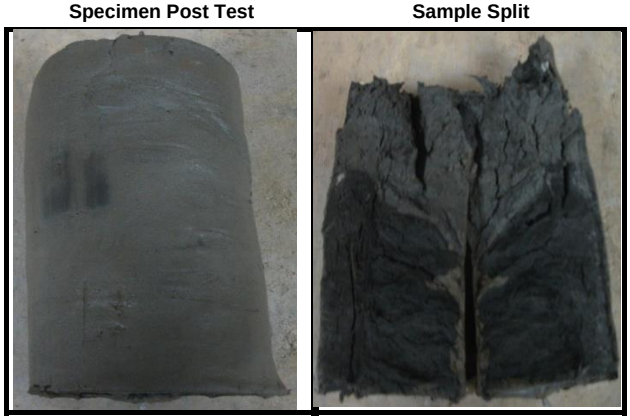
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	L07
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown silty CLAY.	Depth Top (m)	3.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	42
Bulk Density (Mg/m^3)	1.81
Dry Density (Mg/m^3)	1.27
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	60
Deviator Stress (kPa)	36
Undrained Shear Strength (kPa)	18
Failure Strain (%)	15.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

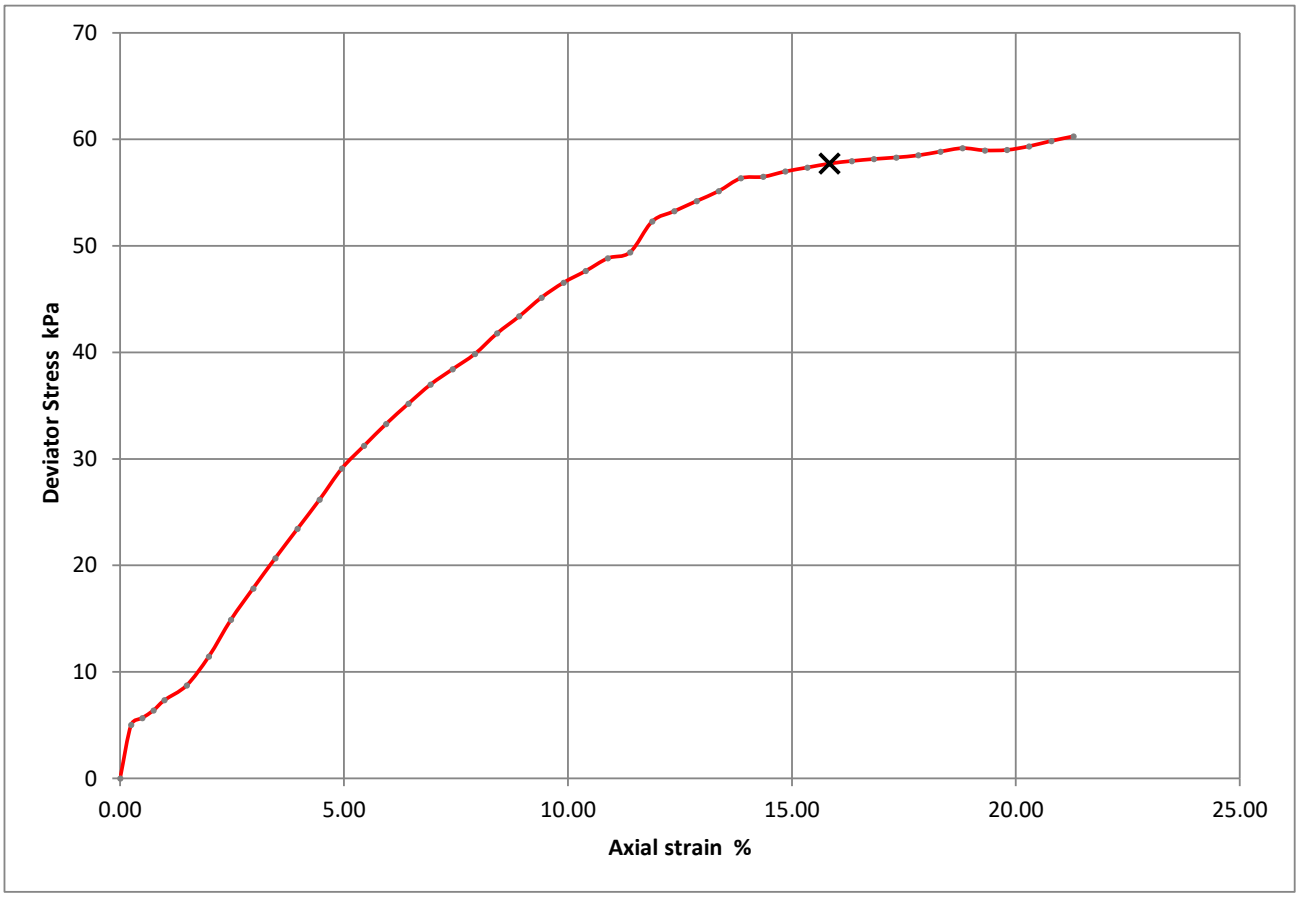
Specimen Post Test **Sample Split**



Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

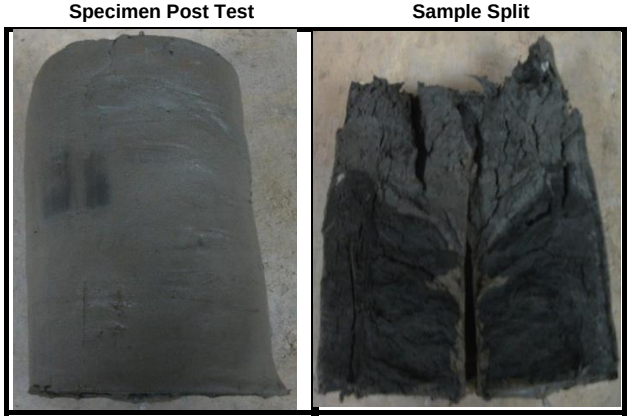
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	LD02
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	8.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	38
Bulk Density (Mg/m^3)	1.87
Dry Density (Mg/m^3)	1.35
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	170
Deviator Stress (kPa)	58
Undrained Shear Strength (kPa)	29
Failure Strain (%)	15.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

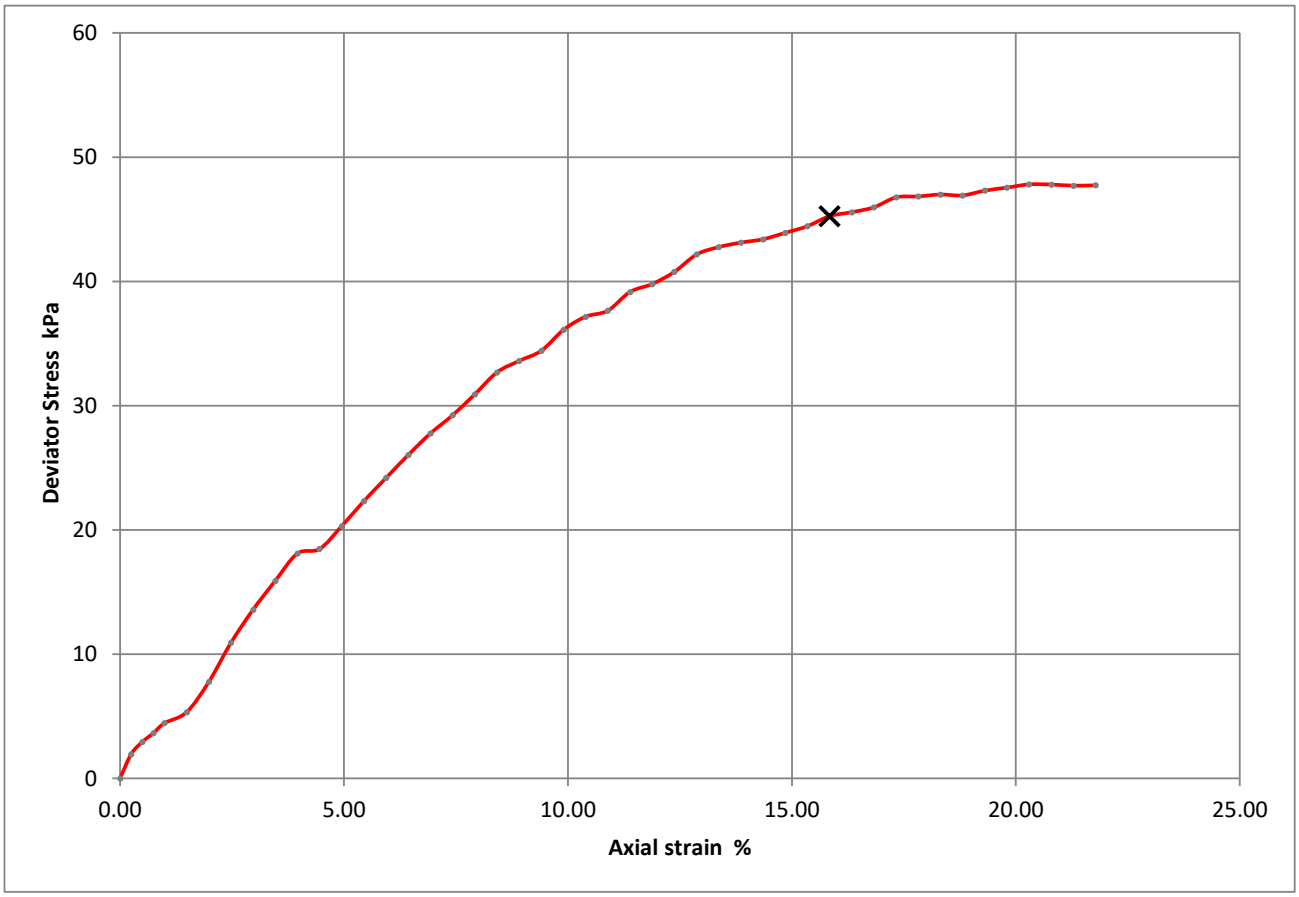
Specimen Post Test **Sample Split**



Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

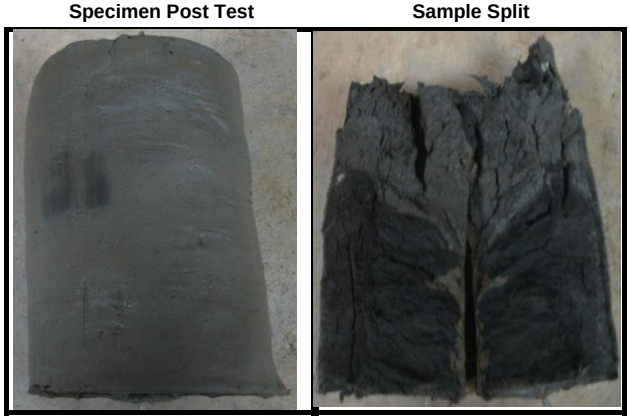
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	LD04
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	3.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	29
Bulk Density (Mg/m^3)	1.75
Dry Density (Mg/m^3)	1.36
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	60
Deviator Stress (kPa)	45
Undrained Shear Strength (kPa)	23
Failure Strain (%)	15.84
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

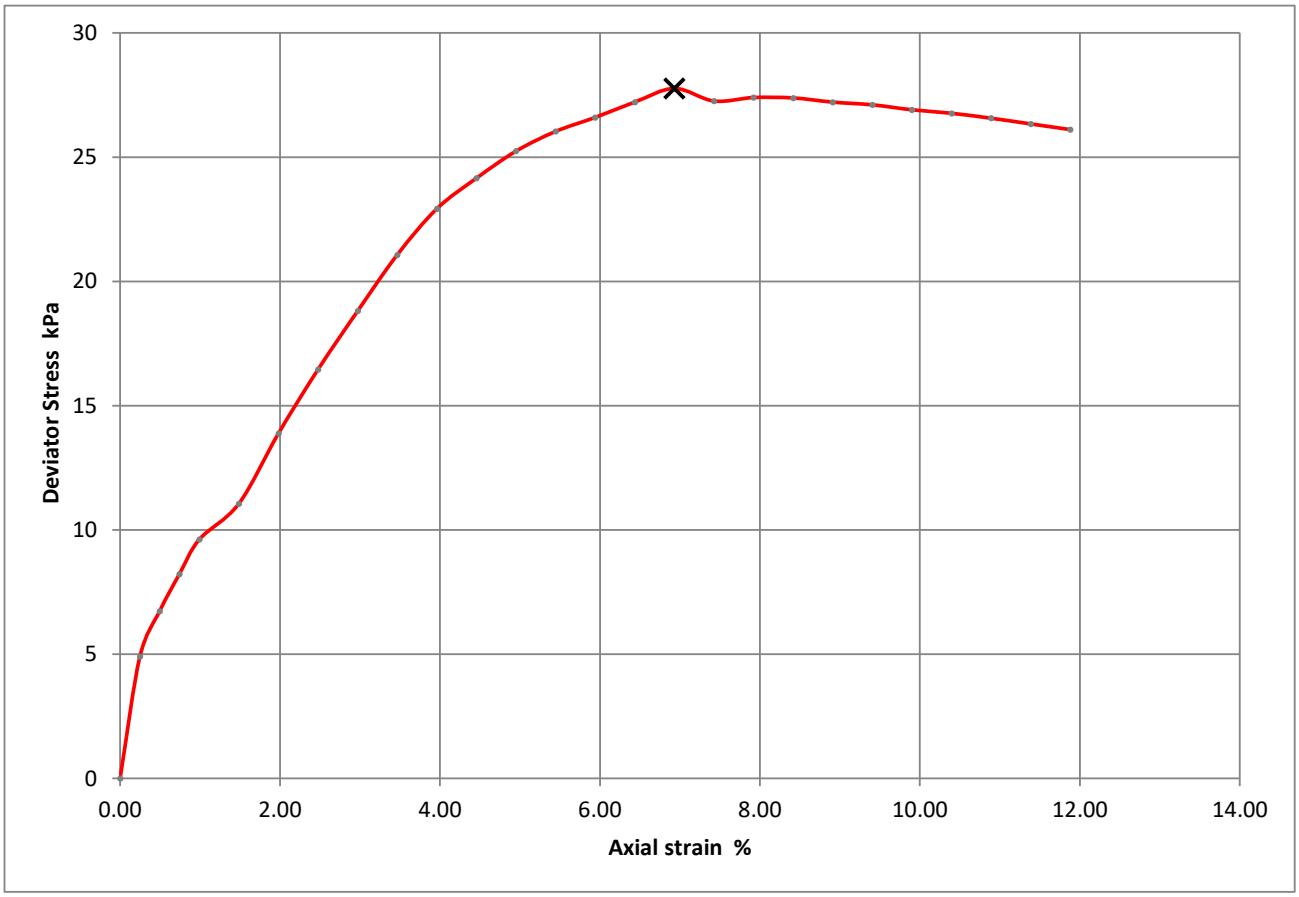
Specimen Post Test **Sample Split**



Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	36330
		Borehole/Pit No.	M09
Site Name	Foynes Port	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	4.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	58
Bulk Density (Mg/m^3)	1.68
Dry Density (Mg/m^3)	1.06
Specimen Length (mm)	202
Specimen Diameter (mm)	102
Cell Pressure (kPa)	75
Deviator Stress (kPa)	28
Undrained Shear Strength (kPa)	14
Failure Strain (%)	6.93
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

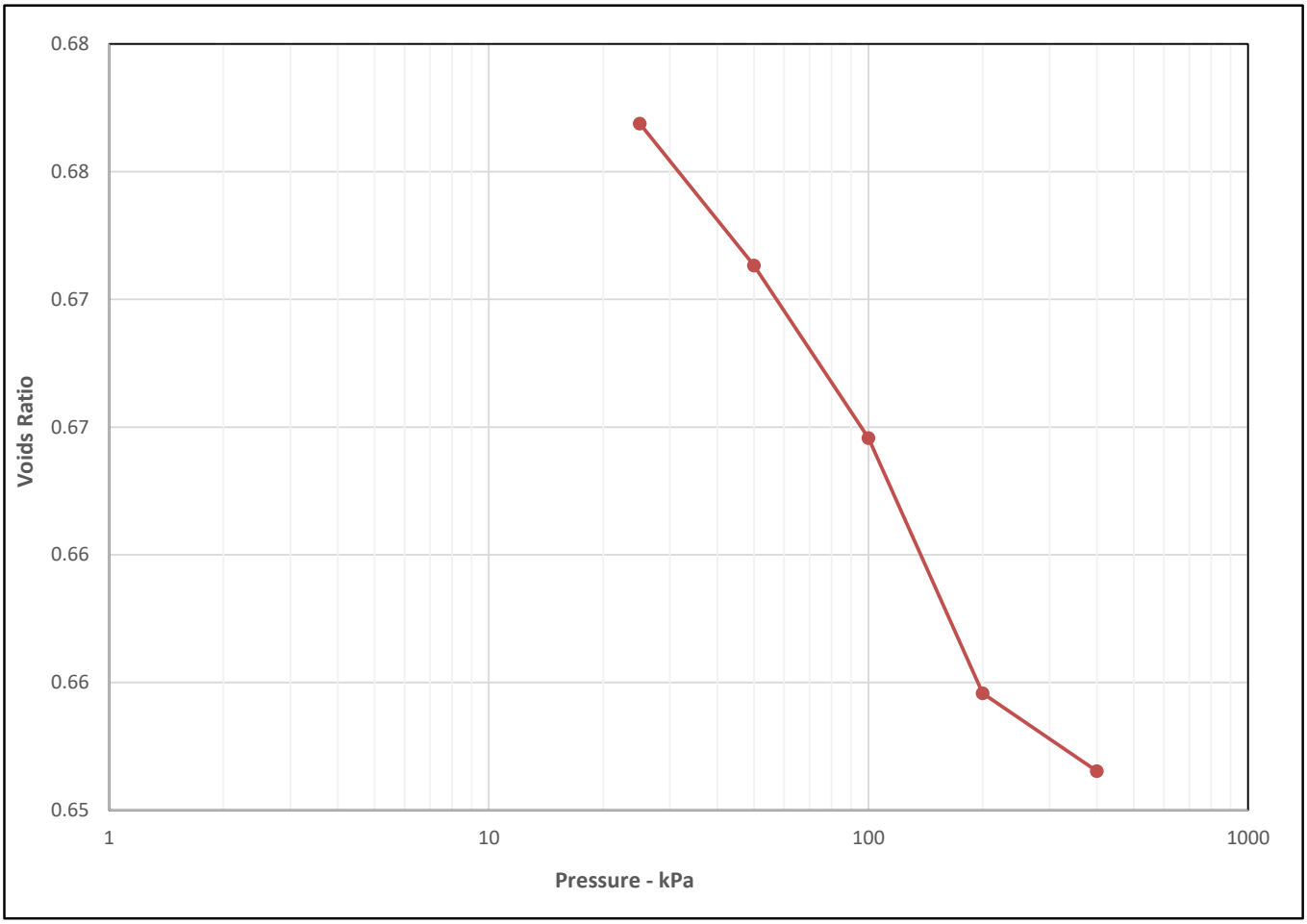
Specimen Post Test

Sample Split

Checked	27-09-17	Emma Sharp	
Approved	28-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L01
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown sandy silty CLAY.	Depth Top (m)	4.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

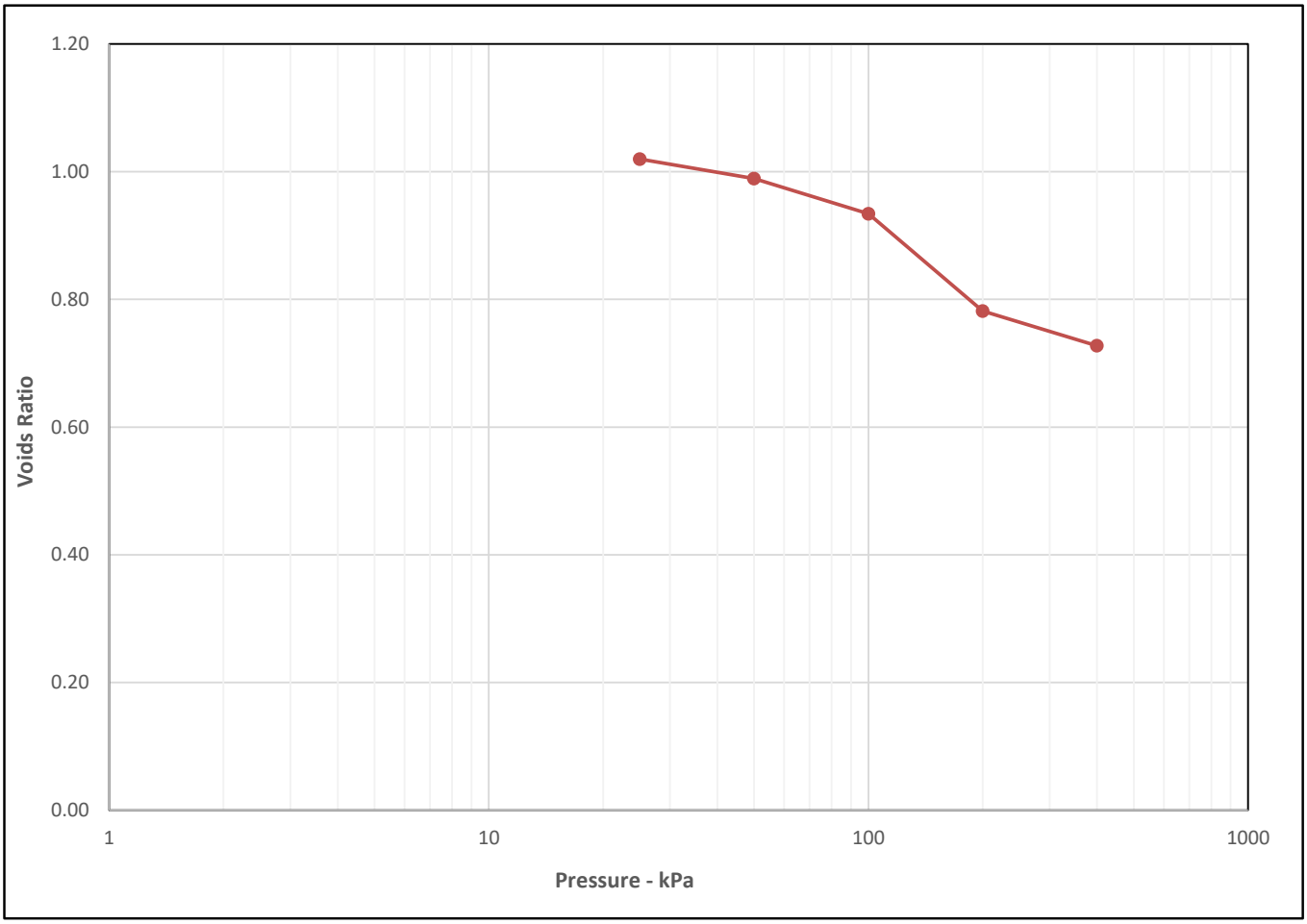


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	26	0	-	25	0.17	20		-			
Bulk Density (Mg/m3)	1.98	25	-	50	0.13	22		-			
Dry Density (Mg/m3)	1.57	50	-	100	0.081	11		-			
Voids Ratio	0.6839	100	-	200	0.1	13		-			
Degree of saturation	99.9	200	-	400	0.0092	10		-			
Height (mm)	18.2		-					-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	10.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

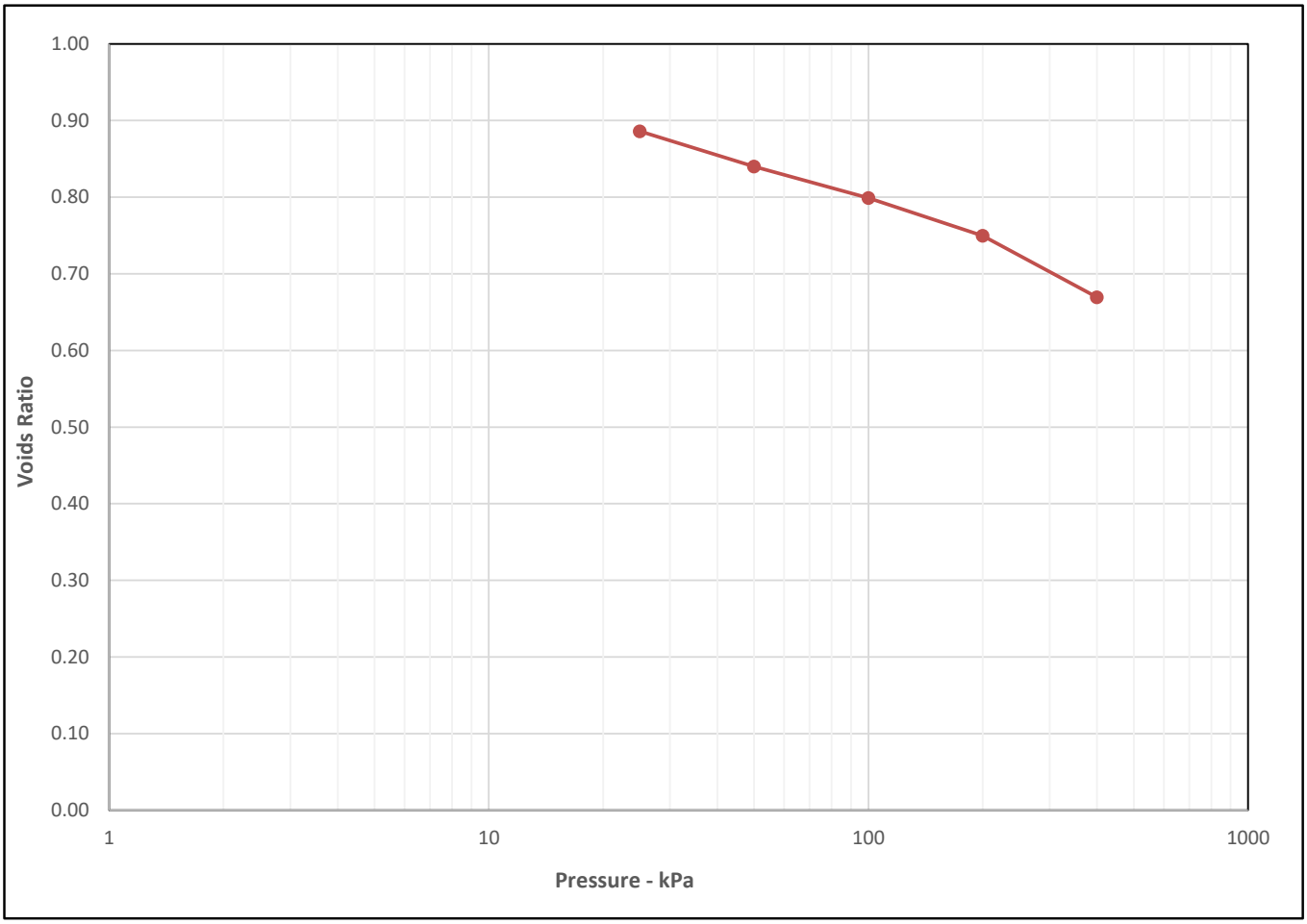


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	46	0	-	25	0.99	5.3		-			
Bulk Density (Mg/m3)	1.87	25	-	50	0.61	10		-			
Dry Density (Mg/m3)	1.28	50	-	100	0.55	12		-			
Voids Ratio	1.0707	100	-	200	0.8	7.2		-			
Degree of saturation	113.4	200	-	400	0.15	11		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.06		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	13.00
		Depth Base (m)	13.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

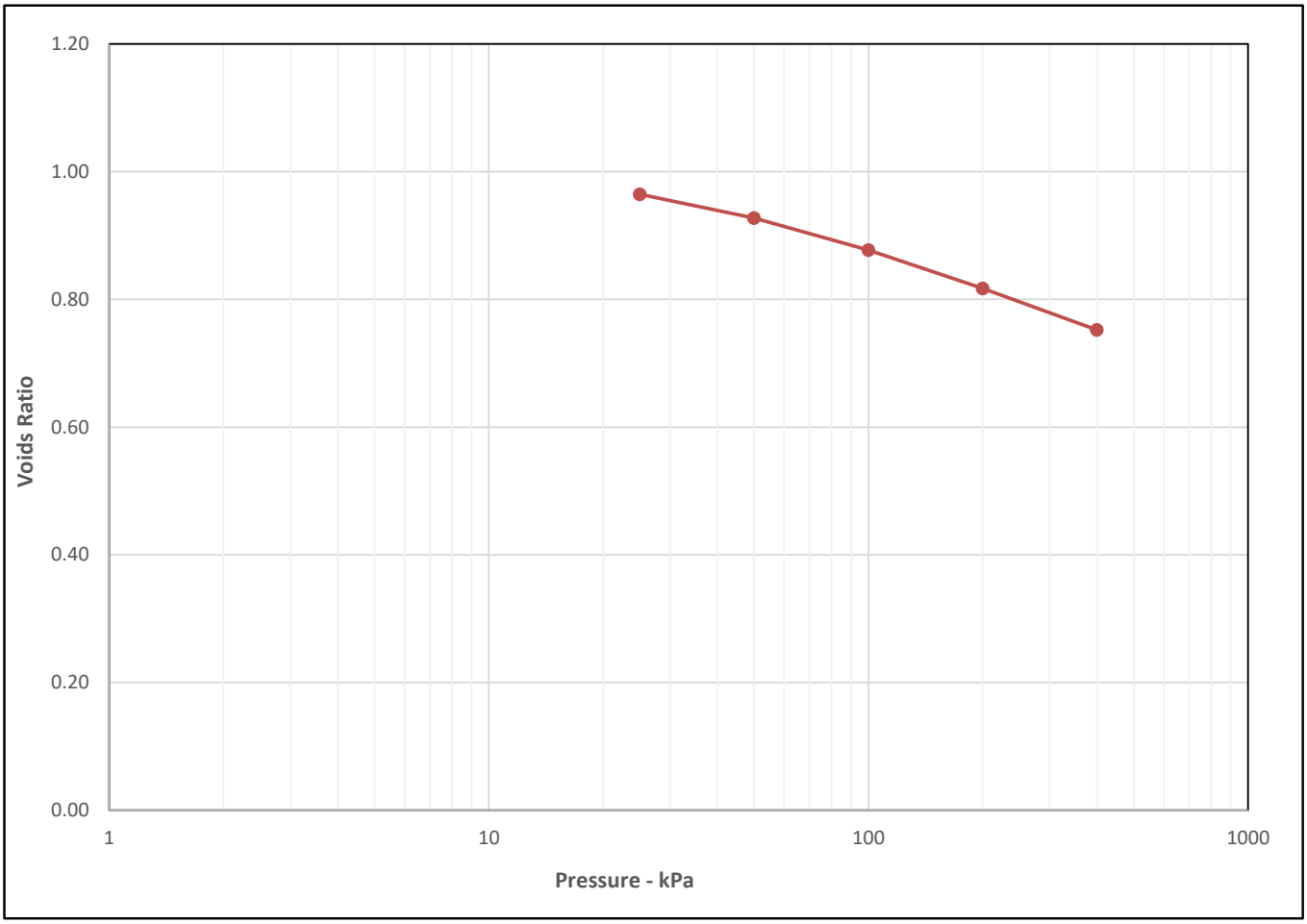


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	40	0	-	25	2.6	4.7		-			
Bulk Density (Mg/m3)	1.84	25	-	50	0.98	7.7		-			
Dry Density (Mg/m3)	1.31	50	-	100	0.45	7.3		-			
Voids Ratio	1.0183	100	-	200	0.3	9.1		-			
Degree of saturation	103.8	200	-	400	0.23	24		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	17.00
		Depth Base (m)	17.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

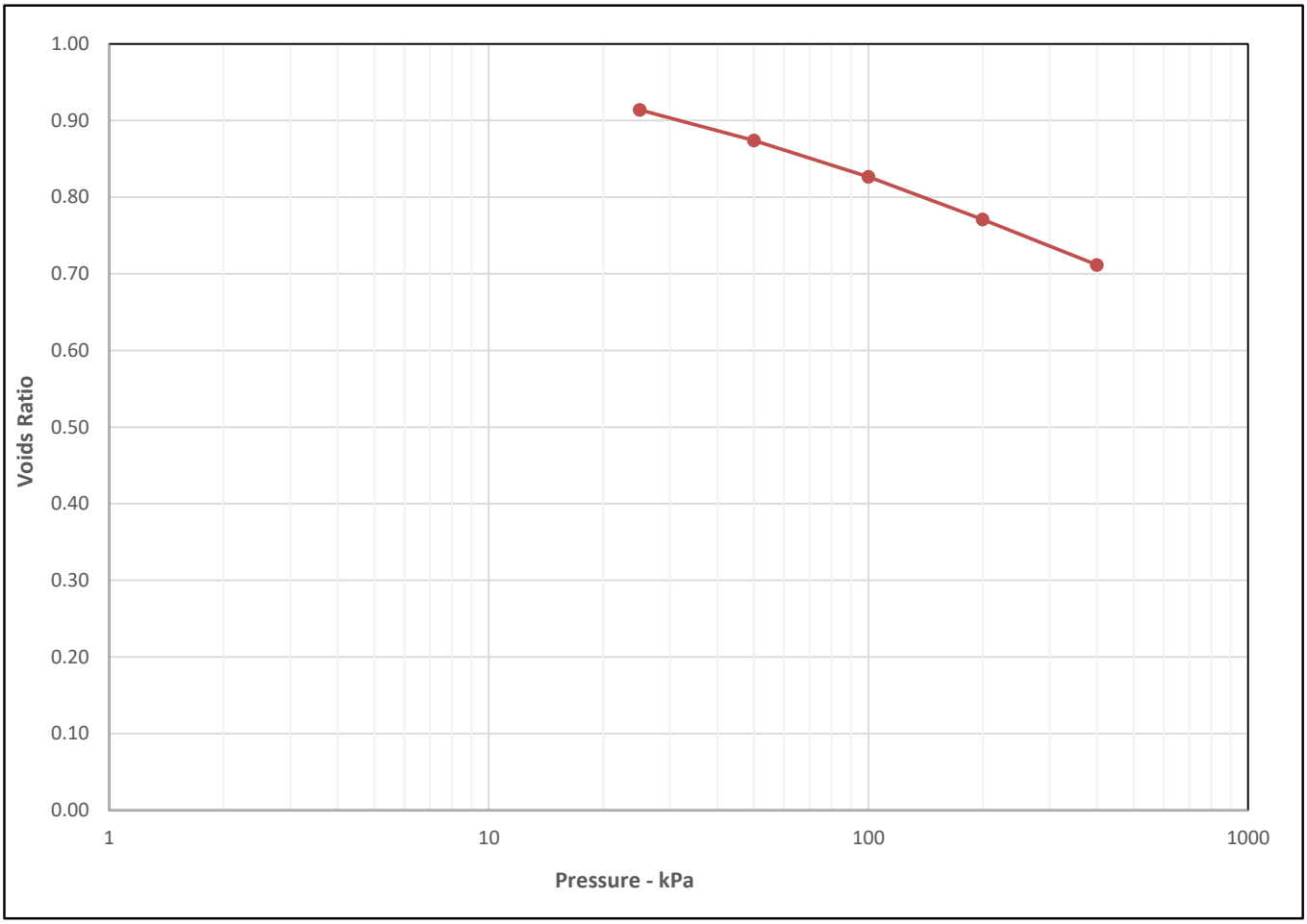


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	40	0	-	25	1.2	3.3		-			
Bulk Density (Mg/m3)	1.83	25	-	50	0.76	1.5		-			
Dry Density (Mg/m3)	1.31	50	-	100	0.52	3.8		-			
Voids Ratio	1.0241	100	-	200	0.3	1.9		-			
Degree of saturation	102.8	200	-	400	0.18	2		-			
Height (mm)	19.95		-					-			
Diameter (mm)	49.91		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	20.00
		Depth Base (m)	20.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

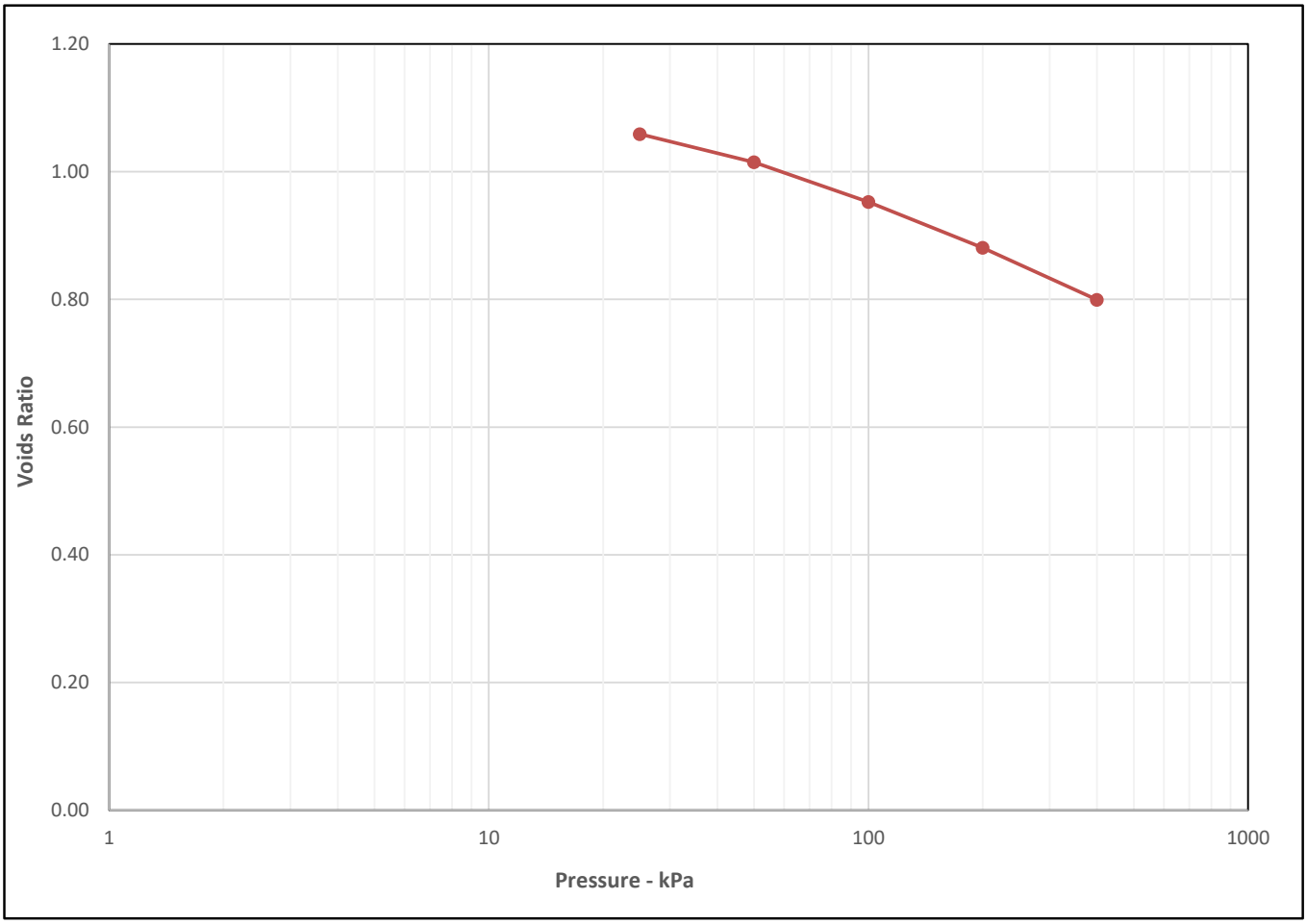


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	38	0	-	25	1.4	4.3		-			
Bulk Density (Mg/m3)	1.84	25	-	50	0.83	2.5		-			
Dry Density (Mg/m3)	1.34	50	-	100	0.51	3.6		-			
Voids Ratio	0.9809	100	-	200	0.3	3.4		-			
Degree of saturation	102.1	200	-	400	0.17	3.9		-			
Height (mm)	19.65		-					-			
Diameter (mm)	74.99		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L07
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	3.00
		Depth Base (m)	4.00
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

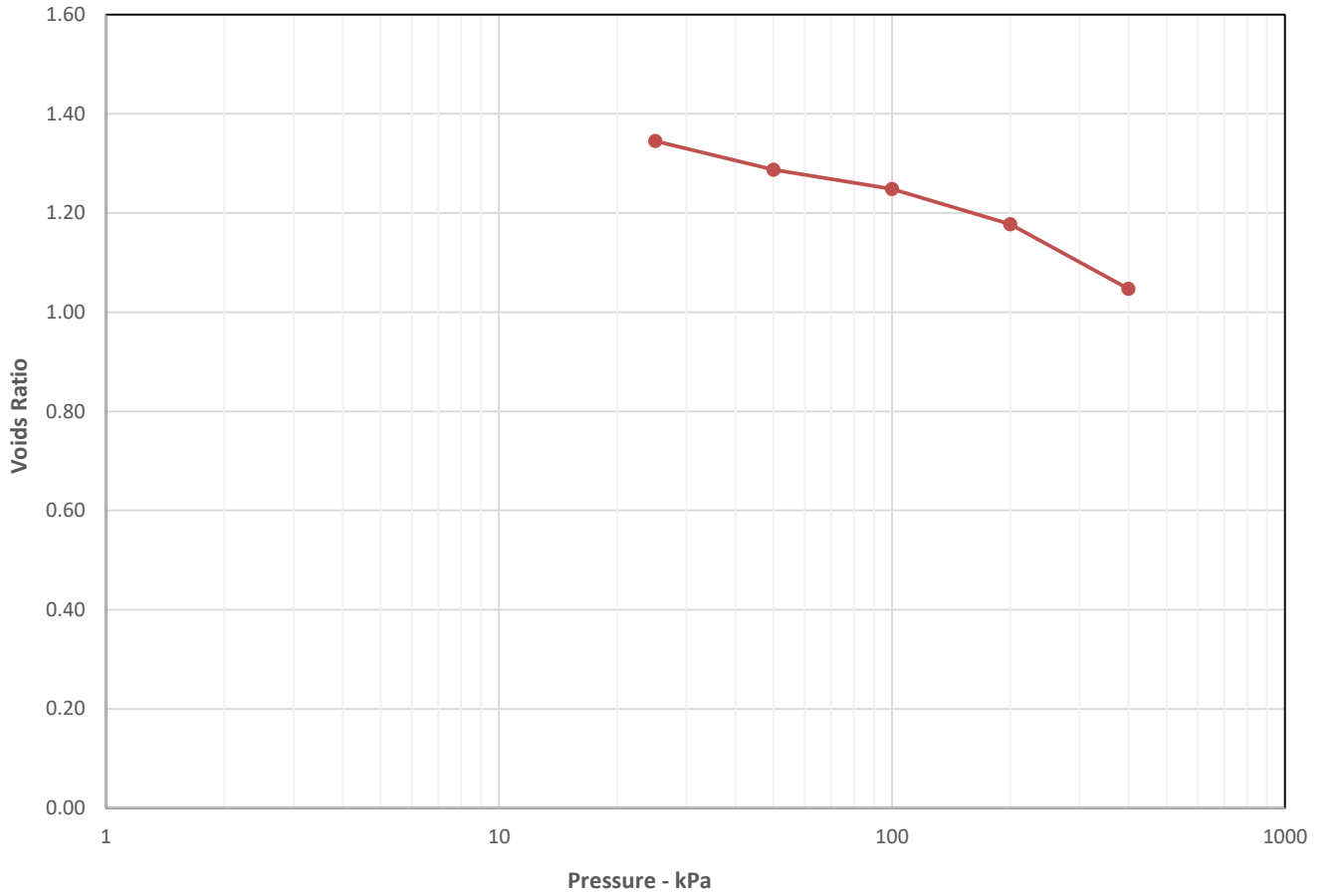


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	45	0	-	25	2.2	0.8		-			
Bulk Density (Mg/m3)	1.77	25	-	50	0.85	0.38		-			
Dry Density (Mg/m3)	1.22	50	-	100	0.62	0.44		-			
Voids Ratio	1.1778	100	-	200	0.4	1		-			
Degree of saturation	101.8	200	-	400	0.22	1.1		-			
Height (mm)	18.02		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	L07
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	5.00
		Depth Base (m)	5.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

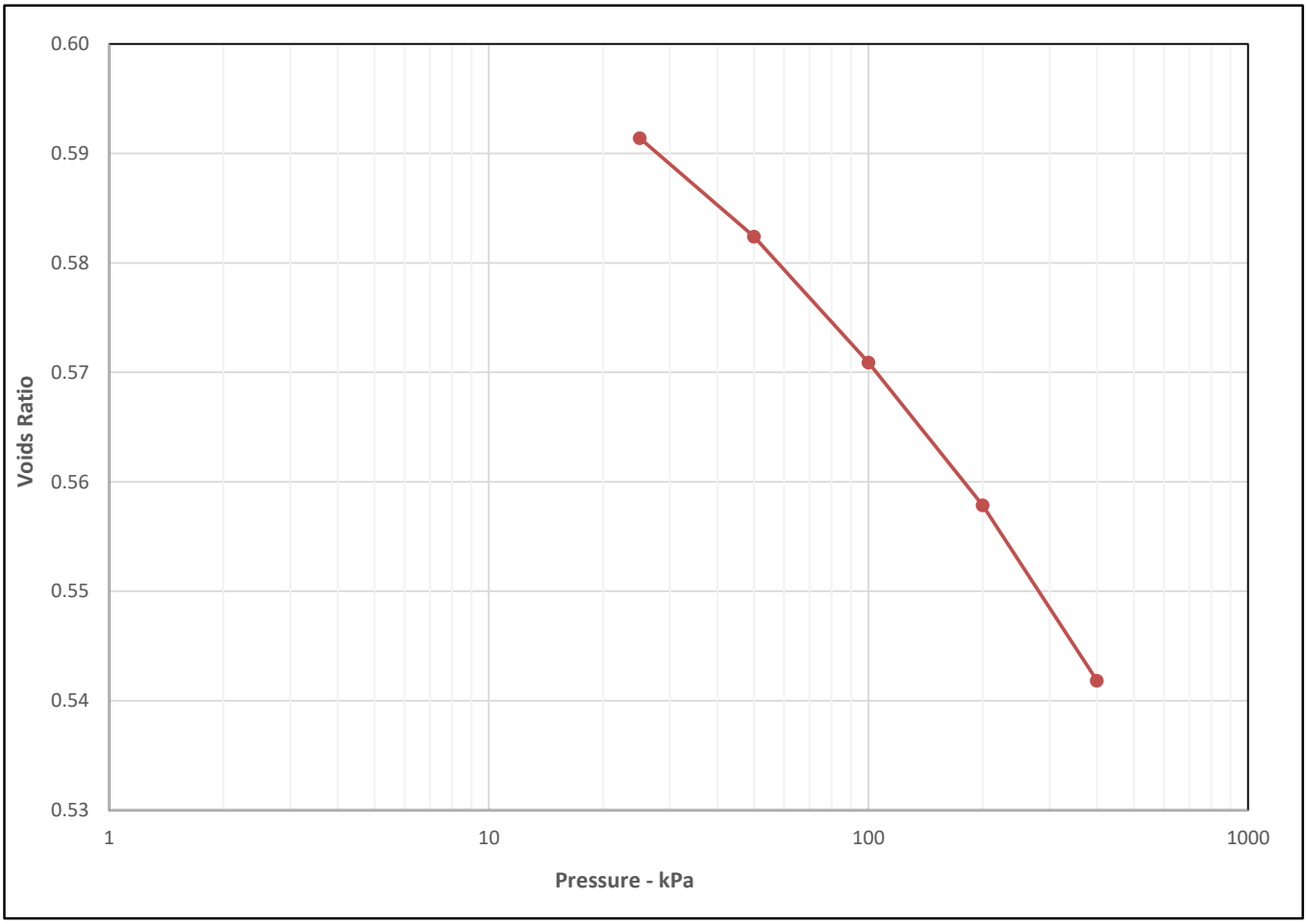


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	51	0	-	25	1.1	1.6		-			
Bulk Density (Mg/m3)	1.66	25	-	50	0.99	3.3		-			
Dry Density (Mg/m3)	1.10	50	-	100	0.33	8.4		-			
Voids Ratio	1.4117	100	-	200	0.3	6.3		-			
Degree of saturation	95.6	200	-	400	0.3	5		-			
Height (mm)	19.97		-					-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	LD01
Site Name	Foynes Port	Sample No.	
Soil Description	Brown fine sandy silty CLAY.	Depth Top (m)	4.50
		Depth Base (m)	5.00
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

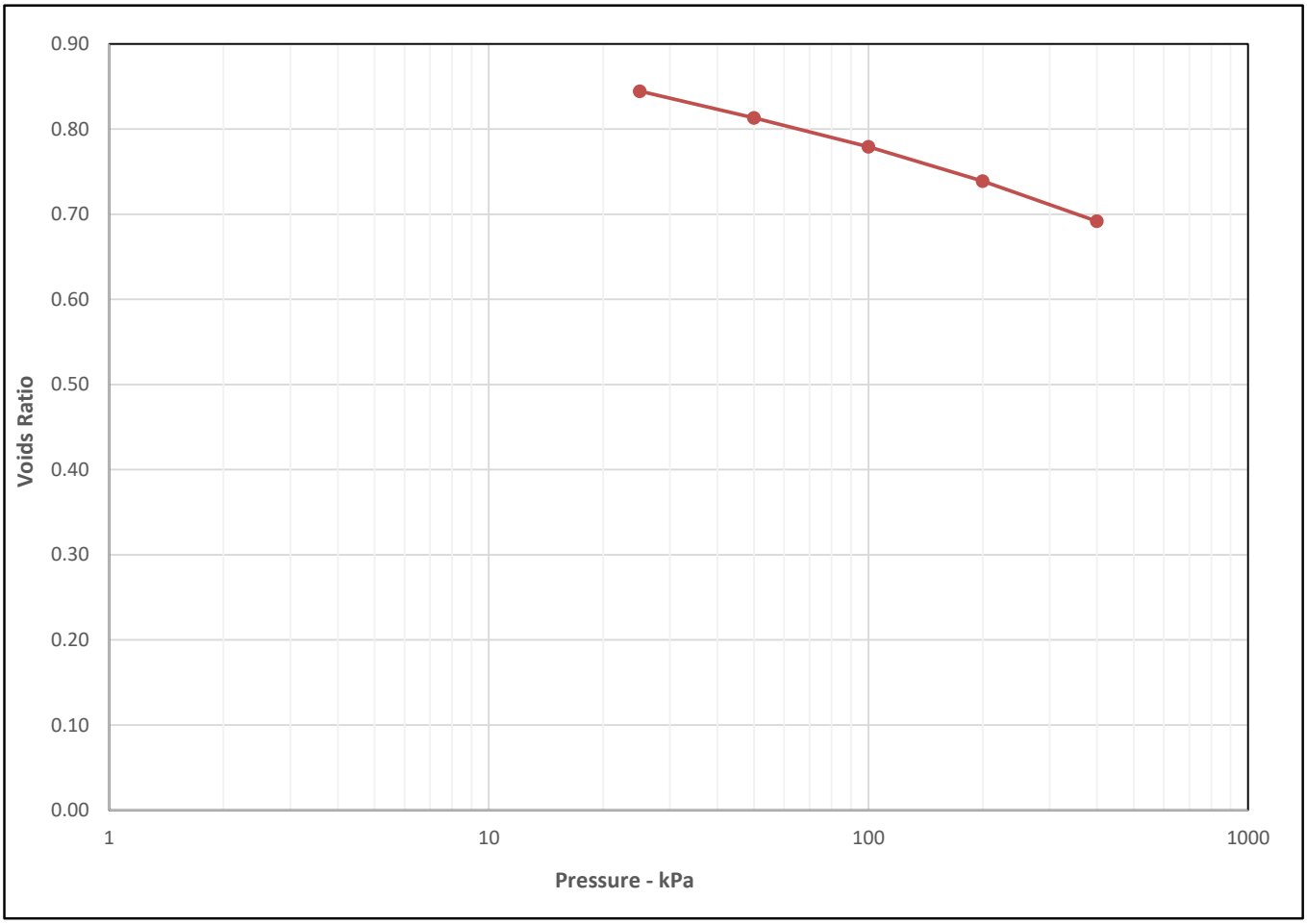


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	24	0	-	25	0.37	5.6		-			
Bulk Density (Mg/m3)	2.04	25	-	50	0.23	12		-			
Dry Density (Mg/m3)	1.65	50	-	100	0.15	14		-			
Voids Ratio	0.6064	100	-	200	0.1	15		-			
Degree of saturation	103.8	200	-	400	0.051	8.6		-			
Height (mm)	19.68		-					-			
Diameter (mm)	74.6		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	LD02
Site Name	Foynes Port	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	8.50
		Depth Base (m)	9.00
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

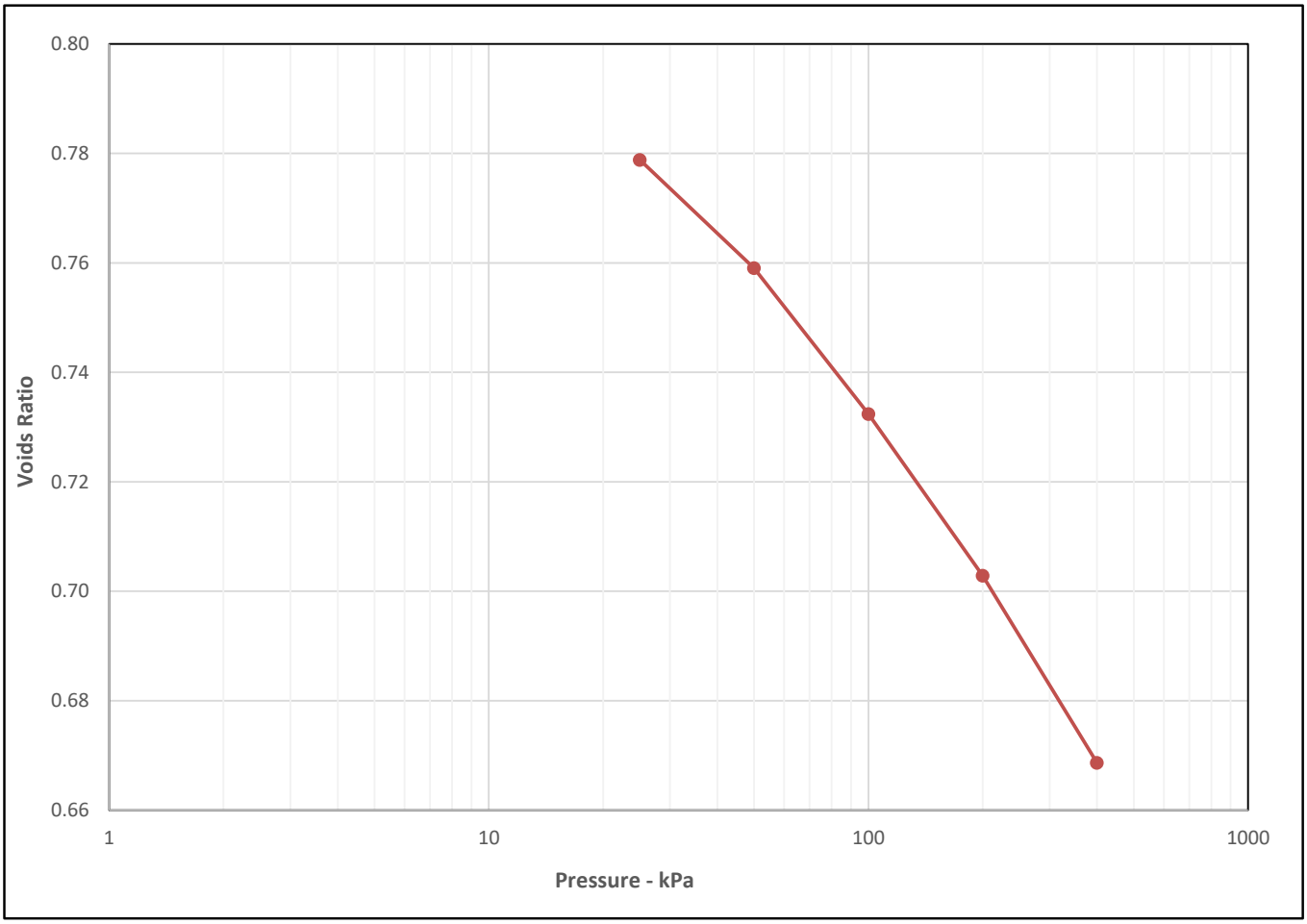


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	38	0	-	25	2.7	0.21		-			
Bulk Density (Mg/m3)	1.85	25	-	50	0.68	0.36		-			
Dry Density (Mg/m3)	1.34	50	-	100	0.38	0.42		-			
Voids Ratio	0.9755	100	-	200	0.2	0.76		-			
Degree of saturation	102.3	200	-	400	0.14	1.4		-			
Height (mm)	18.07		-					-			
Diameter (mm)	74.97		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	LD04
Site Name	Foynes Port	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	3.00
		Depth Base (m)	3.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

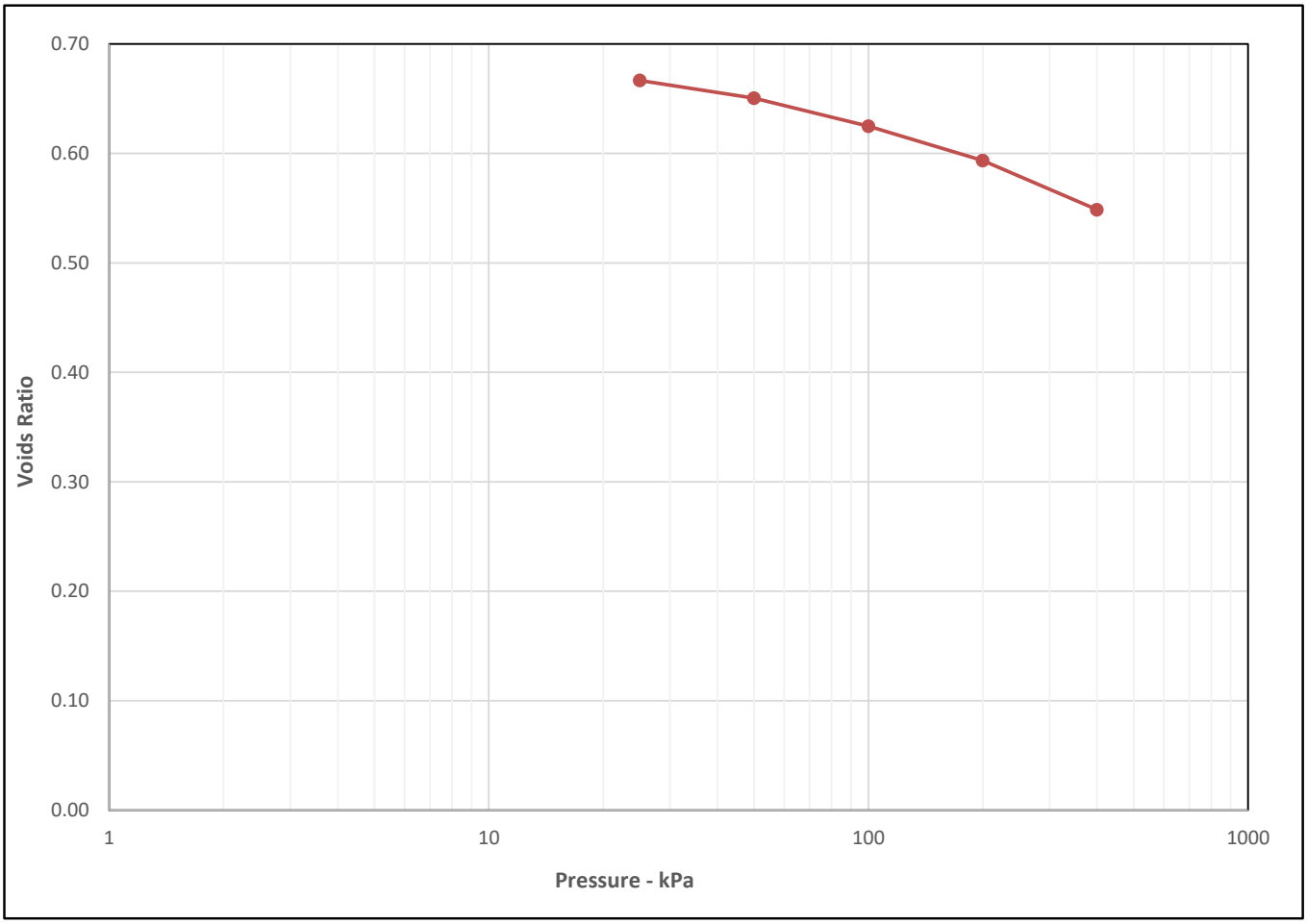


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	32	0	-	25	0.79	16		-			
Bulk Density (Mg/m3)	1.92	25	-	50	0.44	7.7		-			
Dry Density (Mg/m3)	1.46	50	-	100	0.3	6.5		-			
Voids Ratio	0.8147	100	-	200	0.2	9.9		-			
Degree of saturation	103.3	200	-	400	0.1	9.5		-			
Height (mm)	19.82		-					-			
Diameter (mm)	75.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	LD06
Site Name	Foynes Port	Sample No.	
Soil Description	Grey mottled brown silty CLAY.	Depth Top (m)	1.00
		Depth Base (m)	1.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

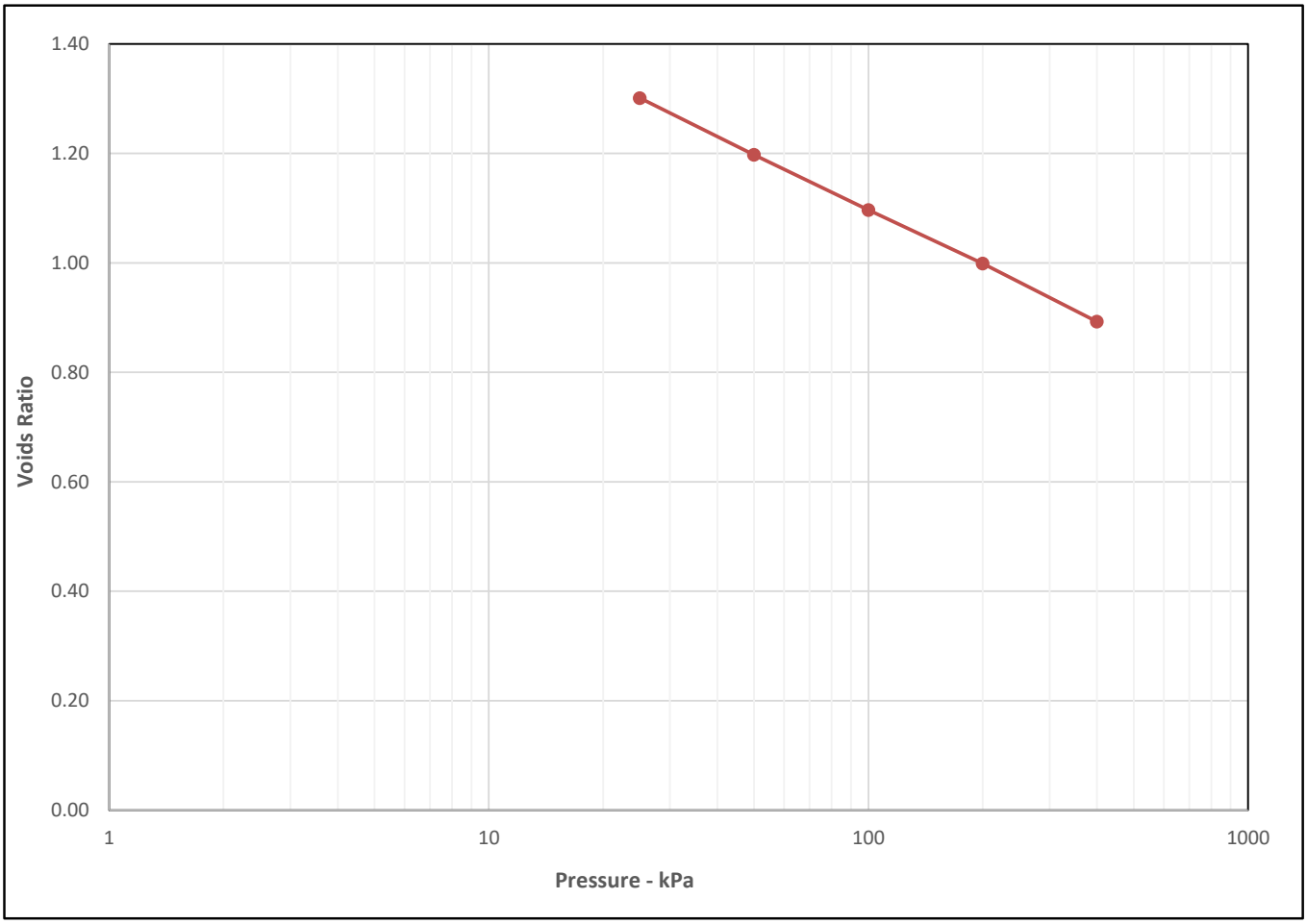


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	26	0	-	25	0.44	5.7		-			
Bulk Density (Mg/m3)	1.98	25	-	50	0.39	7.9		-			
Dry Density (Mg/m3)	1.57	50	-	100	0.31	8		-			
Voids Ratio	0.6851	100	-	200	0.2	10		-			
Degree of saturation	101.1	200	-	400	0.14	3.8		-			
Height (mm)	19.83		-					-			
Diameter (mm)	74.9		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	36330
		Borehole/Trialpit No.	M09
Site Name	Foynes Port	Sample No.	
Soil Description	Grey brown silty CLAY.	Depth Top (m)	13.50
		Depth Base (m)	14.50
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	59	0	-	25	3.5	1.3		-			
Bulk Density (Mg/m3)	1.67	25	-	50	1.8	1.3		-			
Dry Density (Mg/m3)	1.05	50	-	100	0.92	1.5		-			
Voids Ratio	1.5197	100	-	200	0.5	2.5		-			
Degree of saturation	102.2	200	-	400	0.27	3.5		-			
Height (mm)	19.96		-					-			
Diameter (mm)	50.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	18-09-17	Emma Sharp	
LG	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

GSTL

SUMMARY OF SOIL DENSITY TESTS (BS 1377 : PART 2 : 7/8 : 1990)

Contract Number	**36330**
Site Name	**Foynes Port**

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Compaction Method	Particle Density	Estimated Air Voids	Remarks
L01		B	1.00	-						2.57		
L01		B	2.00	-						2.62		
L01		B	3.00	-						2.63		
L01		B	6.00	-						2.66		
L01		B	8.00	-						2.65		
L01		B	10.00	-						2.67		
L01		B	12.00	-						2.66		
L02		B	0.50	-						2.64		
L02		B	2.00	-						2.66		
L02		B	3.00	-						2.67		
L02		B	4.00	-						2.66		
L02		B	6.00	-						2.64		
L02		B	8.00	-						2.63		
L02		B	10.00	-						2.67		
L02		B	13.00	-						2.69		
L02		B	15.00	-						2.66		
L03		B	1.00	-						2.65		
L03		B	3.00	-						2.62		
L03		B	4.00	-						2.57		
L03		B	7.00	-						2.66		
L03		B	9.00	-						2.65		
L03		B	11.00	-						2.66		
L03		B	13.00	-						2.68		
L03		B	15.00	-						2.71		
L03		B	17.00	-						2.66		
L06		B	10.00	-						2.65		
L06		B	12.00	-						2.66		
L06		B	14.00	-						2.66		
L06		B	16.00	-						2.64		
L06		B	18.00	-						2.65		
L06		B	20.00	-						2.66		
L07		B	0.00	-						2.56		
L07		B	1.50	-						2.63		
L07		B	4.50	-						2.63		

Key	**Reported As**
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operators	Checked	10/09/2017	Ben Sharp	
CA/JS	Approved	11/09/2017	Paul Evans	

UKAS TESTING 2788

GSTL

SUMMARY OF SOIL DENSITY TESTS
(BS 1377 : PART 2 : 7/8 : 1990)

Contract Number	**36330**
Site Name	**Foynes Port**

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Compaction Method	Particle Density	Estimated Air Voids	Remarks
L07		B	7.00	-						2.63		
L08		B	0.00	-						2.65		
L08		B	1.50	-						2.67		
L08		B	4.50	-						2.67		
L08		B	6.80	-						2.69		
LD01		B	1.00	-						2.62		
LD01		B	3.00	-						2.64		
LD01		B	8.00	-						2.60		
LD02		B	2.00	-						2.64		
LD02		B	4.00	-						2.65		
LD02		B	6.00	-						2.64		
LD02		B	8.00	-						2.61		
LD04		B	4.50	-						2.62		
LD06		B	1.50	-						2.62		
LD06		B	2.50	-						2.63		
M09		B	0.50	-						2.65		
M09		B	3.00	-						2.67		
M09		B	5.00	-						2.59		
M09		B	6.50	-						2.62		
M09		B	11.00	-						2.63		
M09		B	13.00	-						2.69		
M09		B	15.50	-						2.67		
M09		B	18.20	-						2.68		
M09		B	20.20	-						2.65		
M09		B	26.00	-						2.58		
L06		UT	17.00	-						2.65		
L07		UT	5.00	-						2.63		
M09		UT	4.50	-						2.61		
L01		UT	4.00	-						2.62		
L02		UT	10.50	-						2.67		
LD01		UT	4.50	-						2.64		
LD02		UT	8.50	-						2.62		
LD04		UT	3.00	-						2.63		
LD06		UT	1.00	-						2.60		

Key	**Reported As**
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operators	Checked	10/09/2017	Ben Sharp	
CA/JS	Approved	11/09/2017	Paul Evans	

UKAS TESTING
2788

GSTL

SUMMARY OF SHEAR STRENGTH TESTS (TOTAL STRESS)
(BS 1377 : PART 7 : 3 : 1990)

Contract Number	**36330**
Site Name	**Foynes Port**

BH Borehole	Sample Number	Sample Type	Depth (m)			Moisture Content	Location of Test Horizon	Diameter of Tube (mm)	Vane Size	Disturbed / Undisturbed	Hand Vane	
											Peak	Residual
BHL06		UT	13.00	-					19mm		18	3
BHL06		UT	17.00	-					19mm		39	7
BHL06		UT	20.00	-					19mm		21	2
BHL07		P	3.00	-					19mm		34	9
BHL07		UT	5.00	-					19mm		33	9
BHM09		P	4.50	-					19mm		21	4
BHL01		UT	4.00	-					19mm		36	10
BHL02		UT	10.50	-					19mm		26	4
BHLD01		UT	4.50	-					19mm		41	8
BHLD02		UT	8.50	-					19mm		27	4
BHLD04		UT	3.00	-					19mm		55	12
BHLD06		UT	1.00	-					19mm		113	20
				-								
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Key	**Reported As**
Moisture Content	%
Hand Vane	kPa

Operators	Checked	18-09-17	Ben Sharp	
CJ/JJ	Approved	19-09-17	Paul Evans	

UKAS TESTING 2788

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00
Date		14/09/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey slightly clayey silty firm SAND

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	3342.60
Dry Mass	g	2622.60
Density	Mg/m^3	1.93
Dry Density	Mg/m^3	1.51
Moisture Content	%	27
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	24
Density	Mg/m^3	1.94
Dry Density	Mg/m^3	1.56

D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Contract No

36330

Foynes Port

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Test Setup

Date started	04/09/2017
Date Finished	13/09/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P5
Cell Number	C5

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	199.00
Final B Value		1.00

Consolidation

Effective Pressure	kPa	45.00	70.00	95.00
Cell Pressure	kPa	200.00	200.00	200.00
Back Pressure	kPa	155.00	130.00	105.00
Excess Pore Pressure	kPa	44.00	60.00	64.00
Pore Pressure at End	kPa	155.00	130.00	105.00
Consolidated Volume	cm^3	1701.85	1682.53	1676.34
Consolidated Height	mm	202.78	198.07	187.95
Consolidated Area	mm^2	8393.23	8494.98	8919.26
Vol. Compressibility	m^2/MN	0.11578	0.08733	0.03504
Consolidation Coef.	$m^2/yr.$	2.99088	2.97346	2.64027

D P Grant

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14/09/17
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Contract No

36330

Foynes Port

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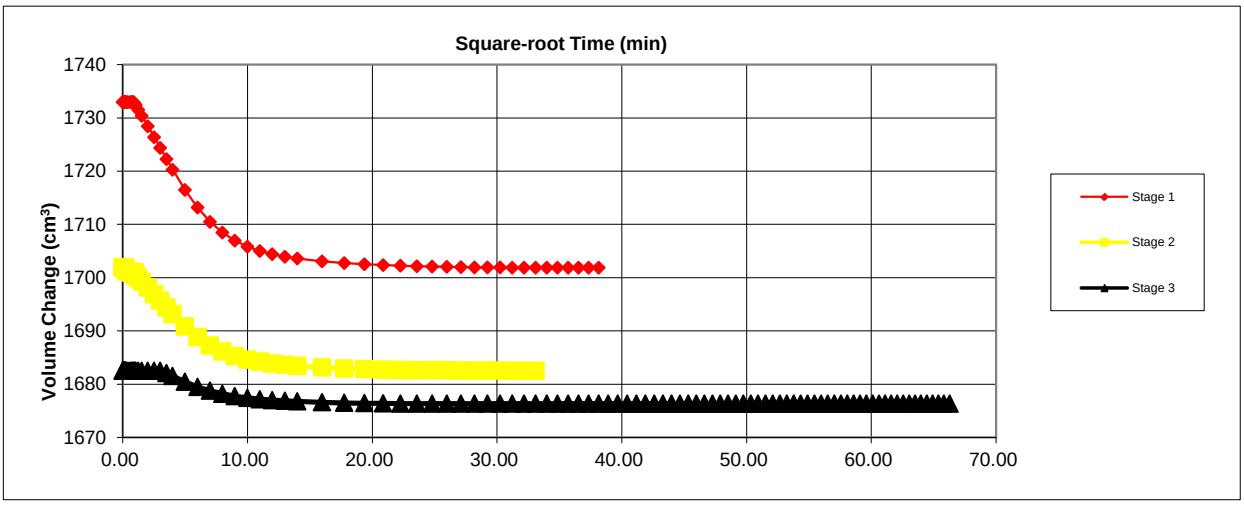
Consolidated Undrained Triaxial Compression Test

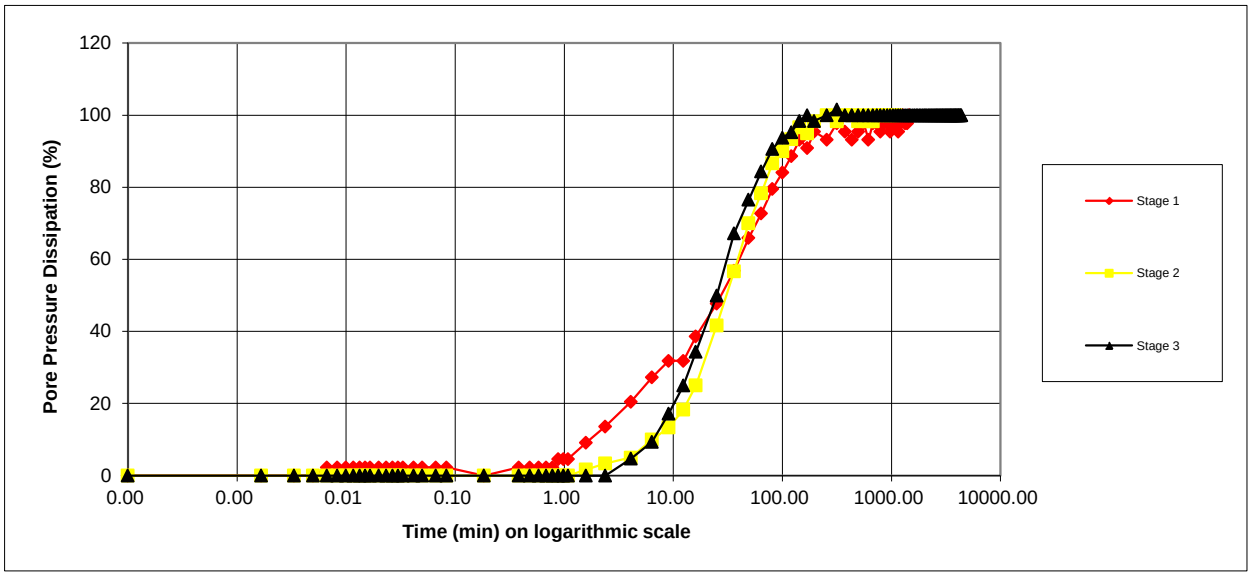
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Consolidation Stage





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Client Ref

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Contract No

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Foynes Port

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Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Shearing

Initial Cell Pressure	kPa	200	200	200
Initial Pore Pressure	kPa	155	130	105
Rate of Strain	mm/min	0.0591	0.0574	0.0484
Max Deviator Stress				
Axial Strain		2.717	8.391	11.884
Axial Stress	kPa	132.662	460.12	595.16
Cor. Deviator stress	kPa	129.811	455.75	590.65
Effective Major Stress	kPa	170.811	603.75	779.65
Effective Minor Stress	kPa	42.000	148.00	189.00
Effective Stress Ratio		4.067	4.079	4.13
s'	kPa	106.406	375.87	484.32
t'	kPa	64.406	227.87	295.32
Max Effective Priciple Stress Ratio				
Axial Strain		2.614	5.266	11.544
Axial Stress	kPa	130.819	322.388	592.649
Cor. Deviator stress	kPa	126.976	318.339	588.155
Effective Major Stress	kPa	168.976	419.339	776.155
Effective Minor Stress	kPa	42.000	101.000	188.000
Effective Stress Ratio		4.023	4.152	4.128
s'	kPa	105.488	260.170	482.078
t'	kPa	63.488	159.170	294.078
Shear Resistance Angle	degs			37.5
Cohesion c'	kPa			0

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Contract No

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Foynes Port

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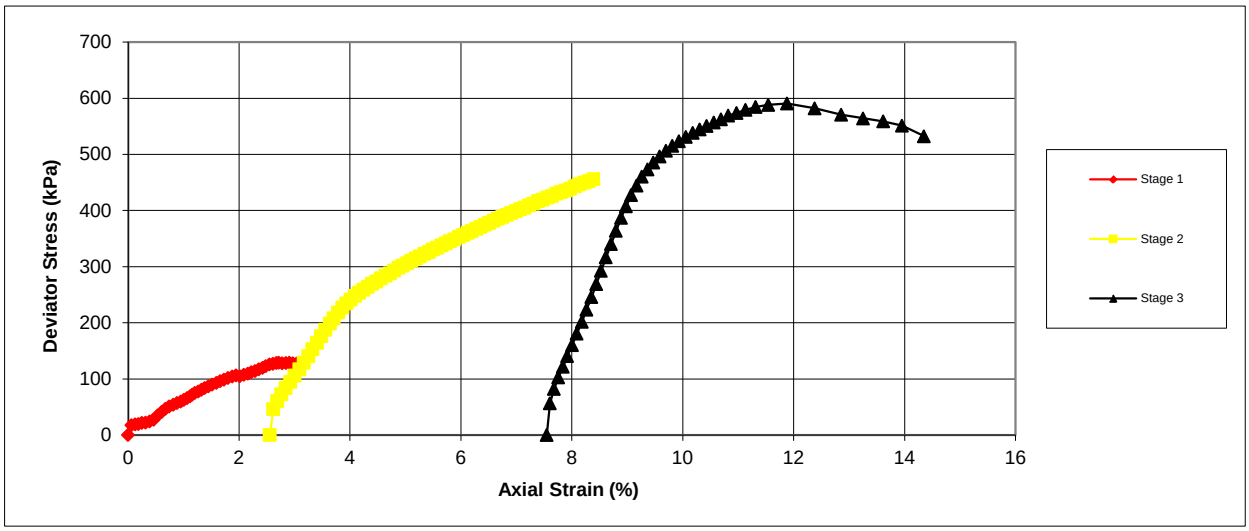
Consolidated Undrained Triaxial Compression Test

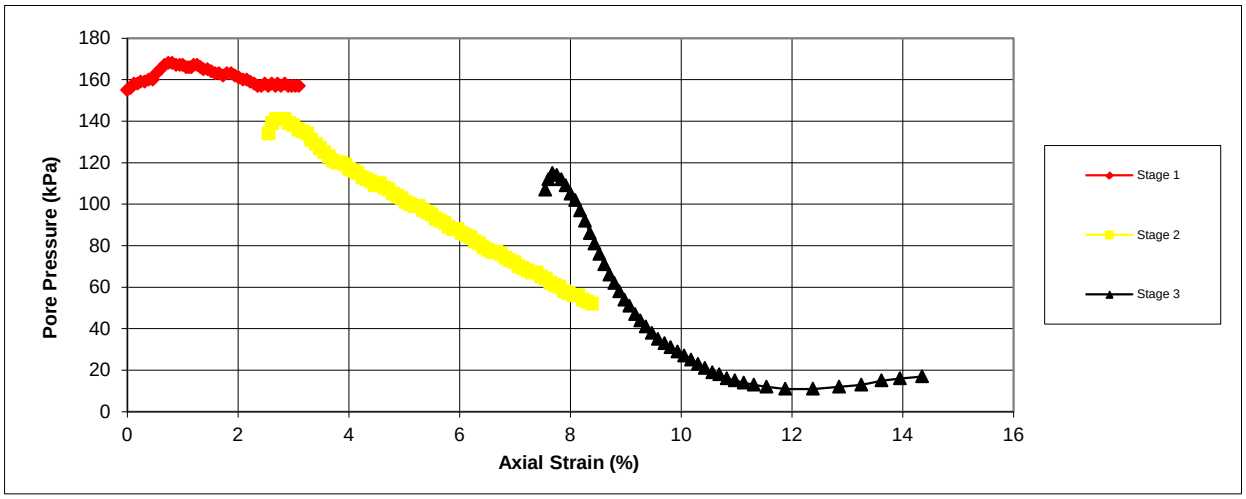
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Shearing Stage





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Client Ref

6552-02-17

Contract No

36330

Foynes Port

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GEO SITE & TESTING SERVICES LTD

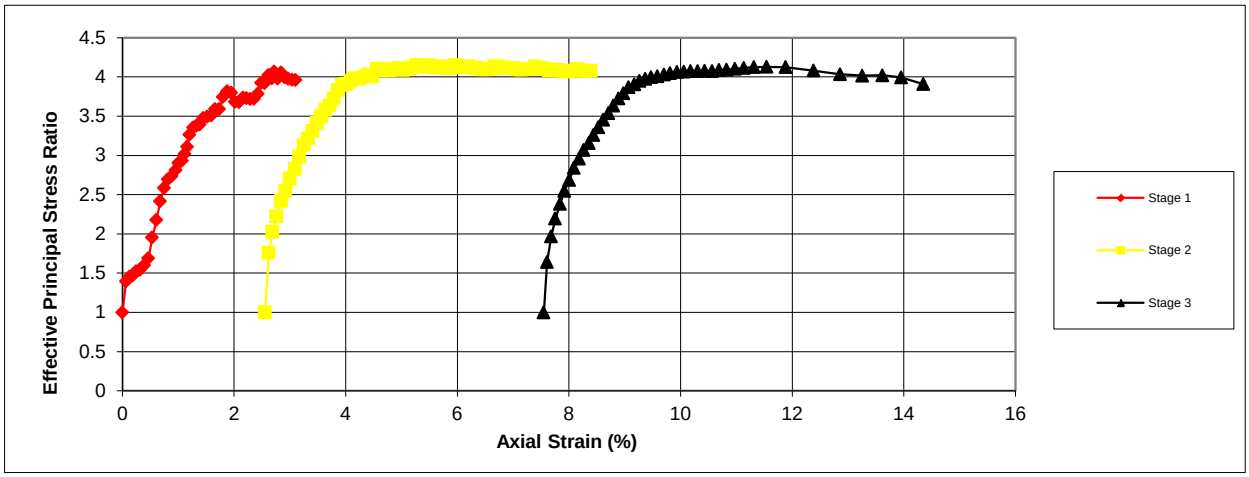
Consolidated Undrained Triaxial Compression Test

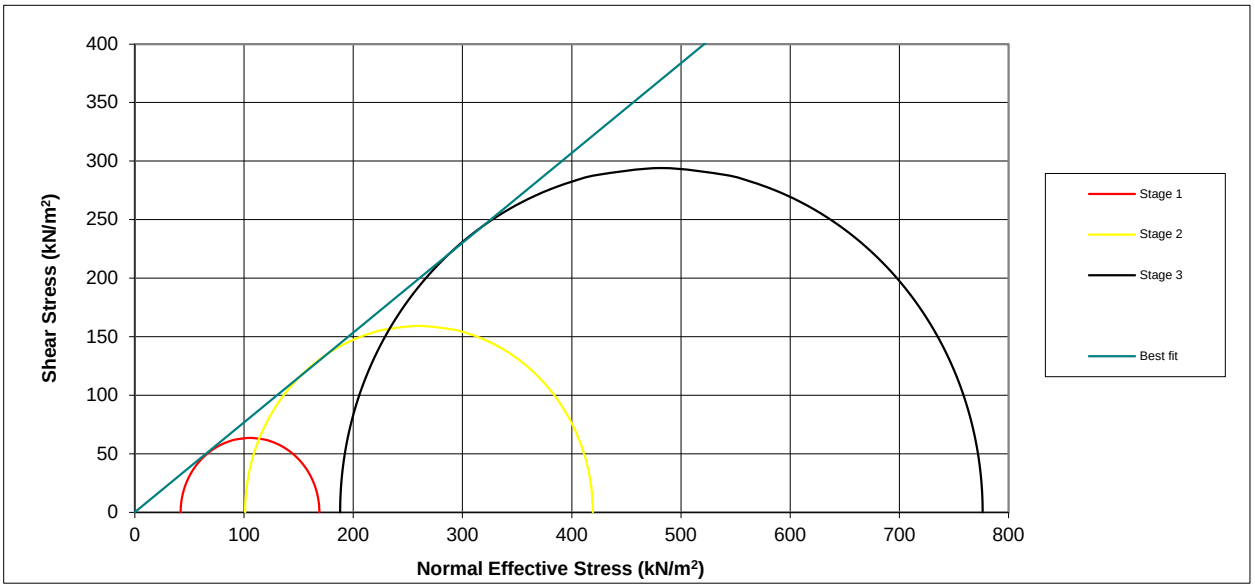
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Shearing Stage





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Client Ref
6552-02-17
Contract No
36330

Foynes Port

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GEO SITE & TESTING SERVICES LTD

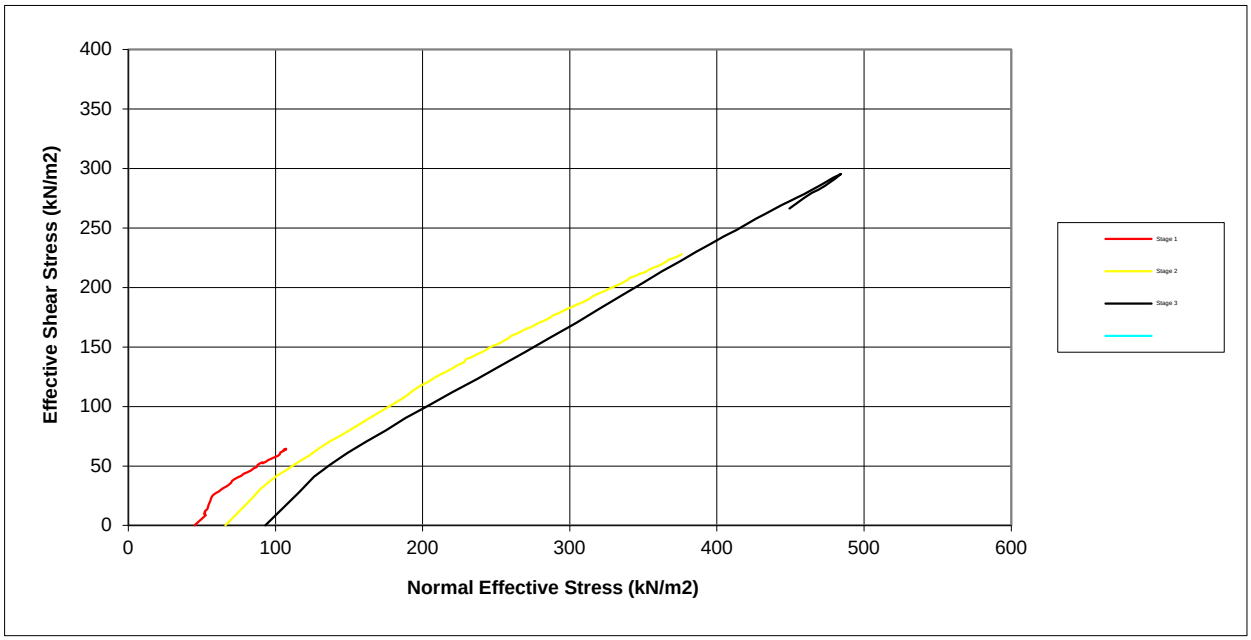
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

Shearing Stage



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Checked and Approved By

14/09/17
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Client Ref

6552-02-17

Foynes Port

Contract No

36330

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD01
Sample No.		UT
Depth	from(m)	4.50
Depth	to(m)	5.00

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14/09/17
Date

Client Ref

6552-02-17

Contract No

36330

Foynes Port

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50
Date		14/09/2017
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown silty firm CLAY

Initial Specimen Conditions

Height	mm	204.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1732.95
Mass	g	3298.40
Dry Mass	g	2571.00
Density	Mg/m^3	1.90
Dry Density	Mg/m^3	1.48
Moisture Content	%	28
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	27
Density	Mg/m^3	1.95
Dry Density	Mg/m^3	1.53

D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Contract No

36330

Foynes Port

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Test Setup

Date started	04/09/2017
Date Finished	13/09/2017
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P6
Cell Number	C6

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	200.00
Final Pore Pressure	kPa	202.00
Final B Value		1.03

Consolidation

Effective Pressure	kPa	10.00	35.00	60.00
Cell Pressure	kPa	200.00	200.00	200.00
Back Pressure	kPa	190.00	165.00	140.00
Excess Pore Pressure	kPa	12.00	25.00	33.00
Pore Pressure at End	kPa	190.00	165.00	140.00
Consolidated Volume	cm^3	1720.65	1702.29	1675.00
Consolidated Height	mm	203.52	195.51	185.12
Consolidated Area	mm^2	8454.67	8707.06	9048.84
Vol. Compressibility	m^2/MN	0.03736	0.06467	0.11451
Consolidation Coef.	$m^2/yr.$	1.62486	0.68621	0.23048

D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Foynes Port

Contract No

36330

GSTL
GEO SITE & TESTING SERVICES LTD

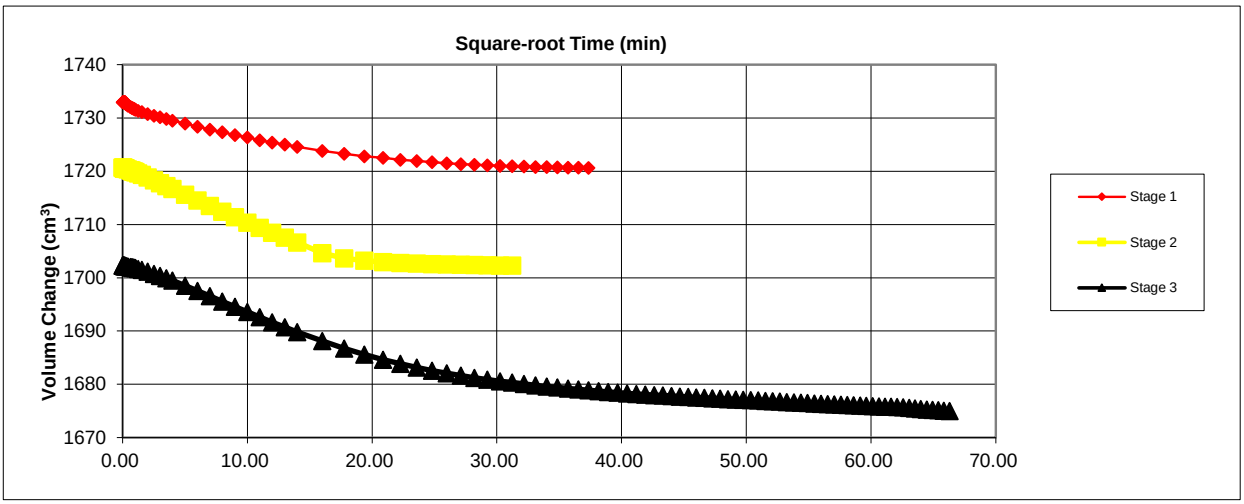
Consolidated Undrained Triaxial Compression Test

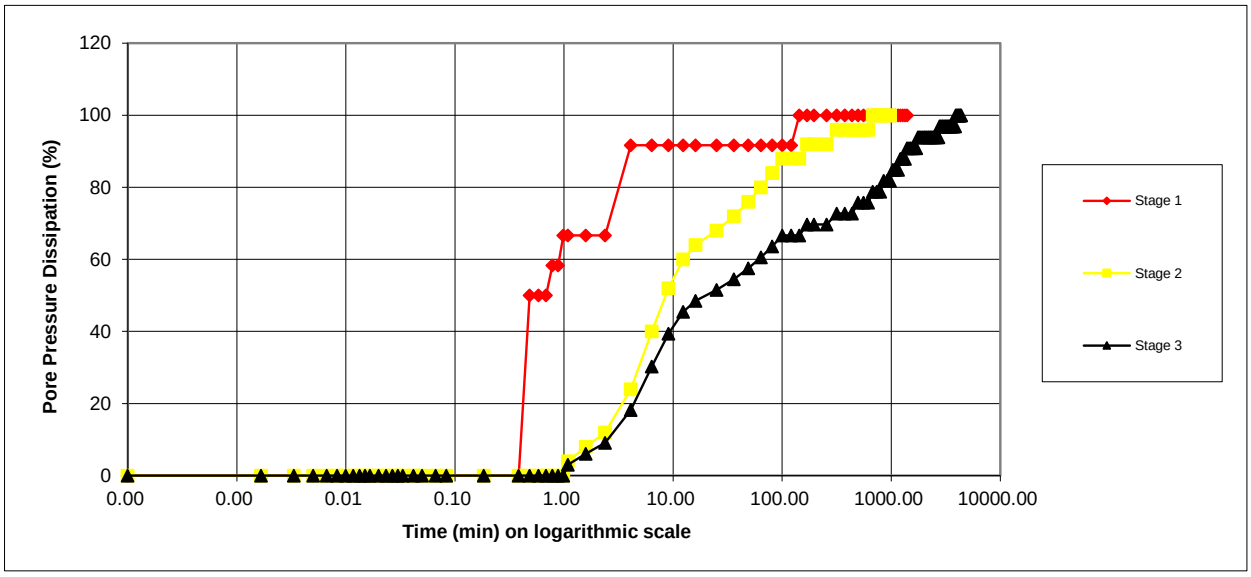
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Consolidation Stage





D P Gray

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Foynes Port

Contract No

36330

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Shearing

Initial Cell Pressure	kPa	200	200	200
Initial Pore Pressure	kPa	190	165	140
Rate of Strain	mm/min	0.0322	0.0131	0.0042
Max Deviator Stress				
Axial Strain		3.381	9.188	12.168
Axial Stress	kPa	63.311	106.25	128.04
Cor. Deviator stress	kPa	60.411	101.80	123.51
Effective Major Stress	kPa	66.411	130.80	162.51
Effective Minor Stress	kPa	7.000	29.00	39.00
Effective Stress Ratio		9.487	4.510	4.17
s'	kPa	36.706	79.90	100.75
t'	kPa	29.706	50.90	61.75
Max Effective Priciple Stress Ratio				
Axial Strain		3.381	6.968	12.168
Axial Stress	kPa	63.311	92.743	128.035
Cor. Deviator stress	kPa	59.411	88.517	123.505
Effective Major Stress	kPa	66.411	110.517	162.505
Effective Minor Stress	kPa	7.000	22.000	39.000
Effective Stress Ratio		9.487	5.024	4.167
s'	kPa	36.706	66.259	100.753
t'	kPa	29.706	44.259	61.753
Shear Resistance Angle	degs			30.0
Cohesion c'	kPa			13

D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Contract No

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Foynes Port

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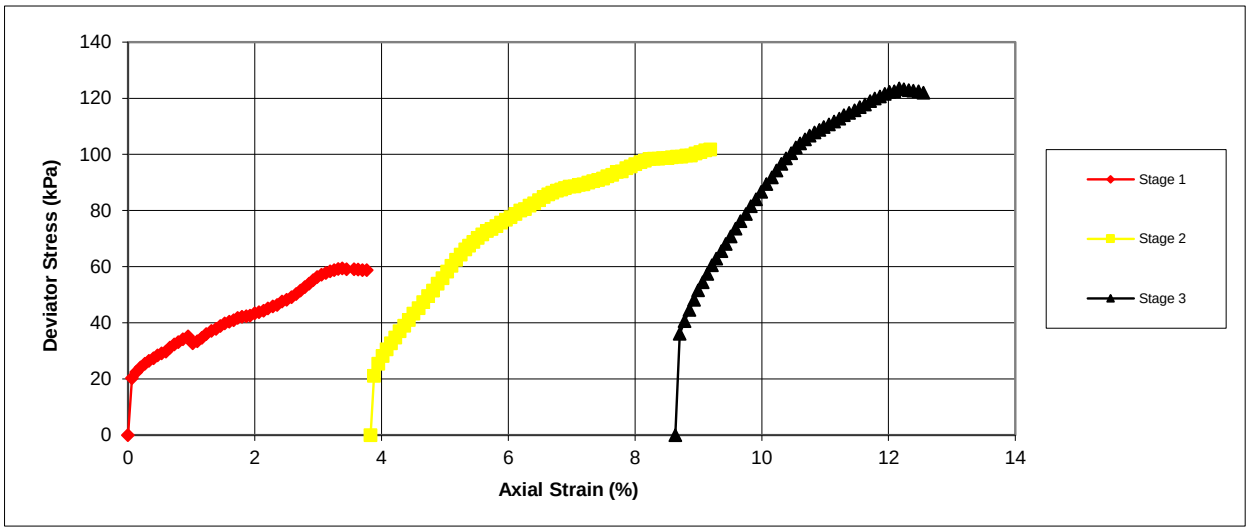
Consolidated Undrained Triaxial Compression Test

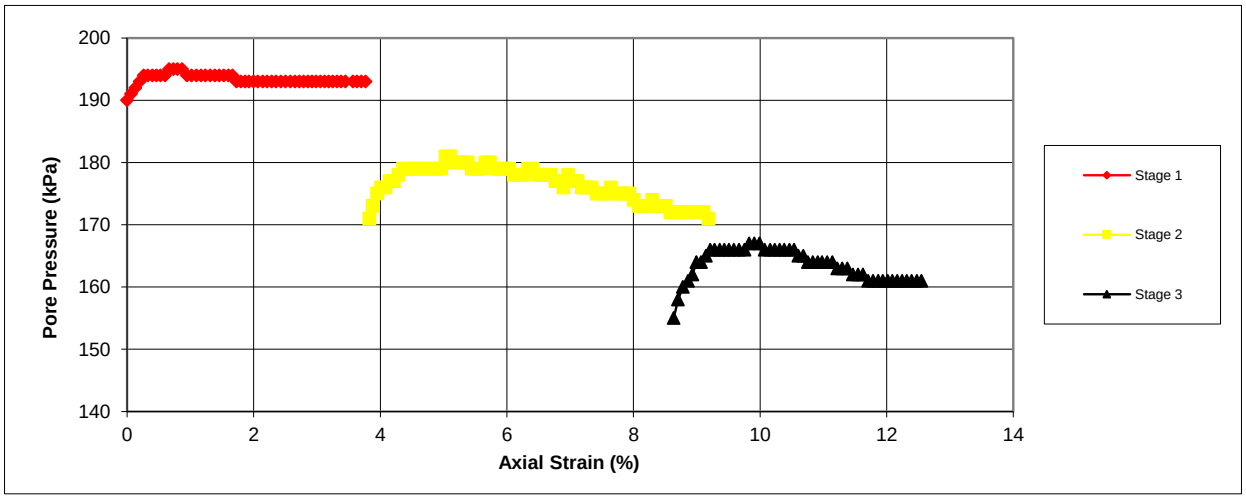
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Shearing Stage





D P Evans

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GSTL
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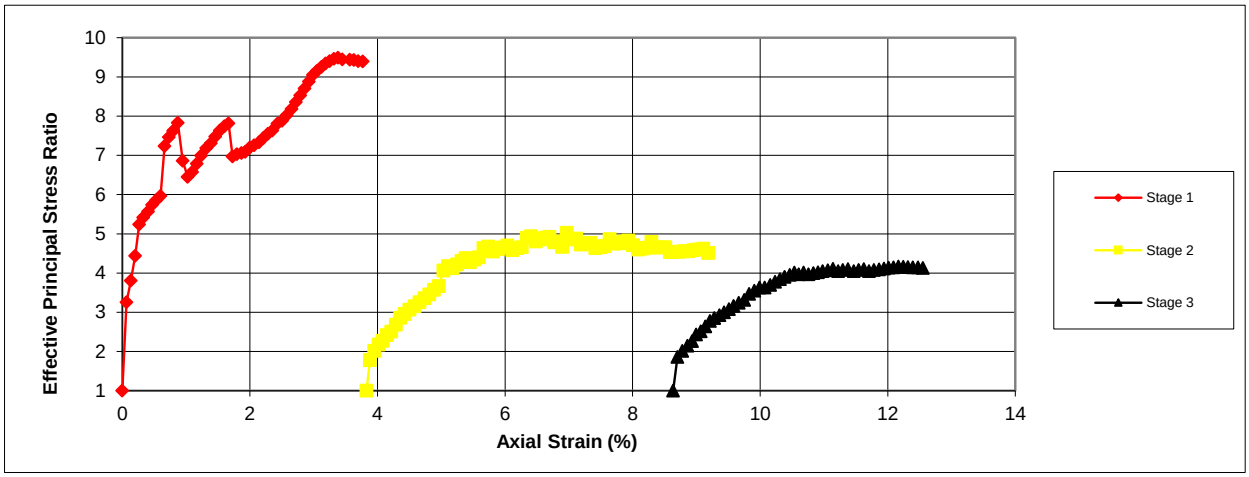
Consolidated Undrained Triaxial Compression Test

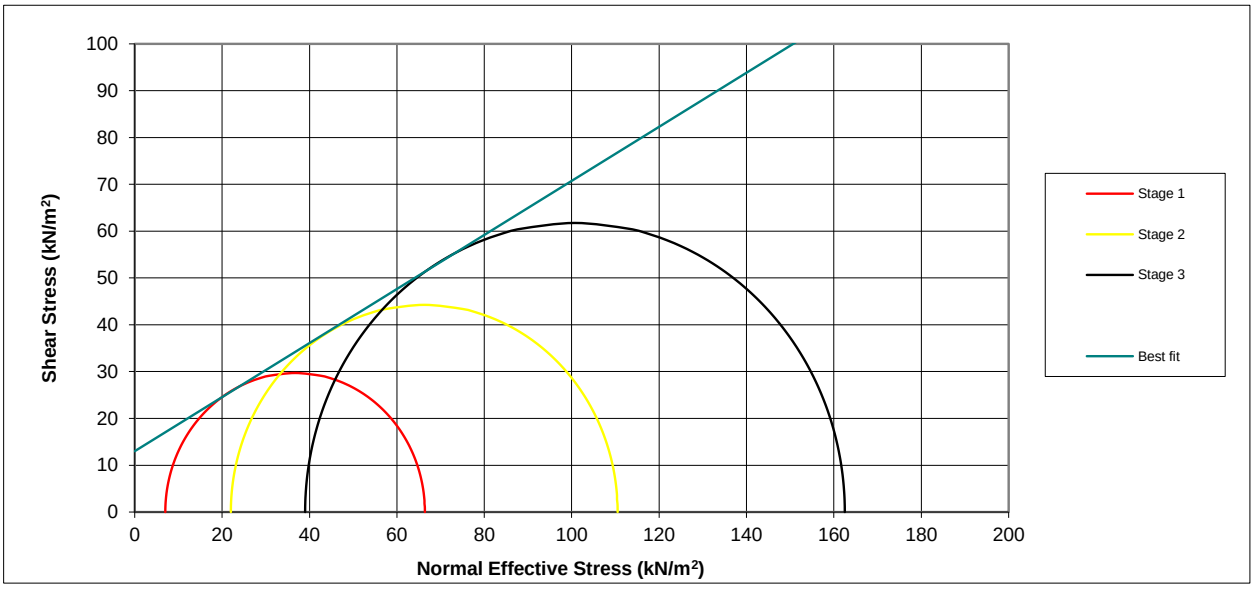
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Shearing Stage





Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Contract No

36330

Foynes Port

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GEO SITE & TESTING SERVICES LTD

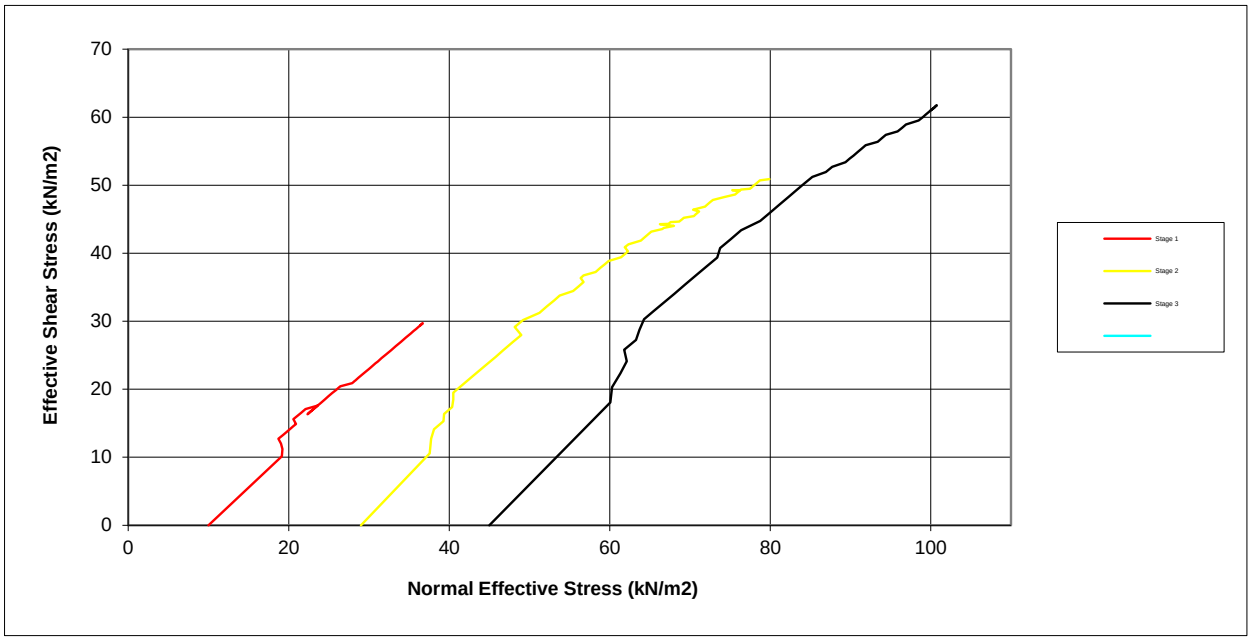
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

Shearing Stage



D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Foynes Port

Contract No

36330

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		LD06
Sample No.		UT
Depth	from(m)	1.00
Depth	to(m)	1.50

D P Evans

Checked and Approved By

14/09/17
Date

Client Ref

6552-02-17

Contract No

36330

Foynes Port

GSTL
GEO SITE & TESTING SERVICES LTD

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 36659

Client's Reference:

Report Date: **28-09-2017**

Client **Ground Investigation Ireland**
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin

Contract Title: **Shannon Foynes Port Company**

For the attention of: **Conor Finnerty**

Date Received: **20-09-2017**

Date Commenced: **20-09-2017**

Date Completed: **28-09-2017**

Test Description	Qty
Determination of Point Load Value Axial or Diametrical including WC ISRM Suggested Method for Point Load Strength 1974-2006 - * UKAS	27
Uniaxial Compressive Strength of Rock Materials with sample preparation for 170-250mm Diameter Cores.	5
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative Assistant)
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	Determination of Unconfined Compressive Strength ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979	
Contract Number	36659	
Site Name	Shannon Foynes Port Company	
Sample Preperation	Sawing and Grinding	
Date Tested	27-09-17	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
LD03	9.19		9.50	102.16	250.41	5451.8	0.40	2.66	2.65	102.0	12.4	Axial Splitting
LD04	5.29		5.47	102.01	167.18	3583.6	0.70	2.62	2.60	289.5	35.4	Axial Splitting
LD04	8.61		8.91	102.2	294.17	6383.7	0.50	2.65	2.63	213.8	26.1	Axial Splitting
LD06	4.90		5.17	101.45	263.88	5729.0	0.20	2.69	2.68	244.7	30.3	Axial Splitting
LD07	3.41		3.58	101.3	175.43	3790.2	0.40	2.68	2.67	162.9	20.2	Axial Splitting

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	mpa

Operators	Checked	27-09-17	Ben Sharp	
JD	Approved	28-09-17	Paul Evans	

GSTL	Point Load Test Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.	
Contract Number	36659	
Site Name	Shannon Foynes Port Company	
Sample Type	Core	
Date Tested	26-09-17	

Hole Reference	Depth (m)			Test Type d / a / b / i	Test Type I //	Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
LD01	12.01	-	12.10	D			106	38.62		3.44	1.40	4.82	0.3	LIMESTONE		
LD03	6.37	-	6.50	D			104	29.49		2.73	1.39	3.79	1.0	LIMESTONE		
	6.80	-	7.08	D			102	22.89		2.20	1.38	3.03	0.7	LIMESTONE		
	9.19	-	9.50	D			102	10.47		1.01	1.38	1.39	1.6	LIMESTONE		
LD04	6.22	-	6.24	D			102	430.26		41.36	1.38	57.00	1.1	LIMESTONE		
L02	25.60	-	25.70	D			106	3.24		0.29	1.40	0.40	1.3	LIMESTONE		
L08	8.08	-	8.13	A		101	46	5.92	76.91	1.00	1.21	1.22	2.5	LIMESTONE		
	10.31	-	10.90	A		103	45	4.57	76.82	0.78	1.21	0.94	1.5	LIMESTONE		
	10.87	-	10.90	A		101	29	5.30	61.07	1.42	1.09	1.55	1.7	LIMESTONE		
	11.40	-	11.43	D			102	1.44		0.14	1.38	0.19	2.3	LIMESTONE		
	11.47	-	11.50	A		103	35	6.36	67.75	1.39	1.15	1.59	1.9	LIMESTONE		
M01	23.60	-	23.79	D			103	6.91		0.65	1.38	0.90	1.5	LIMESTONE		
M09B	44.60	-	44.65	A		105	56	21.49	86.53	2.87	1.28	3.67	2.4	LIMESTONE		
	44.63	-	44.67	A		101	34	19.02	66.12	4.35	1.13	4.93	3.4	LIMESTONE		
M10	32.05	-	32.50	A		63	43	16.78	58.73	4.86	1.08	5.23	2.2	LIMESTONE		
	32.87	-	32.92	D			64	13.31		3.25	1.12	3.63	1.7	LIMESTONE		
M12	28.28	-	28.32	D			100	5.12		0.51	1.37	0.70	0.4	LIMESTONE		
	32.94	-	32.96	A		101	14	7.48	42.43	4.16	0.93	3.86	3.5	LIMESTONE		
	33.71	-	33.95	A		101	53	21.90	82.56	3.21	1.25	4.03	3.7	LIMESTONE		
	33.79	-	33.82	A		101	43	23.30	74.36	4.21	1.20	5.04	3.2	LIMESTONE		
M14	23.50	-	23.59	D			102	21.86		2.10	1.38	2.90	0.1	LIMESTONE		
M15	26.50	-	26.53	A		104	33	8.64	66.10	1.98	1.13	2.24	7.0	LIMESTONE		
M15	26.53	-	26.55	A		99	25	10.16	56.14	3.22	1.05	3.40	5.8	LIMESTONE		
M16	9.19	-	9.25	D			101	41.98		4.11	1.37	5.65	0.2	LIMESTONE		
M16	9.64	-	6.75	D			101	11.34		1.11	1.37	1.53	0.8	LIMESTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operators	Checked	27-09-17	Ben Sharp	
JD	Approved	28-09-17	Paul Evans	

UKAS TESTING 2788

TEST AMENDMENT NOTICE

GSTL Job Ref : **36659**
Project Title: **Shannon Foynes Port Company**
Client : **Ground Investigation Ireland**
For the attention of: **Connor Finnerty**

Dear Sir/Madam,

The following samples listed have been scheduled for testing but are unsuitable for the specified test.

BH/TP no	Sample no	Depth	Testing required	Reason for unsuitability
LD03		*6.80-7.08*	*UCS*	*Fractured upon inspection*

From Clayton Jenkins Date 26/09/2017

APPENDIX 3

ENVIRONMENTAL TEST RESULTS

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	27th September, 2017
Your reference :	17/02/6552
Our reference :	Test Report 17/14043 Batch 1
Location :	Foynes
Date samples received :	21st August, 2017
Status :	Final report
Issue :	1

Six samples were received for analysis on 21st August, 2017 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/14043

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12					LOD/LOR	Units	Method No.
Sample ID	G01	G02	G03	G04	M06	M10							
Depth	0.00	0.00	0.00	0.00	2.00	2.00							
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J							
Sample Date	14/06/2017	14/06/2017	14/06/2017	14/06/2017	14/06/2017	14/06/2017							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/08/2017	21/08/2017	21/08/2017	21/08/2017	21/08/2017	21/08/2017							
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM16
>C21-C35 #	1980	450	295	909	116	94					<7	mg/kg	TM5/PM16
Total aliphatics C5-35	1980	450	295	909	116	94					<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM16
>EC21-EC35 #	96	58	42	88	25	<7					<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	96	58	42	88	25	<19					<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	2076	508	337	997	141	94					<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM31/PM12
Toluene #	<5	11	<5	18	<5	27					<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM31/PM12
Natural Moisture Content	83.8	76.4	48.8	49.2	46.9	59.0					<0.1	%	PM4/PM0
Total Organic Carbon #	1.81	1.68	1.45	1.32	1.71	1.53					<0.02	%	TM21/PM24
Acid Soluble Carbonate Gravimetric	30.9	29.5	32.1	33.5	34.4	25.6					<0.1	%	TM98/PM56
Marine sediments	See attached	See attached	See attached	See attached	See attached	See attached							Sub-contracted

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland

Reference: 17/02/6552

Location: Foynes

Contact: Conor Finnerty

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/14043	1	G01	0.00	1-2	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	G01	0.00	1-2	GRO	Solid Samples were received at a temperature above 9°C.
17/14043	1	G02	0.00	3-4	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	G02	0.00	3-4	GRO	Solid Samples were received at a temperature above 9°C.
17/14043	1	G03	0.00	5-6	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	G03	0.00	5-6	GRO	Solid Samples were received at a temperature above 9°C.
17/14043	1	G04	0.00	7-8	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	G04	0.00	7-8	GRO	Solid Samples were received at a temperature above 9°C.
17/14043	1	M06	2.00	9-10	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	M06	2.00	9-10	GRO	Solid Samples were received at a temperature above 9°C.
17/14043	1	M10	2.00	11-12	EPH, GRO, TOC	Sample holding time exceeded prior to receipt
17/14043	1	M10	2.00	11-12	GRO	Solid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/14043

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/14043

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM98	Acid Soluble Carbonate Gravimetric	PM56	Preparation of sample for Acid Soluble Carbonate			AD	Yes

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Customer

James Lombard

Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
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Co Dublin

Certificate Of Analysis

Job Number: 17-33030
Issue Number: 2
Report Date: 6 September 2017

Reason for re-issuing report: Error with first issue

Site: Foynes
PO Number: Not Supplied
Date Samples Received: 30/08/2017

Please find attached the results for the samples received at our laboratory on 30/08/2017.

Should you have any queries regarding the report or require any further services, we would be happy to discuss your requirements. For additional information about the company please log-on to our website at the above address.

Thank you for choosing City Analysts Limited. We look forward to assisting you again.

Authorised By:

Caitlin Quinn
Deputy Quality Manager

Sent By: 

Sent Date: 6 September 2017

Caitlin Quinn
Deputy Quality Manager

Notes:

Results relate only to the items tested.
Information on methods of analysis and performance characteristics is available on request.
Any opinions or interpretations indicated are outside the scope of our INAB accreditation.

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Catherinestown House
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Newcastle
Co Dublin

Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: G01 @0.00m

Sample Type: Soil

Lab Reference Number: 370562

Date of Sampling: 30/05/2017

Date Sample Received: 30/08/2017

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	>45% giving <2.2 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	1941.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	7.20	mg/l O2
S/S1041	04/09/2017	PH	7.47	pH Unit
S/S3011	04/09/2017	Salinity	1.0	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	>45	<2.2		

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
13 % light inhibition occurred at 45 % vol./vol.
17 % light inhibition occurred at 22.5 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	G01 @0.00m	**Date of Sampling:**	30/05/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370562		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
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Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: G02 @0.00m

Sample Type: Soil

Lab Reference Number: 370563

Date of Sampling: 24/05/2017

Date Sample Received: 30/08/2017

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	>45% giving <2.2 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	201.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	6.90	mg/l O2
S/S1041	04/09/2017	PH	7.30	pH Unit
S/S3011	04/09/2017	Salinity	0.1	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	>45	<2.2		

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
3 % light inhibition occurred at 45 % vol./vol.
3 % light inhibition occurred at 22.5 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	G02 @0.00m	**Date of Sampling:**	24/05/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370563		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

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Note:
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Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: G03 @0.00m

Sample Type: Soil

Date of Sampling: 29/05/2017

Date Sample Received: 30/08/2017

Lab Reference Number: 370564

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	>45% giving <2.2 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	1962.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	7.50	mg/l O2
S/S1041	04/09/2017	PH	7.24	pH Unit
S/S3011	04/09/2017	Salinity	1.0	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	>45	<2.2		

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
25 % light inhibition occurred at 45 % vol./vol.
24 % light inhibition occurred at 22.5 % vol./vol.
23 % light inhibition occurred at 11.25 % vol./vol.
10 % light inhibition occurred at 5.63 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	G03 @0.00m	**Date of Sampling:**	29/05/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370564		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
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Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: G04 @0.00m

Sample Type: Soil

Lab Reference Number: 370565

Date of Sampling: 29/05/2017

Date Sample Received: 30/08/2017

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	>45% giving <2.2 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	1844.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	6.10	mg/l O2
S/S1041	04/09/2017	PH	7.20	pH Unit
S/S3011	04/09/2017	Salinity	0.9	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	>45	>2.2		

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
25 % light inhibition occurred at 45 % vol./vol.
25 % light inhibition occurred at 22.5 % vol./vol.
22 % light inhibition occurred at 11.25 % vol./vol.
18 % light inhibition occurred at 5.63 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	G04 @0.00m	**Date of Sampling:**	29/05/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370565		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: M10/G05 @2.00m

Sample Type: Soil

Lab Reference Number: 370566

Date of Sampling: 14/06/2017

Date Sample Received: 30/08/2017

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	18.32% giving 5.45 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	1713.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	8.66	mg/l O2
S/S1041	04/09/2017	PH	7.18	pH Unit
S/S3011	04/09/2017	Salinity	0.9	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	18.32	5.45	0.36-921	Microtox

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
18 % light inhibition occurred at 45 % vol./vol.
18 % light inhibition occurred at 22.5 % vol./vol.
24 % light inhibition occurred at 11.25 % vol./vol.
14 % light inhibition occurred at 5.63 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	M10/G05 @2.00m	**Date of Sampling:**	14/06/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370566		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
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Report Reference: 17-33030

Report Version: 2

Site: Foynes

Sample Description: M06/G08 @2.00m

Sample Type: Soil

Lab Reference Number: 370567

Date of Sampling: 06/05/2017

Date Sample Received: 30/08/2017

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units
S/S3239	04/09/2017	Inhibitory effect to Vibrio fischeri	>45% giving <2.2 Toxic Units	%vol/vol
Toxicity Chemistry Suite				
S/S3011	04/09/2017	Conductivity @ 20℃	212.0	uS/cm @20℃
S/S1003	04/09/2017	Dissolved Oxygen	8.50	mg/l O2
S/S1041	04/09/2017	PH	7.00	pH Unit
S/S3011	04/09/2017	Salinity	0.1	ppt

Test Parameter	Concentration % vol. / vol.	Toxic Units	95% Confidence Limits % vol./vol.	Method of Calculation
Marine Bacterium	>45	<2.2		

Comments

Marine Bacterium
30 min EC50 to Vibrio fischeri
10 % light inhibition occurred at 45 % vol./vol.
11 % light inhibition occurred at 22.5 % vol./vol.
10 % light inhibition occurred at 11.25 % vol./vol.
- compared to the control.

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
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Report Reference: 17-33030

Report Version: 2

Site:	Foynes		
Sample Description:	M06/G08 @2.00m	**Date of Sampling:**	06/05/2017
Sample Type:	Soil	**Date Sample Received:**	30/08/2017
Lab Reference Number:	370567		

Test Method(s): (see Appendix 1)

Method 2: Marine Bacterium

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
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Appendix 1

Toxicity Test Methods and Procedures

1. Freshwater Crustacean

Method 3235 based on ISO 6341:2012: 'Water quality – Determination of the inhibition of the mobility of Daphnia magna Straus (Cladocera, Crustacea)

3. Marine Copepod

Method 3238 based on ISO 14669:1999: 'Water quality – Determination of acute lethal toxicity to marine copepods (Copepoda, Crustacea)'

2. Marine Bacterium

Method 3239 based on ISO 11348-3:2007: 'Water quality - Determination of the inhibitory effect of water samples on the light emission of Vibrio fischeri (Luminescent bacteria test) – Part 3: Method using freeze-dried bacteria'

4. Marine Algae

Method 3237 based on ISO 10253:2006: 'Water quality - Marine algal growth inhibition test with Skeletonema costatum and Phaeodactylum tricornutum'

5. Freshwater Algae

Method 3236 based on ISO 8692:2012: 'Water quality – Freshwater algal growth inhibition test with unicellular green algae'

6. Freshwater Plant

Based on ISO 20079:2005: 'Water quality – Determination of the toxic effect of water constituents and waste water to duckweed (Lemna minor) – Duckweed growth inhibition test'

7. Marine Fish

Method based on OECD 1992: Guideline 203: - 'Fish, acute toxicity test'

8. Freshwater Fish

Based on OECD 1992: Guideline 203: - 'Fish, acute toxicity test'

9. Estuarine Crustacean

Based on MAFF SOP No. BEG/030:1996: 'Brown Shrimp (Crangon crangon) 96 h acute toxicity for liquid effluents and wastes'

10. Sampling

Based on ISO 5667-16:1998: 'Water quality – Sampling - Part 16: Guidance on biotesting of samples'

11. Eluate Generation

Based on DIN 38 414 part 4, 1984: – 'Sludge and Sediments (Group S) – Determination of leachability by water (S4)

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	23rd August, 2017
Your reference :	
Our reference :	Test Report 17/10097 Batch 1
Location :	Foynes Port
Date samples received :	9th June, 2017
Status :	Final report
Issue :	1

Thirty samples were received for analysis on 9th June, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/10097

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	67-69	70-72	76-78								LOD/LOR	Units	Method No.
Sample ID	BHL01	BHL01	BHL01										
Depth	1.0	3.0	7.0										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	25/05/2017	25/05/2017	25/05/2017										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	09/06/2017	09/06/2017	09/06/2017										
Aluminium	1975	2233	6128								<50	mg/kg	TM30/PM15
Arsenic #	5.6	3.5	6.0								<0.5	mg/kg	TM30/PM15
Barium #	297	39	17								<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	<0.5								<0.5	mg/kg	TM30/PM15
Cadmium #	0.8	0.3	0.2								<0.1	mg/kg	TM30/PM15
Chromium #	17.7	19.2	30.7								<0.5	mg/kg	TM30/PM15
Copper #	8	5	5								<1	mg/kg	TM30/PM15
Iron	5246	4702	14600								<20	mg/kg	TM30/PM15
Lead #	19	9	7								<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM30/PM15
Nickel #	11.1	6.6	14.0								<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1								<1	mg/kg	TM30/PM15
Sulphur as S	0.06	0.07	0.71								<0.01	%	TM30/PM15
Total Sulphate as SO4 #	508	538	2645								<50	mg/kg	TM50/PM29
Vanadium	7	6	18								<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.4	2.0	7.0								<0.1	mg/kg	TM74/PM32
Zinc #	56	25	35								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64								<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	89	94	92								<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/10097

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	67-69	70-72	76-78								LOD/LOR	Units	Method No.
Sample ID	BHL01	BHL01	BHL01										
Depth	1.0	3.0	7.0										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	25/05/2017	25/05/2017	25/05/2017										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	09/06/2017	09/06/2017	09/06/2017										
p/m-Xylene #	<5	<5	<5								<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	100	100	102								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	96	100	103								<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4								<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7	<7								<7	mg/kg	TM5/PM16
>C21-C35 #	62	64	<7								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	62	64	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4								<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	<7								<7	mg/kg	TM5/PM16
>EC21-EC35 #	33	31	<7								<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	33	31	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	95	95	<38								<38	mg/kg	TM5/TM36/PM12/PM16
PCB 77	<5	-	-								<5	ug/kg	TM16/PM8
PCB 81	<5	-	-								<5	ug/kg	TM16/PM8
PCB 105	<5	-	-								<5	ug/kg	TM16/PM8
PCB 114	<5	-	-								<5	ug/kg	TM16/PM8
PCB 118	<5	-	-								<5	ug/kg	TM16/PM8
PCB 123	<5	-	-								<5	ug/kg	TM16/PM8
PCB 126	<5	-	-								<5	ug/kg	TM16/PM8
PCB 156	<5	-	-								<5	ug/kg	TM16/PM8
PCB 157	<5	-	-								<5	ug/kg	TM16/PM8
PCB 167	<5	-	-								<5	ug/kg	TM16/PM8
PCB 169	<5	-	-								<5	ug/kg	TM16/PM8
PCB 189	<5	-	-								<5	ug/kg	TM16/PM8
Total 12 PCBs	<60	-	-								<60	ug/kg	TM16/PM8
Resorcinol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Catechol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Phenol #	0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM26/PM21

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/10097

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	67-69	70-72	76-78								LOD/LOR	Units	Method No.
Sample ID	BHL01	BHL01	BHL01										
Depth	1.0	3.0	7.0										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	25/05/2017	25/05/2017	25/05/2017										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	09/06/2017	09/06/2017	09/06/2017										
o-cresol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	<0.03	<0.03								<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	<0.15	<0.15								<0.15	mg/kg	TM26/PM21
Natural Moisture Content	10.6	11.8	34.3								<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0779	0.1282	0.3813								<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Organic Matter	0.5	0.3	1.1								<0.2	%	TM21/PM24
Dibutyltin	<100	-	-								<100	ug/kg	TM94/PM48
Tributyltin	<100	-	-								<100	ug/kg	TM94/PM48
Triphenyltin	<100	-	-								<100	ug/kg	TM94/PM48
pH #	7.91	8.20	8.21								<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name:	Ground Investigations Ireland	**SVOC Report :**	**Solid**
Reference:			
Location:	Foynes Port		
Contact:	Conor Finnerty		
JE Job No.:	17/10097		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	67-69	70-72	76-78									
Sample ID	BHL01	BHL01	BHL01									
Depth	1.0	3.0	7.0									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	25/05/2017	25/05/2017	25/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	09/06/2017	09/06/2017	09/06/2017							LOD/LOR	Units	Method No.
SVOC MS												
Phenols												
2-Chlorophenol#	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dichlorophenol#	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
Phenol#	<10	<10	<10							<10	ug/kg	TM16/PM8
PAHs												
2-Chloronaphthalene#	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylnaphthalene#	<10	<10	<10							<10	ug/kg	TM16/PM8
Phthalates												
Bis(2-ethylhexyl) phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Dimethyl phthalate#	<100	<100	<100							<100	ug/kg	TM16/PM8
Other SVOCs												
1,2-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene#	<10	<10	<10							<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10							<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10							<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Bromophenylphenylether#	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10							<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10							<10	ug/kg	TM16/PM8
Dibenzofuran#	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobutadiene#	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10							<10	ug/kg	TM16/PM8
Isophorone#	<10	<10	<10							<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine#	<10	<10	<10							<10	ug/kg	TM16/PM8
Nitrobenzene#	<10	<10	<10							<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	91	87	68[SV]							<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	102	99	95							<0	%	TM16/PM8

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/10097

VOC Report : **Solid**

J E Sample No.	67-69	70-72	76-78									
Sample ID	BHL01	BHL01	BHL01									
Depth	1.0	3.0	7.0									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	25/05/2017	25/05/2017	25/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	09/06/2017	09/06/2017	09/06/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30								<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5								<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3								<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6								<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	100	100	102								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	96	100	103								<0	%	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/10097	1	BHL01	1.0	68	17/08/2017	**General Description (Bulk Analysis)**	soil/stones
					17/08/2017	**Asbestos Fibres**	NAD
					17/08/2017	**Asbestos Fibres (2)**	NAD
					17/08/2017	**Asbestos ACM**	NAD
					17/08/2017	**Asbestos ACM (2)**	NAD
					17/08/2017	**Asbestos Type**	NAD
					17/08/2017	**Asbestos Type (2)**	NAD
					17/08/2017	**Asbestos Level Screen**	NAD
17/10097	1	BHL01	3.0	71	17/08/2017	**General Description (Bulk Analysis)**	soil/stones
					17/08/2017	**Asbestos Fibres**	NAD
					17/08/2017	**Asbestos Fibres (2)**	NAD
					17/08/2017	**Asbestos ACM**	NAD
					17/08/2017	**Asbestos ACM (2)**	NAD
					17/08/2017	**Asbestos Type**	NAD
					17/08/2017	**Asbestos Type (2)**	NAD
					17/08/2017	**Asbestos Level Screen**	NAD
17/10097	1	BHL01	7.0	77	17/08/2017	**General Description (Bulk Analysis)**	Soil/stones
					17/08/2017	**Asbestos Fibres**	NAD
					17/08/2017	**Asbestos Fibres (2)**	NAD
					17/08/2017	**Asbestos ACM**	NAD
					17/08/2017	**Asbestos ACM (2)**	NAD
					17/08/2017	**Asbestos Type**	NAD
					17/08/2017	**Asbestos Type (2)**	NAD
					17/08/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Matrix : Solid

Reference:

Location: Foynes Port

Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/10097	1	BHL01	1.0	67-69	Cyanide, EPH, GRO, PAH, Phenols, SVOC, VOC	Sample holding time exceeded prior to receipt
17/10097	1	BHL01	1.0	67-69	GRO, VOC	Solid Samples were received at a temperature above 9°C.
17/10097	1	BHL01	1.0	67-69	pH, Sulphate, Tot SO4	Sample holding time exceeded
17/10097	1	BHL01	3.0	70-72	Cyanide, EPH, GRO, PAH, Phenols, SVOC, VOC	Sample holding time exceeded prior to receipt
17/10097	1	BHL01	3.0	70-72	GRO, VOC	Solid Samples were received at a temperature above 9°C.
17/10097	1	BHL01	3.0	70-72	pH, Sulphate, Tot SO4	Sample holding time exceeded
17/10097	1	BHL01	7.0	76-78	Cyanide, EPH, GRO, PAH, Phenols, SVOC, VOC	Sample holding time exceeded prior to receipt
17/10097	1	BHL01	7.0	76-78	GRO, VOC	Solid Samples were received at a temperature above 9°C.
17/10097	1	BHL01	7.0	76-78	pH, Sulphate, Tot SO4	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/10097

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/10097

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 17/10097

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes

JE Job No: 17/10097

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	2nd June, 2017
Your reference :	
Our reference :	Test Report 17/7223 Batch 1
Location :	Foynes Port
Date samples received :	19th April, 2017
Status :	Final report
Issue :	1

Nine samples were received for analysis on 19th April, 2017 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/7223

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	10-12	13-15									LOD/LOR	Units	Method No.
Sample ID	L05	L05											
Depth	1.00	3.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	10/04/2017	10/04/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	19/04/2017	19/04/2017											
Aluminium	11270	10610									<50	mg/kg	TM30/PM15
Arsenic #	10.1	10.1									<0.5	mg/kg	TM30/PM15
Barium #	40	38									<1	mg/kg	TM30/PM15
Beryllium	0.9	0.8									<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.2									<0.1	mg/kg	TM30/PM15
Chromium #	38.5	33.6									<0.5	mg/kg	TM30/PM15
Copper #	10	8									<1	mg/kg	TM30/PM15
Iron	24700	20930									<20	mg/kg	TM30/PM15
Lead #	24	19									<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Nickel #	22.6	19.9									<0.7	mg/kg	TM30/PM15
Selenium #	2	1									<1	mg/kg	TM30/PM15
Sulphur as S	0.23	0.23									<0.01	%	TM30/PM15
Total Sulphate as SO4 #	2327	1692									<50	mg/kg	TM50/PM29
Vanadium	33	26									<1	mg/kg	TM30/PM15
Water Soluble Boron #	11.0	10.4									<0.1	mg/kg	TM74/PM32
Zinc #	85	73									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64									<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	104									<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	<2									<2	ug/kg	TM15/PM10
Benzene #	<3	<3									<3	ug/kg	TM15/PM10
Toluene #	<3	<3									<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3									<3	ug/kg	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/7223

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	10-12	13-15									LOD/LOR	Units	Method No.
Sample ID	L05	L05											
Depth	1.00	3.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	10/04/2017	10/04/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	19/04/2017	19/04/2017											
p/m-Xylene #	<5	<5									<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3									<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	97	96									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98	97									<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4									<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7									<7	mg/kg	TM5/PM16
>C21-C35 #	<7	<7									<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4									<4	mg/kg	TM5/PM16
>EC16-EC21 #	16	<7									<7	mg/kg	TM5/PM16
>EC21-EC35 #	79	<7									<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	95	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	95	<38									<38	mg/kg	TM5/TM36/PM12/PM16
Resorcinol	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
Catechol	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	<0.02									<0.02	mg/kg	TM26/PM21
o-cresol	<0.01	0.06									<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	0.06									<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	<0.06									<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	<0.01	<0.01									<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	<0.15									<0.15	mg/kg	TM26/PM21
Natural Moisture Content	66.8	42.5									<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3									<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.6183	0.3366									<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5									<0.5	mg/kg	TM89/PM45

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/7223

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	10-12	13-15									LOD/LOR	Units	Method No.
Sample ID	L05	L05											
Depth	1.00	3.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	10/04/2017	10/04/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	19/04/2017	19/04/2017											
Organic Matter	0.5	0.4									<0.2	%	TM21/PM24
Dibutyltin	<100	-									<100	ug/kg	TM94/PM48
Tributyltin	<100	-									<100	ug/kg	TM94/PM48
Triphenyltin	<100	-									<100	ug/kg	TM94/PM48
pH #	8.35	8.31									<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/7223

SVOC Report : **Solid**

J E Sample No.	10-12	13-15											
Sample ID	L05	L05											
Depth	1.00	3.00									Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J T	V J T											
Sample Date	10/04/2017	10/04/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	19/04/2017	19/04/2017									LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10									<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10									<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10									<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10									<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10									<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10									<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10									<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10									<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10									<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10									<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10									<10	ug/kg	TM16/PM8
Phenol #	<10	<10									<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10									<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10									<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100									<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100									<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100									<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100									<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100									<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100									<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10									<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10									<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10									<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10									<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10									<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10									<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10									<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10									<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10									<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10									<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10									<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10									<10	ug/kg	TM16/PM8
Azobenzene	<10	<10									<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10									<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10									<10	ug/kg	TM16/PM8
Carbazole	<10	<10									<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10									<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10									<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10									<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10									<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10									<10	ug/kg	TM16/PM8
Isophorone #	<10	<10									<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10									<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10									<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	71	56									<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	105	104									<0	%	TM16/PM8

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/7223

VOC Report : **Solid**

J E Sample No.	10-12	13-15									LOD/LOR	Units	Method No.
Sample ID	L05	L05											
Depth	1.00	3.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	10/04/2017	10/04/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	19/04/2017	19/04/2017											
VOC MS													
Dichlorodifluoromethane	<2	<2									<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2									<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3									<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2									<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1									<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2									<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2									<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6									<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	67	<30									<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3									<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3									<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3									<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4									<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3									<3	ug/kg	TM15/PM10
Chloroform #	<3	<3									<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3									<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3									<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4									<4	ug/kg	TM15/PM10
Benzene #	<3	<3									<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3									<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6									<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3									<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3									<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4									<4	ug/kg	TM15/PM10
Toluene #	<3	<3									<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3									<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3									<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3									<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3									<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3									<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3									<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3									<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3									<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3									<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5									<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3									<3	ug/kg	TM15/PM10
Styrene	<3	<3									<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3									<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3									<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3									<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2									<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4									<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3									<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3									<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3									<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5									<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6									<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4									<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4									<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4									<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4									<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7									<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4									<4	ug/kg	TM15/PM10
Naphthalene	<27	<27									<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7									<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	97	96									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98	97									<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7223	1	L05	1.00	11	27/05/2017	**General Description (Bulk Analysis)**	Soil/Stones
					27/05/2017	**Asbestos Fibres**	NAD
					27/05/2017	**Asbestos Fibres (2)**	NAD
					27/05/2017	**Asbestos ACM**	NAD
					27/05/2017	**Asbestos ACM (2)**	NAD
					27/05/2017	**Asbestos Type**	NAD
					27/05/2017	**Asbestos Type (2)**	NAD
					27/05/2017	**Asbestos Level Screen**	NAD
17/7223	1	L05	3.00	14	27/05/2017	**General Description (Bulk Analysis)**	Soil/Stones
					27/05/2017	**Asbestos Fibres**	NAD
					27/05/2017	**Asbestos Fibres (2)**	NAD
					27/05/2017	**Asbestos ACM**	NAD
					27/05/2017	**Asbestos ACM (2)**	NAD
					27/05/2017	**Asbestos Type**	NAD
					27/05/2017	**Asbestos Type (2)**	NAD
					27/05/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Matrix : Solid

Reference:

Location: Foynes Port

Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/7223	1	L05	1.00	10-12	Cyanide, EPH, GRO, PAH, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded
17/7223	1	L05	3.00	13-15	Cyanide, EPH, GRO, PAH, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/7223

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/7223

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 17/7223

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes

JE Job No: 17/7223

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	13th June, 2017
Your reference :	
Our reference :	Test Report 17/7158 Batch 1
Location :	Durnish Lands
Date samples received :	18th April, 2017
Status :	Final report
Issue :	2

Eighteen samples were received for analysis on 18th April, 2017 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference:
Location: Durnish Lands
Contact: Conor Finnerty
JE Job No.: 17/7158

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	16-18	22-24	34-36	52-54			LOD/LOR	Units	Method No.
Sample ID	LD01	LD01	LD01	LD01	LD05	LD05	LD05	LD01					
Depth	0.50	1.00	2.00	3.00	0.50	2.00	6.00	8.00					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	11/04/2017	11/04/2017	11/04/2017	11/04/2017	10/04/2017	10/04/2017	11/04/2017	12/04/2017					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017					
Aluminium	21170	-	16400	-	9822	-	-	1492			<50	mg/kg	TM30/PM15
Arsenic #	13.0	-	21.9	-	9.1	-	-	5.7			<0.5	mg/kg	TM30/PM15
Barium #	161	-	213	-	95	-	-	10			<1	mg/kg	TM30/PM15
Beryllium	1.5	-	1.4	-	0.8	-	-	<0.5			<0.5	mg/kg	TM30/PM15
Cadmium #	0.3	-	<0.1	-	0.7	-	-	0.2			<0.1	mg/kg	TM30/PM15
Chromium #	51.3	-	52.2	-	50.1	-	-	18.3			<0.5	mg/kg	TM30/PM15
Copper #	59	-	2	-	10	-	-	3			<1	mg/kg	TM30/PM15
Iron	38140	-	37360	-	19050	-	-	4404			<20	mg/kg	TM30/PM15
Lead #	21	-	19	-	34	-	-	9			<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	-	<0.1	-	-	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	37.9	-	32.6	-	31.6	-	-	6.8			<0.7	mg/kg	TM30/PM15
Selenium #	3	-	2	-	2	-	-	<1			<1	mg/kg	TM30/PM15
Sulphur as S	0.28	-	<0.01	-	0.02	-	-	0.09			<0.01	%	TM30/PM15
Total Sulphate as SO4 #	426	-	385	-	1144	-	-	592			<50	mg/kg	TM50/PM29
Vanadium	52	-	60	-	31	-	-	8			<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.6	-	2.3	-	3.8	-	-	1.3			<0.1	mg/kg	TM74/PM32
Zinc #	87	-	65	-	137	-	-	15			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	-	<0.03	-	<0.03	-	-	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	-	<0.05	-	<0.05	-	-	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	-	<0.03	-	<0.03	-	-	<0.03			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	-	<0.03	-	<0.03	-	-	<0.03			<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	-	<0.03	-	<0.03	-	-	<0.03			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	-	<0.06	-	<0.06	-	-	<0.06			<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	-	<0.02	-	<0.02	-	-	<0.02			<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	-	<0.07	-	<0.07	-	-	<0.07			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
Coronene	<0.04	-	<0.04	-	<0.04	-	-	<0.04			<0.04	mg/kg	TM4/PM8
PAH 17 Total	<0.64	-	<0.64	-	<0.64	-	-	<0.64			<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	-	<0.05	-	<0.05	-	-	<0.05			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	103	-	115	-	90	-	-	113			<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-	<2	-	<2	-	-	<2			<2	ug/kg	TM15/PM10
Benzene #	<3	-	<3	-	<3	-	-	<3			<3	ug/kg	TM15/PM10
Toluene #	<3	-	<3	-	<3	-	-	12			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	-	<3	-	<3	-	-	<3			<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Durnish Lands
Contact: Conor Finnerty
JE Job No.: 17/7158

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-3	4-6	7-9	10-12	16-18	22-24	34-36	52-54			LOD/LOR	Units	Method No.
Sample ID	LD01	LD01	LD01	LD01	LD05	LD05	LD05	LD01					
Depth	0.50	1.00	2.00	3.00	0.50	2.00	6.00	8.00					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	11/04/2017	11/04/2017	11/04/2017	11/04/2017	10/04/2017	10/04/2017	11/04/2017	12/04/2017					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017					
p/m-Xylene #	<5	-	<5	-	<5	-	-	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	-	<3	-	<3	-	-	<3			<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	100	-	101	-	91	-	-	86			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	105	-	100	-	83	-	-	66			<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	-	<0.2	-	-	<0.2			<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	<4	-	<4	-	-	<4			<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	<7	-	<7	-	-	<7			<7	mg/kg	TM5/PM16
>C21-C35 #	13	-	<7	-	37	-	-	<7			<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	<19	-	37	-	-	<19			<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	-	<0.1	-	-	<0.1 SV			<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	-	<0.2	-	<0.2	-	-	<0.2			<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	-	<4	-	<4	-	-	<4			<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	-	<7	-	<7	-	-	<7			<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	-	<7	-	75	-	-	<7			<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	-	<19	-	75	-	-	<19			<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	<38	-	112	-	-	<38			<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 52 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 101 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 118 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 138 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 153 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
PCB 180 #	<50 AA	-	-	-	<50 AA	-	-	-			<5	ug/kg	TM17/PM8
Total 7 PCBs #	<350 AA	-	-	-	<350 AA	-	-	-			<35	ug/kg	TM17/PM8
Resorcinol	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21
Catechol	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	-	<0.02	-	<0.02	-	-	<0.02			<0.02	mg/kg	TM26/PM21
o-cresol	<0.01	-	<0.01	-	<0.01	-	-	0.02			<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	-	<0.03	-	<0.03	-	-	<0.03			<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	-	<0.06	-	<0.06	-	-	<0.06			<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21

Client Name: Ground Investigations Ireland
Reference:
Location: Durnish Lands
Contact: Conor Finnerty
JE Job No.: 17/7158

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	16-18	22-24	34-36	52-54			LOD/LOR	Units	Method No.
Sample ID	LD01	LD01	LD01	LD01	LD05	LD05	LD05	LD01					
Depth	0.50	1.00	2.00	3.00	0.50	2.00	6.00	8.00					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	11/04/2017	11/04/2017	11/04/2017	11/04/2017	10/04/2017	10/04/2017	11/04/2017	12/04/2017					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017	18/04/2017					
2-isopropylphenol #	<0.01	-	<0.01	-	<0.01	-	-	<0.01			<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	-	<0.15	-	<0.15	-	-	<0.15			<0.15	mg/kg	TM26/PM21
Natural Moisture Content	17.2	-	28.1	-	41.3	-	-	10.4			<0.1	%	PM4/PM0
Chloride #	-	84	-	57	-	34	67	-			<2	mg/kg	TM38/PM20
Hexavalent Chromium #	<0.3	-	<0.3	-	<0.3	-	-	<0.3			<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.1143	0.1970	0.0473	0.0037	0.0912	0.0203	0.0210	0.1775			<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	-	<0.5	-	1.0	-	-	<0.5			<0.5	mg/kg	TM89/PM45
Organic Matter	0.8	-	1.1	-	7.5	-	-	0.9			<0.2	%	TM21/PM24
Dibutyltin	<100	-	-	-	-	-	-	-			<100	ug/kg	TM94/PM48
Tributyltin	<100	-	-	-	-	-	-	-			<100	ug/kg	TM94/PM48
Triphenyltin	<100	-	-	-	-	-	-	-			<100	ug/kg	TM94/PM48
pH #	7.96	7.92	8.10	8.10	7.81	8.56	8.64	8.06			<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Durnish Lands
Contact: Conor Finnerty
JE Job No.: 17/7158

SVOC Report : **Solid**

J E Sample No.	1-3	7-9	16-18	52-54							LOD/LOR	Units	Method No.
Sample ID	LD01	LD01	LD05	LD01									
Depth	0.50	2.00	0.50	8.00									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	11/04/2017	11/04/2017	10/04/2017	12/04/2017									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	18/04/2017	18/04/2017	18/04/2017	18/04/2017									
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100							<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10							<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	86	82	76	101							<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	98	125	104	113							<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland **VOC Report :** **Solid**
Reference:
Location: Durnish Lands
Contact: Conor Finnerty
JE Job No.: 17/7158

J E Sample No.	1-3	7-9	16-18	52-54							LOD/LOR	Units	Method No.
Sample ID	LD01	LD01	LD05	LD01									
Depth	0.50	2.00	0.50	8.00									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	11/04/2017	11/04/2017	10/04/2017	12/04/2017									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	18/04/2017	18/04/2017	18/04/2017	18/04/2017									
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2							<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2							<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2							<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1							<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2							<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2							<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6							<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30							<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6							<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
Toluene #	<3	5	<3	9							<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5							<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3							<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2							<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3							<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5							<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6							<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7							<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4							<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27							<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7							<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	98	99	93	89							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	103	106	92	74							<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Durnish Lands
Contact: Conor Finnerty

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7158	1	LD01	0.50	2	26/05/2017	**General Description (Bulk Analysis)**	Soil/Stones
					26/05/2017	**Asbestos Fibres**	NAD
					26/05/2017	**Asbestos Fibres (2)**	NAD
					26/05/2017	**Asbestos ACM**	NAD
					26/05/2017	**Asbestos ACM (2)**	NAD
					26/05/2017	**Asbestos Type**	NAD
					26/05/2017	**Asbestos Type (2)**	NAD
					26/05/2017	**Asbestos Level Screen**	NAD
17/7158	1	LD01	2.00	8	26/05/2017	**General Description (Bulk Analysis)**	Clay/Stones
					26/05/2017	**Asbestos Fibres**	NAD
					26/05/2017	**Asbestos Fibres (2)**	NAD
					26/05/2017	**Asbestos ACM**	NAD
					26/05/2017	**Asbestos ACM (2)**	NAD
					26/05/2017	**Asbestos Type**	NAD
					26/05/2017	**Asbestos Type (2)**	NAD
					26/05/2017	**Asbestos Level Screen**	NAD
17/7158	1	LD05	0.50	17	26/05/2017	**General Description (Bulk Analysis)**	Soil/Stones
					26/05/2017	**Asbestos Fibres**	NAD
					26/05/2017	**Asbestos Fibres (2)**	NAD
					26/05/2017	**Asbestos ACM**	NAD
					26/05/2017	**Asbestos ACM (2)**	NAD
					26/05/2017	**Asbestos Type**	NAD
					26/05/2017	**Asbestos Type (2)**	NAD
					26/05/2017	**Asbestos Level Screen**	NAD
17/7158	1	LD01	8.00	53	26/05/2017	**General Description (Bulk Analysis)**	Soil/Stones
					26/05/2017	**Asbestos Fibres**	NAD
					26/05/2017	**Asbestos Fibres (2)**	NAD
					26/05/2017	**Asbestos ACM**	NAD
					26/05/2017	**Asbestos ACM (2)**	NAD
					26/05/2017	**Asbestos Type**	NAD
					26/05/2017	**Asbestos Type (2)**	NAD
					26/05/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland **Matrix : Solid**
Reference:
Location: Durnish Lands
Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/7158	1	LD01	0.50	1-3	Cyanide, EPH, GRO, PAH, PCB, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded
17/7158	1	LD01	1.00	4-6	Chloride, pH, Sulphate	Sample holding time exceeded
17/7158	1	LD01	2.00	7-9	Cyanide, EPH, GRO, PAH, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded
17/7158	1	LD01	3.00	10-12	Chloride, pH, Sulphate	Sample holding time exceeded
17/7158	1	LD05	0.50	16-18	Cyanide, EPH, GRO, PAH, PCB, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded
17/7158	1	LD05	2.00	22-24	Chloride, pH, Sulphate	Sample holding time exceeded
17/7158	1	LD05	6.00	34-36	Chloride, pH, Sulphate	Sample holding time exceeded
17/7158	1	LD01	8.00	52-54	Cyanide, EPH, GRO, PAH, pH, Phenols, Sulphate, SVOC, Tot SO4, VOC	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/7158

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

JE Job No: 17/7158

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 17/7158

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

JE Job No: 17/7158

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Fergal McNamara
Date :	13th June, 2017
Your reference :	
Our reference :	Test Report 17/7031 Batch 1
Location :	Foynes Port
Date samples received :	13th April, 2017
Status :	Final report
Issue :	2

Twenty one samples were received for analysis on 13th April, 2017 of which twelve were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	10-12	13-16	38-40	41-43	46-47	48	49-51	52-54	LOD/LOR	Units	Method No.
Sample ID	LD02	LD02	LD02	LD02	LD04	LD04	LD04	LD04	LD06	LD06			
Depth	0.5	1.0	3.0	4.0	0.5	1.0	3.0	4.0	0.5	1.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V T	T	V J T	V J T			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Aluminium	-	11710	-	7045	-	10440	-	10260	19800	-	<50	mg/kg	TM30/PM15
Arsenic #	-	21.3	-	4.8	-	8.4	-	9.3	17.8	-	<0.5	mg/kg	TM30/PM15
Barium #	-	25	-	17	-	23	-	24	40	-	<1	mg/kg	TM30/PM15
Beryllium	-	0.8	-	0.5	-	0.8	-	0.9	1.6	-	<0.5	mg/kg	TM30/PM15
Cadmium #	-	0.2	-	0.2	-	0.2	-	0.3	<0.1	-	<0.1	mg/kg	TM30/PM15
Chromium #	-	32.9	-	26.1	-	36.9	-	28.8	52.9	-	<0.5	mg/kg	TM30/PM15
Copper #	-	<1	-	1	-	2	-	6	<1	-	<1	mg/kg	TM30/PM15
Iron	-	22590	-	17420	-	24360	-	21800	44840	-	<20	mg/kg	TM30/PM15
Lead #	-	13	-	9	-	13	-	13	22	-	<5	mg/kg	TM30/PM15
Mercury #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM30/PM15
Nickel #	-	22.9	-	14.9	-	22.5	-	27.1	33.5	-	<0.7	mg/kg	TM30/PM15
Selenium #	-	<1	-	<1	-	<1	-	<1	1	-	<1	mg/kg	TM30/PM15
Sulphur as S	-	0.01	-	0.38	-	0.49	-	0.48	0.01	-	<0.01	%	TM30/PM15
Total Sulphate as SO4 #	-	195	-	1522	-	1481	-	1324	309	-	<50	mg/kg	TM50/PM29
Vanadium	-	39	-	20	-	31	-	26	64	-	<1	mg/kg	TM30/PM15
Water Soluble Boron #	-	1.1	-	3.5	-	7.4	-	6.6	1.6	-	<0.1	mg/kg	TM74/PM32
Zinc #	-	54	-	37	-	55	-	62	83	-	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	<0.03	-	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05	-	<0.05	mg/kg	TM4/PM8
Fluorene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	<0.03	-	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	TM4/PM8
Anthracene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	<0.03	-	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	TM4/PM8
Pyrene #	-	<0.03	-	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	<0.06	-	<0.06	-	<0.06	-	<0.06	<0.06	-	<0.06	mg/kg	TM4/PM8
Chrysene #	-	<0.02	-	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	<0.07	-	<0.07	-	<0.07	-	<0.07	<0.07	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	<0.04	-	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	<0.6	-	<0.6	-	<0.6	-	<0.6	<0.6	-	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	<0.02	-	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	-	<1	-	<1	-	<1	-	<1	<1	-	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	114	-	122	-	122	-	121	113	-	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	<2	-	<2	-	<2	-	<2	<2	-	<2	ug/kg	TM15/PM10
Benzene #	-	<3	-	<3	-	<3	-	<3	<3	-	<3	ug/kg	TM15/PM10
Toluene #	-	<3	-	<3	-	<3	-	<3	<3	-	<3	ug/kg	TM15/PM10
Ethylbenzene #	-	<3	-	<3	-	<3	-	<3	<3	-	<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	10-12	13-16	38-40	41-43	46-47	48	49-51	52-54	LOD/LOR	Units	Method No.
Sample ID	LD02	LD02	LD02	LD02	LD04	LD04	LD04	LD04	LD06	LD06			
Depth	0.5	1.0	3.0	4.0	0.5	1.0	3.0	4.0	0.5	1.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V T	T	V J T	V J T			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
p/m-Xylene #	-	<5	-	<5	-	<5	-	<5	<5	-	<5	ug/kg	TM15/PM10
o-Xylene #	-	<3	-	<3	-	<3	-	<3	<3	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	98	-	98	-	95	-	103	97	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	97	-	98	-	87	-	113	97	-	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2	<0.2	-	<0.2	mg/kg	TM5/PM16
>C12-C16 #	-	<4	-	<4	-	<4	-	<4	<4	-	<4	mg/kg	TM5/PM16
>C16-C21 #	-	<7	-	<7	-	<7	-	<7	<7	-	<7	mg/kg	TM5/PM16
>C21-C35 #	-	<7	-	34	-	10	-	<7	<7	-	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	<19	-	34	-	<19	-	<19	<19	-	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	-	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-	<0.2	-	<0.2	-	<0.2	-	<0.2	<0.2	-	<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	-	<4	-	<4	-	<4	-	<4	<4	-	<4	mg/kg	TM5/PM16
>EC16-EC21 #	-	<7	-	<7	-	<7	-	<7	<7	-	<7	mg/kg	TM5/PM16
>EC21-EC35 #	-	<7	-	30	-	24	-	<7	<7	-	<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	-	<19	-	30	-	24	-	<19	<19	-	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	<38	-	64	-	<38	-	<38	<38	-	<38	mg/kg	TM5/TM36/PM12/PM16
PCB 77	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 81	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 105	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 114	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 118	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 123	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 126	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 156	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 157	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 167	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 169	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 189	-	<5	-	-	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
Total 12 PCBs	-	<60	-	-	-	<60	-	-	<60	-	<60	ug/kg	TM16/PM8
Resorcinol	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
Catechol	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
Phenol #	-	<0.01	-	0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
m/p-cresol #	-	<0.02	-	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	mg/kg	TM26/PM21

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	10-12	13-16	38-40	41-43	46-47	48	49-51	52-54	LOD/LOR	Units	Method No.
Sample ID	LD02	LD02	LD02	LD02	LD04	LD04	LD04	LD04	LD06	LD06			
Depth	0.5	1.0	3.0	4.0	0.5	1.0	3.0	4.0	0.5	1.0			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V T	T	V J T	V J T			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
o-cresol	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
Total cresols	-	<0.03	-	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	mg/kg	TM26/PM21
Xylenols #	-	<0.06	-	<0.06	-	<0.06	-	<0.06	<0.06	-	<0.06	mg/kg	TM26/PM21
1-naphthol	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	-	<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	-	<0.15	-	<0.15	-	<0.15	-	<0.15	<0.15	-	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	-	30.6	-	39.1	-	30.8	-	29.1	28.0	-	<0.1	%	PM4/PM0
Chloride #	12	-	147	-	160	-	341	-	-	14	<2	mg/kg	TM38/PM20
Hexavalent Chromium #	-	<0.3	-	<0.3	-	<0.3	-	<0.3	<0.3	-	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0241	0.0070	0.1849	0.1918	0.7385	0.3670	1.4657	0.3941	0.0082	0.0167	<0.0015	g/l	TM38/PM20
Total Cyanide #	-	<0.5	-	<0.5	-	<0.5	-	<0.5	<0.5	-	<0.5	mg/kg	TM89/PM45
Organic Matter	-	0.9	-	0.9	-	0.5	-	0.8	0.9	-	<0.2	%	TM21/PM24
Dibutyltin	-	<100	-	-	-	<100	-	-	<100	-	<100	ug/kg	TM94/PM48
Tributyltin	-	<100	-	-	-	<100	-	-	<100	-	<100	ug/kg	TM94/PM48
Triphenyltin	-	<100	-	-	-	<100	-	-	<100	-	<100	ug/kg	TM94/PM48
pH #	8.19	8.39	8.14	8.25	7.99	8.27	7.89	8.30	7.20	8.11	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	55-57	58-60									LOD/LOR	Units	Method No.
Sample ID	LD06	LD06											
Depth	2.0	3.0											
COC No / misc													
Containers	V J T	V J T											
Sample Date	<>	<>											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/04/2017	13/04/2017											
Aluminium	-	1342									<50	mg/kg	TM30/PM15
Arsenic #	-	2.1									<0.5	mg/kg	TM30/PM15
Barium #	-	6									<1	mg/kg	TM30/PM15
Beryllium	-	<0.5									<0.5	mg/kg	TM30/PM15
Cadmium #	-	0.2									<0.1	mg/kg	TM30/PM15
Chromium #	-	9.6									<0.5	mg/kg	TM30/PM15
Copper #	-	3									<1	mg/kg	TM30/PM15
Iron	-	2931									<20	mg/kg	TM30/PM15
Lead #	-	7									<5	mg/kg	TM30/PM15
Mercury #	-	<0.1									<0.1	mg/kg	TM30/PM15
Nickel #	-	7.8									<0.7	mg/kg	TM30/PM15
Selenium #	-	<1									<1	mg/kg	TM30/PM15
Sulphur as S	-	0.03									<0.01	%	TM30/PM15
Total Sulphate as SO4 #	-	205									<50	mg/kg	TM50/PM29
Vanadium	-	6									<1	mg/kg	TM30/PM15
Water Soluble Boron #	-	0.4									<0.1	mg/kg	TM74/PM32
Zinc #	-	14									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene #	-	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #	-	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	<0.04									<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	<0.6									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	-	<1									<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	125									<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	<2									<2	ug/kg	TM15/PM10
Benzene #	-	<3									<3	ug/kg	TM15/PM10
Toluene #	-	<3									<3	ug/kg	TM15/PM10
Ethylbenzene #	-	<3									<3	ug/kg	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	55-57	58-60											
Sample ID	LD06	LD06											
Depth	2.0	3.0											
COC No / misc													
Containers	V J T	V J T											
Sample Date	<>	<>											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/04/2017	13/04/2017											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
p/m-Xylene #	-	<5									<5	ug/kg	TM15/PM10
o-Xylene #	-	<3									<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	92									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	70									<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2									<0.2	mg/kg	TM5/PM16
>C12-C16 #	-	<4									<4	mg/kg	TM5/PM16
>C16-C21 #	-	<7									<7	mg/kg	TM5/PM16
>C21-C35 #	-	<7									<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-	<0.2									<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	-	<4									<4	mg/kg	TM5/PM16
>EC16-EC21 #	-	<7									<7	mg/kg	TM5/PM16
>EC21-EC35 #	-	<7									<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	-	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	<38									<38	mg/kg	TM5/TM36/PM12/PM16
PCB 77	-	-									<5	ug/kg	TM16/PM8
PCB 81	-	-									<5	ug/kg	TM16/PM8
PCB 105	-	-									<5	ug/kg	TM16/PM8
PCB 114	-	-									<5	ug/kg	TM16/PM8
PCB 118	-	-									<5	ug/kg	TM16/PM8
PCB 123	-	-									<5	ug/kg	TM16/PM8
PCB 126	-	-									<5	ug/kg	TM16/PM8
PCB 156	-	-									<5	ug/kg	TM16/PM8
PCB 157	-	-									<5	ug/kg	TM16/PM8
PCB 167	-	-									<5	ug/kg	TM16/PM8
PCB 169	-	-									<5	ug/kg	TM16/PM8
PCB 189	-	-									<5	ug/kg	TM16/PM8
Total 12 PCBs	-	-									<60	ug/kg	TM16/PM8
Resorcinol	-	<0.01									<0.01	mg/kg	TM26/PM21
Catechol	-	<0.01									<0.01	mg/kg	TM26/PM21
Phenol #	-	<0.01									<0.01	mg/kg	TM26/PM21
m/p-cresol #	-	<0.02									<0.02	mg/kg	TM26/PM21

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	55-57	58-60									LOD/LOR	Units	Method No.
Sample ID	LD06	LD06											
Depth	2.0	3.0											
COC No / misc													
Containers	V J T	V J T											
Sample Date	<>	<>											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/04/2017	13/04/2017											
o-cresol	-	<0.01									<0.01	mg/kg	TM26/PM21
Total cresols	-	<0.03									<0.03	mg/kg	TM26/PM21
Xylenols #	-	<0.06									<0.06	mg/kg	TM26/PM21
1-naphthol	-	<0.01									<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	-	<0.01									<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	-	<0.01									<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	-	<0.15									<0.15	mg/kg	TM26/PM21
Natural Moisture Content	-	6.7									<0.1	%	PM4/PM0
Chloride #	43	-									<2	mg/kg	TM38/PM20
Hexavalent Chromium #	-	<0.3									<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0192	0.0113									<0.0015	g/l	TM38/PM20
Total Cyanide #	-	<0.5									<0.5	mg/kg	TM89/PM45
Organic Matter	-	1.1									<0.2	%	TM21/PM24
Dibutyltin	-	-									<100	ug/kg	TM94/PM48
Tributyltin	-	-									<100	ug/kg	TM94/PM48
Triphenyltin	-	-									<100	ug/kg	TM94/PM48
pH #	8.59	8.69									<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland **SVOC Report :** **Solid**
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

J E Sample No.	4-6	13-16	41-43	48	49-51	58-60							
Sample ID	LD02	LD02	LD04	LD04	LD06	LD06							
Depth	1.0	4.0	1.0	4.0	0.5	3.0					Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J T	V J T	V J T	T	V J T	V J T							
Sample Date	<>	<>	<>	<>	<>	<>							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017					LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	104	115	120	116	115	120					<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	116	125	111	130	127	126					<0	%	TM16/PM8

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara
JE Job No.: 17/7031

VOC Report : **Solid**

J E Sample No.	4-6	13-16	41-43	48	49-51	58-60						
Sample ID	LD02	LD02	LD04	LD04	LD06	LD06						
Depth	1.0	4.0	1.0	4.0	0.5	3.0						
COC No / misc												
Containers	V J T	V J T	V J T	T	V J T	V J T						
Sample Date	<>	<>	<>	<>	<>	<>						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1						
Date of Receipt	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017						

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1					<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6					<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	71	<30	<30	<30					<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6					<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2					<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3					<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6					<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7					<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4					<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27					<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7					<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	98	98	95	103	97	92					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	98	87	113	97	70					<0	%	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7031	1	LD02	1.0	5	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7031	1	LD02	4.0	15	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7031	1	LD04	1.0	42	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7031	1	LD04	4.0	48	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7031	1	LD06	0.5	50	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Fergal McNamara

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7031	1	LD06	0.5	50	27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7031	1	LD06	3.0	59	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stone
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Matrix : Solid

Reference:

Location: Foynes Port

Contact: Fergal McNamara

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/7031	1	LD02	0.5	1-3	All analyses	No sampling date given
17/7031	1	LD02	1.0	4-6	All analyses	No sampling date given
17/7031	1	LD02	3.0	10-12	All analyses	No sampling date given
17/7031	1	LD02	4.0	13-16	All analyses	No sampling date given
17/7031	1	LD04	0.5	38-40	All analyses	No sampling date given
17/7031	1	LD04	1.0	41-43	All analyses	No sampling date given
17/7031	1	LD04	3.0	46-47	All analyses	No sampling date given
17/7031	1	LD04	4.0	48	All analyses	No sampling date given
17/7031	1	LD04	4.0	48	EPH	Sample received in inappropriate container
17/7031	1	LD06	0.5	49-51	All analyses	No sampling date given
17/7031	1	LD06	1.0	52-54	All analyses	No sampling date given
17/7031	1	LD06	2.0	55-57	All analyses	No sampling date given
17/7031	1	LD06	3.0	58-60	All analyses	No sampling date given

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/7031

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/7031

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 17/7031

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes

JE Job No: 17/7031

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	16th June, 2017
Your reference :	
Our reference :	Test Report 17/9027 Batch 1
Location :	Foynes Port
Date samples received :	22nd May, 2017
Status :	Final report
Issue :	1

Twenty three samples were received for analysis on 22nd May, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/9027

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	7-9	19-21									
Sample ID	BHLD03	BHLD03	BHLD03									
Depth	0.50	2.00	6.00									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	16/05/2017	16/05/2017	16/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	22/05/2017	22/05/2017	22/05/2017									

Please see attached notes for all abbreviations and acronyms

				LOD/LOR	Units	Method No.
Aluminium	19500	10900	1218	<50	mg/kg	TM30/PM15
Arsenic #	17.1	11.0	2.4	<0.5	mg/kg	TM30/PM15
Barium #	43	25	5	<1	mg/kg	TM30/PM15
Beryllium	1.4	0.8	<0.5	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	0.2	0.5	<0.1	mg/kg	TM30/PM15
Chromium #	49.6	30.6	13.2	<0.5	mg/kg	TM30/PM15
Copper #	5	7	6	<1	mg/kg	TM30/PM15
Iron	35460	23350	3480	<20	mg/kg	TM30/PM15
Lead #	19	9	<5	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	32.7	22.4	9.6	<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	mg/kg	TM30/PM15
Sulphur as S	0.02	0.07	0.05	<0.01	%	TM30/PM15
Total Sulphate as SO4 #	291	508	221	<50	mg/kg	TM50/PM29
Vanadium	60	31	3	<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.6	2.0	0.7	<0.1	mg/kg	TM74/PM32
Zinc #	82	53	13	<5	mg/kg	TM30/PM15
PAH MS						
Naphthalene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	91	83	83	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	ug/kg	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/9027

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	7-9	19-21									
Sample ID	BHLD03	BHLD03	BHLD03									
Depth	0.50	2.00	6.00									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	16/05/2017	16/05/2017	16/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	22/05/2017	22/05/2017	22/05/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
p/m-Xylene #	<5	<5	<5								<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	96	96	97								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	103	96	112								<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4								<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7	<7								<7	mg/kg	TM5/PM16
>C21-C35 #	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4								<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	<7								<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38								<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 52 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 101 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 118 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 138 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 153 #	<5	-	-								<5	ug/kg	TM17/PM8
PCB 180 #	<5	-	-								<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	-	-								<35	ug/kg	TM17/PM8
Resorcinol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Catechol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM26/PM21
o-cresol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	<0.03	<0.03								<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/9027

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	7-9	19-21									
Sample ID	BHLD03	BHLD03	BHLD03									
Depth	0.50	2.00	6.00									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	16/05/2017	16/05/2017	16/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	22/05/2017	22/05/2017	22/05/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
2-isopropylphenol #	<0.01	<0.01	<0.01								<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	<0.15	<0.15								<0.15	mg/kg	TM26/PM21
Natural Moisture Content	22.3	31.0	5.5								<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0021	0.0947	0.0748								<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Organic Matter	1.3	2.1	<0.2								<0.2	%	TM21/PM24
Dibutyltin	<100	-	-								<100	ug/kg	TM94/PM48
Tributyltin	<100	-	-								<100	ug/kg	TM94/PM48
Triphenyltin	<100	-	-								<100	ug/kg	TM94/PM48
pH #	6.49	8.34	8.47								<0.01	pH units	TM73/PM11

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/9027

SVOC Report : **Solid**

J E Sample No.	1-3	7-9	19-21									
Sample ID	BHLD03	BHLD03	BHLD03									
Depth	0.50	2.00	6.00									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	16/05/2017	16/05/2017	16/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	22/05/2017	22/05/2017	22/05/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10								<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10								<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10								<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10								<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10								<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10								<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10								<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10								<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10								<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100								<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100								<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100								<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100								<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100								<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100								<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10								<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10								<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10								<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10								<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10								<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10								<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10								<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10								<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10								<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10								<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10								<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10								<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10								<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10								<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10								<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10								<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10								<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10								<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10								<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10								<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	105	114	74								<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	102	120	117								<0	%	TM16/PM8

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty
JE Job No.: 17/9027

VOC Report : **Solid**

J E Sample No.	1-3	7-9	19-21									
Sample ID	BHLD03	BHLD03	BHLD03									
Depth	0.50	2.00	6.00									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	16/05/2017	16/05/2017	16/05/2017									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	22/05/2017	22/05/2017	22/05/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30								<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5								<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3								<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6								<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	96	96	97								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	103	96	112								<0	%	TM15/PM10

Client Name: Ground Investigations Ireland
Reference:
Location: Foynes Port
Contact: Conor Finnerty

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/9027	1	BHLD03	0.50	2	09/06/2017	**General Description (Bulk Analysis)**	Soil/Stones
					09/06/2017	**Asbestos Fibres**	NAD
					09/06/2017	**Asbestos Fibres (2)**	NAD
					09/06/2017	**Asbestos ACM**	NAD
					09/06/2017	**Asbestos ACM (2)**	NAD
					09/06/2017	**Asbestos Type**	NAD
					09/06/2017	**Asbestos Type (2)**	NAD
					09/06/2017	**Asbestos Level Screen**	NAD
17/9027	1	BHLD03	2.00	8	09/06/2017	**General Description (Bulk Analysis)**	Soil/Stones
					09/06/2017	**Asbestos Fibres**	NAD
					09/06/2017	**Asbestos Fibres (2)**	NAD
					09/06/2017	**Asbestos ACM**	NAD
					09/06/2017	**Asbestos ACM (2)**	NAD
					09/06/2017	**Asbestos Type**	NAD
					09/06/2017	**Asbestos Type (2)**	NAD
					09/06/2017	**Asbestos Level Screen**	NAD
17/9027	1	BHLD03	6.00	20	09/06/2017	**General Description (Bulk Analysis)**	Soil/Stones
					09/06/2017	**Asbestos Fibres**	NAD
					09/06/2017	**Asbestos Fibres (2)**	NAD
					09/06/2017	**Asbestos ACM**	NAD
					09/06/2017	**Asbestos ACM (2)**	NAD
					09/06/2017	**Asbestos Type**	NAD
					09/06/2017	**Asbestos Type (2)**	NAD
					09/06/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Matrix : Solid

Reference:

Location: Foynes Port

Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/9027	1	BHLD03	0.50	1-3	Cyanide, EPH, GRO, PAH, PCB, Phenols, SVOC, VOC	Sample holding time exceeded
17/9027	1	BHLD03	0.50	1-3	GRO, VOC	Solid Samples were received at a temperature above 9°C.
17/9027	1	BHLD03	2.00	7-9	Cyanide, EPH, GRO, PAH, Phenols, SVOC, VOC	Sample holding time exceeded
17/9027	1	BHLD03	2.00	7-9	GRO, VOC	Solid Samples were received at a temperature above 9°C.
17/9027	1	BHLD03	6.00	19-21	Cyanide, EPH, GRO, PAH, Phenols, SVOC, VOC	Sample holding time exceeded
17/9027	1	BHLD03	6.00	19-21	GRO, VOC	Solid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/9027

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/9027

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

JE Job No: 17/9027

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

JE Job No: 17/9027

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.			AR	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Finnerty
Date :	8th May, 2017
Your reference :	17/02/6552
Our reference :	Test Report 17/7213 Batch 1
Location :	Foynes
Date samples received :	19th April, 2017
Status :	Final report
Issue :	1

Twenty four samples were received for analysis on 19th April, 2017 of which twenty four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Where Waste Acceptance Criteria Suite (EC Decision of 19 December 2002 (2003/33/EC)) has been requested, all analyses have been performed using the relevant EN methods where they exist.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	TP01 0.50 ENV	TP01 1.00 ENV	TP01 3.90 ENV	TP02 1.00 ENV	TP02 4.50 ENV	TP03 0.50 ENV	TP03 0.80 ENV	TP03 3.00 ENV	TP04 1.00 ENV	TP04 2.30 ENV			
Depth	0.50	1.00	3.90	1.00	4.50	0.50	0.80	3.00	1.00	2.30			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
Aluminium	14360	-	8145	8272	8851	17380	-	9144	2868	2232	<50	mg/kg	TM30/PM15
Arsenic #	15.9	-	15.2	8.6	8.5	9.5	-	6.2	6.5	6.1	<0.5	mg/kg	TM30/PM15
Barium #	26	-	18	17	22	30	-	18	16	13	<1	mg/kg	TM30/PM15
Beryllium	1.0	-	0.6	0.6	0.7	1.2	-	0.7	<0.5	<0.5	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	-	0.1	0.1	0.2	<0.1	-	0.2	0.5	0.6	<0.1	mg/kg	TM30/PM15
Chromium #	42.5	-	26.6	22.5	25.6	47.3	-	25.3	10.8	10.7	<0.5	mg/kg	TM30/PM15
Copper #	<1	-	2	<1	3	<1	-	1	5	5	<1	mg/kg	TM30/PM15
Iron	20960	-	24270	18680	21220	35340	-	21950	6862	6083	<20	mg/kg	TM30/PM15
Lead #	15	-	10	9	10	16	-	13	12	8	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	24.7	-	21.7	16.7	20.5	32.4	-	19.2	14.6	12.7	<0.7	mg/kg	TM30/PM15
Selenium #	1	-	1	<1	<1	2	-	<1	<1	<1	<1	mg/kg	TM30/PM15
Sulphur as S	<0.01	-	0.73	0.01	0.46	<0.01	-	0.53	0.01	0.01	<0.01	%	TM30/PM15
Total Sulphate as SO4 #	174	-	1654	281	1488	101	-	1659	154	139	<50	mg/kg	TM50/PM29
Vanadium	47	-	26	26	22	46	-	25	6	6	<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.9	-	4.9	0.8	4.5	2.1	-	3.8	0.2	0.2	<0.1	mg/kg	TM74/PM32
Zinc #	59	-	42	39	45	67	-	47	24	24	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	-	<0.04	-	-	-	-	<0.04	-	-	-	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	<0.22	-	-	-	-	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH 16 Total	<0.6	-	<0.6	<0.6	<0.6	<0.6	-	<0.6	<0.6	<0.6	<0.6	mg/kg	TM4/PM8
PAH 17 Total	-	<0.64	-	-	-	-	<0.64	-	-	-	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	-	<1	<1	<1	<1	-	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	114	109	107	99	105	100	98	100	100	103	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-	<2	<2	<2	<2	-	<2	<2	<2	<2	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	TP01 0.50 ENV	TP01 1.00 ENV	TP01 3.90 ENV	TP02 1.00 ENV	TP02 4.50 ENV	TP03 0.50 ENV	TP03 0.80 ENV	TP03 3.00 ENV	TP04 1.00 ENV	TP04 2.30 ENV			
Depth	0.50	1.00	3.90	1.00	4.50	0.50	0.80	3.00	1.00	2.30			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
Benzene #	<3	-	<3	<3	<3	<3	-	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	<3	-	<3	<3	<3	<3	-	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	-	<3	<3	<3	<3	-	<3	<3	<3	<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	-	<5	<5	<5	<5	-	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	-	<3	<3	<3	<3	-	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	98	-	99	100	99	101	-	98	100	101	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	102	-	99	108	99	107	-	95	117	111	<0	%	TM15/PM10
Mineral Oil (C10-C40)	-	<30	-	-	-	-	<30	-	-	-	<30	mg/kg	TM5/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	<4	<4	<4	<4	-	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	<7	<7	<7	<7	-	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 #	<7	-	<7	<7	<7	<7	-	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	<19	<19	<19	<19	-	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	-	<4	<4	<4	<4	-	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	-	<7	<7	<7	<7	-	<7	<7	<7	<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	-	<7	<7	<7	<7	-	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	-	<19	<19	<19	<19	-	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	<38	<38	<38	<38	-	<38	<38	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
Benzene #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
Toluene #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
Ethylbenzene #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
m/p-Xylene #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
o-Xylene #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM31/PM12
PCB 77	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 81	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 105	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 114	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 118	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 123	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	TP01 0.50 ENV	TP01 1.00 ENV	TP01 3.90 ENV	TP02 1.00 ENV	TP02 4.50 ENV	TP03 0.50 ENV	TP03 0.80 ENV	TP03 3.00 ENV	TP04 1.00 ENV	TP04 2.30 ENV			
Depth	0.50	1.00	3.90	1.00	4.50	0.50	0.80	3.00	1.00	2.30			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
PCB 126	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 156	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 157	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 167	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 169	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
PCB 189	<5	-	-	<5	-	<5	-	-	<5	-	<5	ug/kg	TM16/PM8
Total 12 PCBs	<60	-	-	<60	-	<60	-	-	<60	-	<60	ug/kg	TM16/PM8
PCB 28 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	-	-	-	-	<5	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	-	-	-	-	<35	-	-	-	<35	ug/kg	TM17/PM8
Resorcinol	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Catechol	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	mg/kg	TM26/PM21
o-cresol	0.02	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	-	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	-	<0.06	<0.06	<0.06	<0.06	-	<0.06	<0.06	<0.06	<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	-	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	28.9	38.1	33.4	25.2	31.7	28.6	34.6	30.6	8.9	7.2	<0.1	%	PM4/PM0
% Dry Matter 105°C	-	71.4	-	-	-	-	72.7	-	-	-	<0.1	%	NONE/PM4
Hexavalent Chromium #	<0.3	-	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	<0.0015	-	0.6390	0.0085	0.4432	0.0029	-	0.4328	0.0034	0.0023	<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	0.63	-	-	-	-	0.13	-	-	-	<0.02	%	TM21/PM24
Organic Matter	0.7	-	0.8	1.1	0.9	0.2	-	0.7	1.2	<0.2	<0.2	%	TM21/PM24
ANC at pH4	-	0.03	-	-	-	-	0.04	-	-	-	<0.03	mol/kg	TM77/PM0
ANC at pH7	-	<0.03	-	-	-	-	<0.03	-	-	-	<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-	3.9	-	-	-	-	4.2	-	-	-	<1.0	%	TM22/PM0
pH #	6.96	7.41	8.24	8.71	8.54	7.55	7.76	7.97	8.74	8.93	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	LOD/LOR	Units	Method No.
Sample ID	TP05 0.50 ENV	TP05 0.80 ENV	TP05 2.00 ENV	TP06 1.00 ENV	TP07 0.50 ENV	TP07 1.00 ENV	TP07 3.80 ENV	TP08 0.50 ENV	TP08 2.00 ENV	TP09 0.50 ENV			
Depth	0.50	0.80	2.00	1.00	0.50	1.00	3.80	0.50	2.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
Aluminium	4995	-	2714	12020	17860	-	7372	6567	3177	8159	<50	mg/kg	TM30/PM15
Arsenic #	7.8	-	6.0	28.4	24.1	-	6.6	7.2	4.9	5.6	<0.5	mg/kg	TM30/PM15
Barium #	14	-	11	60	30	-	20	37	12	23	<1	mg/kg	TM30/PM15
Beryllium	<0.5	-	<0.5	1.2	1.3	-	0.6	0.5	<0.5	0.6	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	-	0.5	0.4	<0.1	-	0.2	0.3	0.5	0.1	<0.1	mg/kg	TM30/PM15
Chromium #	26.0	-	11.9	41.6	49.4	-	24.4	18.1	13.0	24.0	<0.5	mg/kg	TM30/PM15
Copper #	<1	-	6	4	<1	-	3	2	7	<1	<1	mg/kg	TM30/PM15
Iron	13120	-	7213	32880	40890	-	18190	15280	6420	18120	<20	mg/kg	TM30/PM15
Lead #	8	-	8	14	20	-	10	10	9	10	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	7.3	-	18.5	65.9	30.7	-	18.0	15.6	18.0	17.2	<0.7	mg/kg	TM30/PM15
Selenium #	<1	-	<1	3	2	-	1	<1	<1	<1	<1	mg/kg	TM30/PM15
Sulphur as S	<0.01	-	0.01	0.01	<0.01	-	0.49	0.01	0.01	0.01	<0.01	%	TM30/PM15
Total Sulphate as SO4 #	69	-	131	346	133	-	2118	162	114	324	<50	mg/kg	TM50/PM29
Vanadium	16	-	7	40	68	-	19	19	7	24	<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.3	-	0.3	1.6	2.1	-	5.6	0.6	0.4	0.8	<0.1	mg/kg	TM74/PM32
Zinc #	24	-	28	94	71	-	40	41	31	39	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	-	<0.04	-	-	-	<0.04	-	-	-	-	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	<0.22	-	-	-	<0.22	-	-	-	-	<0.22	mg/kg	TM4/PM8
PAH 16 Total	<0.6	-	<0.6	<0.6	<0.6	-	<0.6	<0.6	<0.6	<0.6	<0.6	mg/kg	TM4/PM8
PAH 17 Total	-	<0.64	-	-	-	<0.64	-	-	-	-	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	99	101	99	94	99	95	104	103	99	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-	<2	<2	<2	-	<2	<2	<2	<2	<2	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	LOD/LOR	Units	Method No.
Sample ID	TP05 0.50 ENV	TP05 0.80 ENV	TP05 2.00 ENV	TP06 1.00 ENV	TP07 0.50 ENV	TP07 1.00 ENV	TP07 3.80 ENV	TP08 0.50 ENV	TP08 2.00 ENV	TP09 0.50 ENV			
Depth	0.50	0.80	2.00	1.00	0.50	1.00	3.80	0.50	2.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
Benzene #	<3	-	<3	<3	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	<3	-	<3	<3	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	-	<3	<3	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	-	<5	<5	<5	-	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	-	<3	<3	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	95	-	99	102	98	-	98	98	101	99	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	99	-	114	114	104	-	96	102	110	104	<0	%	TM15/PM10
Mineral Oil (C10-C40)	-	<30	-	-	-	<30	-	-	-	-	<30	mg/kg	TM5/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	<4	<4	<4	-	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	<7	<7	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 #	<7	-	<7	<7	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	<19	<19	<19	-	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	-	<4	<4	<4	-	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	-	<7	<7	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	-	<7	<7	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	-	<19	<19	<19	-	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	<38	<38	<38	-	<38	<38	<38	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
Benzene #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
Toluene #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
Ethylbenzene #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
m/p-Xylene #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
o-Xylene #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM31/PM12
PCB 77	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 81	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 105	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 114	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 118	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 123	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	LOD/LOR	Units	Method No.
Sample ID	TP05 0.50 ENV	TP05 0.80 ENV	TP05 2.00 ENV	TP06 1.00 ENV	TP07 0.50 ENV	TP07 1.00 ENV	TP07 3.80 ENV	TP08 0.50 ENV	TP08 2.00 ENV	TP09 0.50 ENV			
Depth	0.50	0.80	2.00	1.00	0.50	1.00	3.80	0.50	2.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
PCB 126	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 156	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 157	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 167	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 169	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
PCB 189	<5	-	-	<5	<5	-	-	<5	-	<5	<5	ug/kg	TM16/PM8
Total 12 PCBs	<60	-	-	<60	<60	-	-	<60	-	<60	<60	ug/kg	TM16/PM8
PCB 28 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	-	-	-	<5	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	-	-	-	<35	-	-	-	-	<35	ug/kg	TM17/PM8
Resorcinol	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Catechol	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM26/PM21
o-cresol	0.02	-	<0.01	<0.01	<0.01	-	<0.01	0.02	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	-	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	-	<0.06	<0.06	<0.06	-	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	-	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	18.4	23.5	11.5	37.0	24.1	28.9	29.5	12.4	9.6	23.9	<0.1	%	PM4/PM0
% Dry Matter 105°C	-	76.9	-	-	-	76.0	-	-	-	-	<0.1	%	NONE/PM4
Hexavalent Chromium #	<0.3	-	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0021	-	0.0035	0.0061	<0.0015	-	0.5705	0.0048	0.0053	<0.0015	<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	0.11	-	-	-	0.11	-	-	-	-	<0.02	%	TM21/PM24
Organic Matter	<0.2	-	<0.2	0.2	0.5	-	0.8	1.0	<0.2	<0.2	<0.2	%	TM21/PM24
ANC at pH4	-	1.36	-	-	-	0.03	-	-	-	-	<0.03	mol/kg	TM77/PM0
ANC at pH7	-	0.05	-	-	-	<0.03	-	-	-	-	<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-	3.0	-	-	-	4.1	-	-	-	-	<1.0	%	TM22/PM0
pH #	6.22	8.26	8.66	8.25	7.09	7.38	8.31	8.41	8.82	8.68	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	61-63	64-66	67-69	70-72							LOD/LOR	Units	Method No.
Sample ID	TP09 1.80 ENV	TP10 0.50 ENV	TP10 1.00 ENV	TP10 4.70 ENV									
Depth	1.80	0.50	1.00	4.70									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017									
Aluminium	7156	-	8281	8335							<50	mg/kg	TM30/PM15
Arsenic #	8.3	-	5.5	6.9							<0.5	mg/kg	TM30/PM15
Barium #	19	-	17	19							<1	mg/kg	TM30/PM15
Beryllium	0.8	-	0.6	0.6							<0.5	mg/kg	TM30/PM15
Cadmium #	0.1	-	<0.1	0.1							<0.1	mg/kg	TM30/PM15
Chromium #	30.5	-	26.6	24.0							<0.5	mg/kg	TM30/PM15
Copper #	6	-	<1	1							<1	mg/kg	TM30/PM15
Iron	15430	-	21490	19890							<20	mg/kg	TM30/PM15
Lead #	11	-	11	10							<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM30/PM15
Nickel #	22.1	-	18.5	22.0							<0.7	mg/kg	TM30/PM15
Selenium #	<1	-	<1	<1							<1	mg/kg	TM30/PM15
Sulphur as S	0.05	-	<0.01	0.30							<0.01	%	TM30/PM15
Total Sulphate as SO4 #	514	-	162	892							<50	mg/kg	TM50/PM29
Vanadium	21	-	26	20							<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.2	-	0.6	2.0							<0.1	mg/kg	TM74/PM32
Zinc #	52	-	44	45							<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06							<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Coronene	-	<0.04	-	-							<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	<0.22	-	-							<0.22	mg/kg	TM4/PM8
PAH 16 Total	<0.6	-	<0.6	<0.6							<0.6	mg/kg	TM4/PM8
PAH 17 Total	-	<0.64	-	-							<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	-	<1	<1							<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	113	96	102	97							<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-	<2	<2							<2	ug/kg	TM15/PM10

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	61-63	64-66	67-69	70-72							LOD/LOR	Units	Method No.
Sample ID	TP09 1.80 ENV	TP10 0.50 ENV	TP10 1.00 ENV	TP10 4.70 ENV									
Depth	1.80	0.50	1.00	4.70									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017									
Benzene #	<3	-	<3	<3							<3	ug/kg	TM15/PM10
Toluene #	<3	-	<3	<3							<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	-	<3	<3							<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	-	<5	<5							<5	ug/kg	TM15/PM10
o-Xylene #	<3	-	<3	<3							<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	96	-	100	99							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	-	104	96							<0	%	TM15/PM10
Mineral Oil (C10-C40)	-	<30	-	-							<30	mg/kg	TM5/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	<0.2							<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	<4	<4							<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	<7	<7							<7	mg/kg	TM5/PM16
>C21-C35 #	<7	-	<7	<7							<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	<19	<19							<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	-	<0.2	<0.2							<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	-	<4	<4							<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	-	<7	<7							<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	-	<7	<7							<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	-	<19	<19							<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	<38	<38							<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	<5	-	-							<5	ug/kg	TM31/PM12
Benzene #	-	<5	-	-							<5	ug/kg	TM31/PM12
Toluene #	-	<5	-	-							<5	ug/kg	TM31/PM12
Ethylbenzene #	-	<5	-	-							<5	ug/kg	TM31/PM12
m/p-Xylene #	-	<5	-	-							<5	ug/kg	TM31/PM12
o-Xylene #	-	<5	-	-							<5	ug/kg	TM31/PM12
PCB 77	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 81	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 105	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 114	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 118	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 123	-	-	<5	-							<5	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	61-63	64-66	67-69	70-72							LOD/LOR	Units	Method No.
Sample ID	TP09 1.80 ENV	TP10 0.50 ENV	TP10 1.00 ENV	TP10 4.70 ENV									
Depth	1.80	0.50	1.00	4.70									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017									
PCB 126	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 156	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 157	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 167	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 169	-	-	<5	-							<5	ug/kg	TM16/PM8
PCB 189	-	-	<5	-							<5	ug/kg	TM16/PM8
Total 12 PCBs	-	-	<60	-							<60	ug/kg	TM16/PM8
PCB 28 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	-	-							<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	-	-							<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	-	-							<35	ug/kg	TM17/PM8
Resorcinol	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
Catechol	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
Phenol #	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
m/p-cresol #	<0.02	-	<0.02	<0.02							<0.02	mg/kg	TM26/PM21
o-cresol	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
Total cresols	<0.03	-	<0.03	<0.03							<0.03	mg/kg	TM26/PM21
Xylenols #	<0.06	-	<0.06	<0.06							<0.06	mg/kg	TM26/PM21
1-naphthol	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
2,3,5-trimethyl phenol #	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
2-isopropylphenol #	<0.01	-	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
Total Speciated Phenols HPLC	<0.15	-	<0.15	<0.15							<0.15	mg/kg	TM26/PM21
Natural Moisture Content	36.9	25.9	25.1	34.1							<0.1	%	PM4/PM0
% Dry Matter 105°C	-	77.2	-	-							<0.1	%	NONE/PM4
Hexavalent Chromium #	<0.3	-	<0.3	<0.3							<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.1019	-	0.0025	0.2201							<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	-	<0.5	<0.5							<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	0.12	-	-							<0.02	%	TM21/PM24
Organic Matter	1.0	-	<0.2	0.2							<0.2	%	TM21/PM24
ANC at pH4	-	0.04	-	-							<0.03	mol/kg	TM77/PM0
ANC at pH7	-	NDP	-	-							<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-	4.0	-	-							<1.0	%	TM22/PM0
pH #	8.25	7.47	8.87	8.53							<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	4-6	19-21	34-36	46-48	64-66											
Sample ID	TP01 1.00 ENV	TP03 0.80 ENV	TP05 0.80 ENV	TP07 1.00 ENV	TP10 0.50 ENV											
Depth	1.00	0.80	0.80	1.00	0.50											
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T											
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017											
Sample Type	Soil	Soil	Soil	Soil	Soil											
Batch Number	1	1	1	1	1											
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017											
Solid Waste Analysis																
Total Organic Carbon #	0.63	0.13	0.11	0.11	0.12						3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025						6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035						1	-	-	<0.035	mg/kg	TM17/PM8
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22						-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64						100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Mass of raw test portion	0.1256	0.1235	0.1165	0.1186	0.1164						-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	71.4	72.7	76.9	76.0	77.2						-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.864	0.866	0.873	0.872	0.873						-	-	-		l	NONE/PM17
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30						-	-	-	<30	mg/kg	TM5/PM16
ANC at pH4	0.03	0.04	1.36	0.03	0.04						-	-	-	<0.03	mol/kg	TM77/PM0
ANC at pH7	<0.03	<0.03	0.05	<0.03	NDP						-	-	-	<0.03	mol/kg	TM77/PM0
pH #	7.41	7.76	8.26	7.38	7.47						-	-	-	<0.01	pH units	TM73/PM11

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

SVOC Report : **Solid**

J E Sample No.	1-3	7-9	10-12	13-15	16-18	22-24	25-27	28-30	31-33	37-39	LOD/LOR	Units	Method No.
Sample ID	TP01 0.50 ENV	TP01 3.90 ENV	TP02 1.00 ENV	TP02 4.50 ENV	TP03 0.50 ENV	TP03 3.00 ENV	TP04 1.00 ENV	TP04 2.30 ENV	TP05 0.50 ENV	TP05 2.00 ENV			
Depth	0.50	3.90	1.00	4.50	0.50	3.00	1.00	2.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	121	115	107	89	54 SV	69 SV	84	97	64 SV	113	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	128	123	110	102	103	99	105	116	109	105	<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

SVOC Report : **Solid**

J E Sample No.	40-42	43-45	49-51	52-54	55-57	58-60	61-63	67-69	70-72		LOD/LOR	Units	Method No.
Sample ID	TP06 1.00 ENV	TP07 0.50 ENV	TP07 3.80 ENV	TP08 0.50 ENV	TP08 2.00 ENV	TP09 0.50 ENV	TP09 1.80 ENV	TP10 1.00 ENV	TP10 4.70 ENV				
Depth	1.00	0.50	3.80	0.50	2.00	0.50	1.80	1.00	4.70				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017				
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	101	115	101	72	78	69 SV	92	86	94		<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	122	131	113	108	106	93	123	90	111		<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

VOC Report : **Solid**

J E Sample No.	1-3	7-9	10-12	13-15	16-18	22-24	25-27	28-30	31-33	37-39	LOD/LOR	Units	Method No.
Sample ID	TP01 0.50 ENV	TP01 3.90 ENV	TP02 1.00 ENV	TP02 4.50 ENV	TP03 0.50 ENV	TP03 3.00 ENV	TP04 1.00 ENV	TP04 2.30 ENV	TP05 0.50 ENV	TP05 2.00 ENV			
Depth	0.50	3.90	1.00	4.50	0.50	3.00	1.00	2.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	98	99	100	99	101	98	100	101	95	99	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	102	99	108	99	107	95	117	111	99	114	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty
JE Job No.: 17/7213

VOC Report : **Solid**

J E Sample No.	40-42	43-45	49-51	52-54	55-57	58-60	61-63	67-69	70-72		LOD/LOR	Units	Method No.
Sample ID	TP06 1.00 ENV	TP07 0.50 ENV	TP07 3.80 ENV	TP08 0.50 ENV	TP08 2.00 ENV	TP09 0.50 ENV	TP09 1.80 ENV	TP10 1.00 ENV	TP10 4.70 ENV				
Depth	1.00	0.50	3.80	0.50	2.00	0.50	1.80	1.00	4.70				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017				
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6		<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30	<30	<30		<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<6	<6		<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6	<6	<6		<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7		<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27	<27	<27		<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7		<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	102	98	98	98	101	99	96	100	99		<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	114	104	96	102	110	104	97	104	96		<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Mass of sample taken (kg)	0.1256	Moisture Content Ratio (%) =	40.1
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	71.4
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/7213**			
Sample No	**6**			
Client Sample No	**TP01 1.00 ENV**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**1.00**			
Sample Date	**13/04/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.63	3	5	6
Loss on Ignition (%)	3.9	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	7.41	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.03	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	0.003	0.03	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	0.004	0.04	4	50	200
Chloride	11.3	113	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	16.95	169.5	1000	20000	50000
Total Dissolved Solids	84	840	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	8	80	500	800	1000

Mass of sample taken (kg)	0.1235	Moisture Content Ratio (%) =	37.5
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	72.7
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/7213**			
Sample No	**21**			
Client Sample No	**TP03 0.80 ENV**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.80**			
Sample Date	**13/04/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.13	3	5	6
Loss on Ignition (%)	4.2	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	7.76	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.04	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.005	0.05	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.5	5	800	15000	25000
Fluoride	0.6	6	10	150	500
Sulphate as SO4	0.52	5.2	1000	20000	50000
Total Dissolved Solids	87	870	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Mass of sample taken (kg)	0.1165	Moisture Content Ratio (%) =	30.1
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	76.9
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/7213**			
Sample No	**36**			
Client Sample No	**TP05 0.80 ENV**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.80**			
Sample Date	**13/04/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.11	3	5	6
Loss on Ignition (%)	3.0	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	8.26	-	>6	-
ANC to pH 7 (mol/kg)	0.05	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	1.36	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.4	4	800	15000	25000
Fluoride	0.5	5	10	150	500
Sulphate as SO4	0.90	9.0	1000	20000	50000
Total Dissolved Solids	112	1120	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Mass of sample taken (kg)	0.1186	Moisture Content Ratio (%) =	31.5
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	76.0
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/7213**			
Sample No	**48**			
Client Sample No	**TP07 1.00 ENV**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**1.00**			
Sample Date	**13/04/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.11	3	5	6
Loss on Ignition (%)	4.1	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	7.38	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.03	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	0.006	0.06	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	0.6	6	10	150	500
Sulphate as SO4	0.77	7.7	1000	20000	50000
Total Dissolved Solids	80	800	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	13	130	500	800	1000

Mass of sample taken (kg)	0.1164	Moisture Content Ratio (%) =	29.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	77.2
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/7213**			
Sample No	**66**			
Client Sample No	**TP10 0.50 ENV**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.50**			
Sample Date	**13/04/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.12	3	5	6
Loss on Ignition (%)	4.0	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	7.47	-	>6	-
ANC to pH 7 (mol/kg)	NDP	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.04	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	0.63	6.3	1000	20000	50000
Total Dissolved Solids	48	480	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7213	1	TP01 0.50 ENV	0.50	2	27/04/2017	**General Description (Bulk Analysis)**	soil-stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP01 3.90 ENV	3.90	8	27/04/2017	**General Description (Bulk Analysis)**	soil-stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP02 1.00 ENV	1.00	11	27/04/2017	**General Description (Bulk Analysis)**	soil-stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP02 4.50 ENV	4.50	14	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP03 0.50 ENV	0.50	17	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7213	1	TP03 0.50 ENV	0.50	17	27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP03 3.00 ENV	3.00	23	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP04 1.00 ENV	1.00	26	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP04 2.30 ENV	2.30	29	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP05 0.50 ENV	0.50	32	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP05 2.00 ENV	2.00	38	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP06 1.00 ENV	1.00	41	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7213	1	TP06 1.00 ENV	1.00	41	27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP07 0.50 ENV	0.50	44	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP07 3.80 ENV	3.80	50	27/04/2017	**General Description (Bulk Analysis)**	Soil-Silt/Stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP08 0.50 ENV	0.50	53	27/04/2017	**General Description (Bulk Analysis)**	Soil/Stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP08 2.00 ENV	2.00	56	27/04/2017	**General Description (Bulk Analysis)**	soil-stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP09 0.50 ENV	0.50	59	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/7213	1	TP09 1.80 ENV	1.80	62	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP10 1.00 ENV	1.00	68	27/04/2017	**General Description (Bulk Analysis)**	soil/stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD
17/7213	1	TP10 4.70 ENV	4.70	71	27/04/2017	**General Description (Bulk Analysis)**	Soil-Silt/Stones
					27/04/2017	**Asbestos Fibres**	NAD
					27/04/2017	**Asbestos Fibres (2)**	NAD
					27/04/2017	**Asbestos ACM**	NAD
					27/04/2017	**Asbestos ACM (2)**	NAD
					27/04/2017	**Asbestos Type**	NAD
					27/04/2017	**Asbestos Type (2)**	NAD
					27/04/2017	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 17/02/6552
Location: Foynes
Contact: Conor Finnerty

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
17/7213	1	TP10 0.50 ENV	0.50	64-66	Sample received is below pH7

Client Name: Ground Investigations Ireland

Reference: 17/02/6552

Location: Foynes

Contact: Conor Finnerty

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/7213	1	TP01 0.50 ENV	0.50	1-3	VOC	Sample holding time exceeded
17/7213	1	TP01 3.90 ENV	3.90	7-9	VOC	Sample holding time exceeded
17/7213	1	TP02 1.00 ENV	1.00	10-12	VOC	Sample holding time exceeded
17/7213	1	TP02 4.50 ENV	4.50	13-15	VOC	Sample holding time exceeded
17/7213	1	TP03 0.50 ENV	0.50	16-18	VOC	Sample holding time exceeded
17/7213	1	TP03 3.00 ENV	3.00	22-24	VOC	Sample holding time exceeded
17/7213	1	TP04 1.00 ENV	1.00	25-27	VOC	Sample holding time exceeded
17/7213	1	TP05 2.00 ENV	2.00	37-39	VOC	Sample holding time exceeded
17/7213	1	TP06 1.00 ENV	1.00	40-42	VOC	Sample holding time exceeded
17/7213	1	TP07 0.50 ENV	0.50	43-45	VOC	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/7213

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/7213

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

JE Job No: 17/7213

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes		AR	Yes

JE Job No: 17/7213

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

JE Job No: 17/7213

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				

JE Job No: 17/7213

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Appendix - Methods used for WAC (2003/33/EC)

Leachate tests	
10l/kg; 4mm	I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 μm membrane filter.
Eluate analysis	
As	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ba	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cd	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cr total	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Cu	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Hg	I.S. EN 13370 rec. EN 1483 (CVAAS)
Mo	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Ni	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Pb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Sb	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Se	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Zn	I.S. EN 12506 : EN ISO 11885 (ICP-OES)
Chloride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Fluoride	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Sulphate	I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions)
Phenol index	I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometic methods after distillation)* (BY HPLC - Jones Env)
DOC	I.S. EN 1484
TDS	I.S. EN 15216
Compositional analysis	
TOC	I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion.
BTEX	GC-FID
PCB7**	I.S. EN 15308 analysis by GC-ECD.
Mineral oil	I.S. EN 14039 C10 to C40 analysis by GC-FID.
PAH17***	I.S. EN 15527 PAH17 analysis by GC-MS
Metals	I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 (ICP-OES)
Other	
Dry matter	I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection.
LOI	I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C.
ANC	CEN/TS 15364 Determined by amouns of acid or base needed to cover the pH range

Notes:

*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS

**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180

***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.

Exova Jones Environmental

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Conor Costigan
Date :	29th August, 2017
Your reference :	6552-02-17
Our reference :	Test Report 17/13689 Batch 1
Location :	Foynes Port
Date samples received :	14th August, 2017
Status :	Final report
Issue :	1

Six samples were received for analysis on 14th August, 2017 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan
JE Job No.: 17/13689

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-6	7-12	13-18	19-24	25-30	31-36					LOD/LOR	Units	Method No.
Sample ID	BHLD-01	BHLD-02	BHLD-03	BHLD-04	BHLD-05	BHLD-06							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017							
Dissolved Aluminium	261	250	134	355	<20	<20					<20	ug/l	TM30/PM14
Dissolved Arsenic	52.5	7.5	4.1	11.8	13.3	10.9					<2.5	ug/l	TM30/PM14
Dissolved Barium	36	15	179	53	18	135					<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM30/PM14
Dissolved Boron	268	259	2500	2459	227	537					<12	ug/l	TM30/PM14
Dissolved Cadmium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM30/PM14
Dissolved Calcium	285.5	290.3	369.0$_{AB}$	321.2$_{AB}$	179.3	109.3					<0.2	mg/l	TM30/PM14
Total Dissolved Chromium	9.3	8.3	6.7	4.0	<1.5	<1.5					<1.5	ug/l	TM30/PM14
Dissolved Copper	<7	<7	<7	<7	<7	<7					<7	ug/l	TM30/PM14
Total Dissolved Iron	37220$_{AC}$	1458	1537	7391	<20	<20					<20	ug/l	TM30/PM14
Dissolved Lead	<5	<5	<5	<5	<5	<5					<5	ug/l	TM30/PM14
Dissolved Magnesium	56.1	42.4	1062.0	661.6	34.1	24.1					<0.1	mg/l	TM30/PM14
Dissolved Manganese	6122	344	779	415	667	77					<2	ug/l	TM30/PM14
Dissolved Mercury	<1	<1	<1	<1	<1	<1					<1	ug/l	TM30/PM14
Dissolved Nickel	7	5	7	34	23	4					<2	ug/l	TM30/PM14
Dissolved Potassium	15.4	13.6	291.7$_{AB}$	186.4$_{AB}$	11.0	9.2					<0.1	mg/l	TM30/PM14
Dissolved Selenium	<3	<3	<3	<3	<3	<3					<3	ug/l	TM30/PM14
Dissolved Sodium	486.6$_{AB}$	273.5$_{AB}$	8473.0$_{AE}$	5237.0$_{AE}$	143.2	335.8$_{AB}$					<0.1	mg/l	TM30/PM14
Dissolved Vanadium	7.9	4.5	<1.5	<1.5	<1.5	<1.5					<1.5	ug/l	TM30/PM14
Dissolved Zinc	18	12	126	31	17	20					<3	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	949$_{AB}$	904$_{AB}$	5383$_{AE}$	3582$_{AE}$	591	374					<1	mg/l	TM30/PM14
PAH MS													
Naphthalene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013					<0.013	ug/l	TM4/PM30
Acenaphthene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013					<0.013	ug/l	TM4/PM30
Fluorene	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014					<0.014	ug/l	TM4/PM30
Phenanthrene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011					<0.011	ug/l	TM4/PM30
Anthracene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013					<0.013	ug/l	TM4/PM30
Fluoranthene	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012					<0.012	ug/l	TM4/PM30
Pyrene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013					<0.013	ug/l	TM4/PM30
Benzo(a)anthracene	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015					<0.015	ug/l	TM4/PM30
Chrysene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011					<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018					<0.018	ug/l	TM4/PM30
Benzo(a)pyrene	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016					<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011					<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011					<0.011	ug/l	TM4/PM30
Coronene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM4/PM30
PAH 17 Total	<0.295	<0.295	<0.295	<0.295	<0.295	<0.295					<0.295	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	73	76	79	74	81	83					<0	%	TM4/PM30

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan
JE Job No.: 17/13689

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-6	7-12	13-18	19-24	25-30	31-36					LOD/LOR	Units	Method No.
Sample ID	BHLD-01	BHLD-02	BHLD-03	BHLD-04	BHLD-05	BHLD-06							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017							
Methyl Tertiary Butyl Ether	1.0	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM15/PM10
Toluene	<5	<5	<5	<5	<5	<5					<5	ug/l	TM15/PM10
Ethylbenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
p/m-Xylene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
o-Xylene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	92	92	93	94	93	93					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	110	110	111	110	111	112					<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C6-C8	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C8-C10	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C10-C12	<5	<5	<5	<5	<5	<5					<5	ug/l	TM5/PM30
>C12-C16	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
>C16-C21	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
>C21-C35	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
Total aliphatics C5-35	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/TM36/PM30/PM12
Aromatics													
>C5-EC7	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC7-EC8	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC8-EC10	<10	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC10-EC12	<5	<5	<5	<5	<5	<5					<5	ug/l	TM5/PM30
>EC12-EC16	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
>EC16-EC21	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
>EC21-EC35	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/PM30
Total aromatics C5-35	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/TM36/PM30/PM12
Total aliphatics and aromatics(C5-35)	<10	<10	<10	<10	<10	<10					<10	ug/l	TM5/TM36/PM30/PM12
PCB 28	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 52	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 101	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 118	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 138	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 153	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
PCB 180	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM17/PM30
Total 7 PCBs	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7					<0.7	ug/l	TM17/PM30
Resorcinol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Catechol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
m/p-cresol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					<0.02	mg/l	TM26/PM0
o-cresol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan
JE Job No.: 17/13689

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

J E Sample No.	1-6	7-12	13-18	19-24	25-30	31-36					LOD/LOR	Units	Method No.
Sample ID	BHLD-01	BHLD-02	BHLD-03	BHLD-04	BHLD-05	BHLD-06							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017							
Total cresols	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/l	TM26/PM0
Xylenols	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06					<0.06	mg/l	TM26/PM0
1-naphthol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
2,3,5-trimethyl phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
2-isopropylphenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Total Speciated Phenols HPLC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/l	TM26/PM0
Sulphate as SO4	90.0	137.7	1918.4	1258.5	91.4	198.3					<0.5	mg/l	TM38/PM0
Chloride	267.9	525.2	13829.0$_{AD}$	7814.3	267.0	195.4					<0.3	mg/l	TM38/PM0
Nitrate as N	0.12	0.55	<0.05	<0.05	0.12	2.40					<0.05	mg/l	TM38/PM0
Nitrite as N	0.014	0.060	<0.006	<0.006	0.014	<0.006					<0.006	mg/l	TM38/PM0
Ortho Phosphate as P	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/l	TM38/PM0
Total Cyanide	1587$_{AA}$	1090$_{AA}$	3326$_{AB}$	1760$_{AA}$	2637$_{AB}$	1627$_{AA}$					<5	ug/l	TM89/PM0
Ammoniacal Nitrogen as N	<0.03	0.10	<0.03	7.89	0.22	<0.03					<0.03	mg/l	TM38/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006					<0.006	mg/l	TM38/PM0
Total Alkalinity as CaCO3	682	466	204	1126	646	558					<1	mg/l	TM75/PM0
Dibutyltin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM94/PM48
Tributyltin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM94/PM48
Triphenyltin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM94/PM48
pH	7.30	7.36	7.74	7.22	7.32	7.53					<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan
JE Job No.: 17/13689

SVOC Report : **Liquid**

J E Sample No.	1-6	7-12	13-18	19-24	25-30	31-36							
Sample ID	BHLD-01	BHLD-02	BHLD-03	BHLD-04	BHLD-05	BHLD-06							
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017					LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
2-Methylphenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10	<10	<10					<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5	<5	<5					<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Di-n-butyl phthalate	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5					<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Diethyl phthalate	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Other SVOCs													
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
1,3-Dichlorobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
1,4-Dichlorobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
2,4-Dinitrotoluene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Bromophenylphenylether	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chlorophenylphenylether	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Azobenzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Carbazole	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Dibenzofuran	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Hexachlorobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachlorobutadiene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachloroethane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Isophorone	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Nitrobenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	79	84	74	74	78	76					<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	89	102	85	91	88	83					<0	%	TM16/PM30

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan
JE Job No.: 17/13689

VOC Report : **Liquid**

J E Sample No.	1-6	7-12	13-18	19-24	25-30	31-36							
Sample ID	BHLD-01	BHLD-02	BHLD-03	BHLD-04	BHLD-05	BHLD-06							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017	10/08/2017							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017	14/08/2017							
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether	1.0	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Chloromethane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Chloroethane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Trichlorofluoromethane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE)	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Dichloromethane (DCM)	<5	<5	<5	<5	<5	<5					<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Bromochloromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chloroform	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1-Dichloropropene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Carbon tetrachloride	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dichloroethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM15/PM10
Trichloroethene (TCE)	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichloropropane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromomethane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Bromodichloromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Toluene	<5	<5	<5	<5	<5	<5					<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Tetrachloroethene (PCE)	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichloropropane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromochloromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dibromoethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chlorobenzene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Ethylbenzene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
p/m-Xylene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
o-Xylene	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Bromoform	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Isopropylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4					<4	ug/l	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,3-Trichloropropane	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Propylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
tert-Butylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
sec-Butylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
4-Isopropyltoluene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,4-Dichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
n-Butylbenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	92	92	93	94	93	93					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	110	110	111	110	111	112					<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 6552-02-17
Location: Foynes Port
Contact: Conor Costigan

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 17/13689						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/13689

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x5 Dilution
AC	x10 Dilution
AD	x20 Dilution
AE	x50 Dilution

JE Job No: 17/13689

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM30/PM12	CWG GC-FID				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.				

JE Job No: 17/13689

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.				
TM75	Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.				
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM94	Derivatisation and extraction of Organotins. Analysis by GC-MS	PM48	Samples are pretreated and derivatised. The derviatised organotins are then extracted using hexane.				

Appendix B

Soil screening tables

Method Detection Limit						<0.1	<0.01	<2	<0.0015	<1.0	<0.5	<0.2	<0.02			<50	<0.5	<1	<0.5	<0.1	<0.1	<1	<0.5
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.		Natural Moisture Content	pH	Chloride	Sulphate as SO4 (2:1 Ext)	Loss on Ignition	Cyanide (total)	Organic matter	Total organic carbon	Asbestos (fibres and/or ACM)		Aluminium	Arsenic	Barium	Beryllium	Boron (water soluble)	Cadmium	Copper	Total Chromium
						%	pH Units	mg/kg	g/l	%	mg/kg	%	%			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1		10.6	7.91	-	0.0779	-	<0.5	0.5	-	NAD		1975	5.6	297	<0.5	1.4	0.8	8	17.7
3.00	L01	25/05/2017	70-72	2		11.8	8.2	-	0.1282	-	<0.5	0.3	-	NAD		2233	3.5	39	<0.5	2	0.3	5	19.2
7.00	L01	25/05/2017	76-78	3		34.3	8.21	-	0.3813	-	<0.5	1.1	-	NAD		6128	6	17	<0.5	7	0.2	5	30.7
1.00	L05	10/04/2017	10-12	4		66.8	8.35	-	0.6183	-	<0.5	0.5	-	NAD		11270	10.1	40	0.9	11	0.2	10	38.5
3.00	L05	10/04/2017	13-15	5		42.5	8.31	-	0.3366	-	<0.5	0.4	-	NAD		10610	10.1	38	0.8	10.4	0.2	8	33.6
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6		17.2	7.96	-	0.1143	-	<0.5	0.8	-	NAD		21170	13	161	1.5	0.6	0.3	59	51.3
1.00	LD01	11/04/2017	4-6	7		-	7.92	84	0.197	-	-	-	-	-		-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8		28.1	8.1	-	0.0473	-	<0.5	1.1	-	NAD		16400	21.9	213	1.4	2.3	<0.1	2	52.2
3.00	LD01	11/04/2017	10-12	9		-	8.1	57	0.0037	-	-	-	-	-		-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10		10.4	8.06	-	0.1775	-	<0.5	0.9	-	NAD		1492	5.7	10	<0.5	1.3	0.2	3	18.3
0.50	LD02	13/04/2017	1-3	11		-	8.19	12	0.0241	-	-	-	-	-		-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12		30.6	8.39	-	0.007	-	<0.5	0.9	-	NAD		11710	21.3	25	0.8	1.1	0.2	<1	32.9
3.00	LD02	13/04/2017	10-12	13		-	8.14	147	0.1849	-	-	-	-	-		-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14		39.1	8.25	-	0.1918	-	<0.5	0.9	-	NAD		7045	4.8	17	0.5	3.5	0.2	1	26.1
0.50	LD03	16/05/2017	1-3	15		22.3	6.49	-	0.0021	-	<0.5	1.3	-	NAD		19500	17.1	43	1.4	1.6	<0.1	5	49.6
2.00	LD03	16/05/2017	7-9	16		31	8.34	-	0.0947	-	<0.5	2.1	-	NAD		10900	11	25	0.8	2	0.2	7	30.6
6.00	LD03	16/05/2017	19-21	17		5.5	8.47	-	0.0748	-	<0.5	<0.2	-	NAD		1218	2.4	5	<0.5	0.7	0.5	6	13.2
0.50	LD04	13/04/2017	38-40	18		-	7.99	160	0.7385	-	-	-	-	-		-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19		30.8	8.27	-	0.367	-	<0.5	0.5	-	NAD		10440	8.4	23	0.8	7.4	0.2	2	36.9
3.00	LD04	13/04/2017	46-47	20		-	7.89	341	1.4657	-	-	-	-	-		-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21		29.1	8.3	-	0.3941	-	<0.5	0.8	-	NAD		10260	9.3	24	0.9	6.6	0.3	6	28.8
0.50	LD05	10/04/2017	16-18	22		41.3	7.81	-	0.0912	-	1	7.5	-	NAD		9822	9.1	95	0.8	3.8	0.7	10	50.1
2.00	LD05	10/04/2017	22-24	23		-	8.56	34	0.0203	-	-	-	-	-		-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24		-	8.64	67	0.021	-	-	-	-	-		-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25		28	7.2	-	0.0082	-	<0.5	0.9	-	NAD		19800	17.8	40	1.6	1.6	<0.1	<1	52.9
1.00	LD06	13/04/2017	52-54	26		-	8.11	14	0.0167	-	-	-	-	-		-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27		-	8.59	43	0.0192	-	-	-	-	-		-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28		6.7	8.69	-	0.0113	-	<0.5	1.1	-	NAD		1342	2.1	6	<0.5	0.4	0.2	3	9.6
0.50	TP01	13/04/2017	1-3	29		28.9	6.96	-	<0.0015	-	<0.5	0.7	-	NAD		14360	15.9	26	1	0.9	<0.1	<1	42.5
1.00	TP01	13/04/2017	4-6	30		38.1	7.41	-	-	3.9	-	-	0.63	-		-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31		33.4	8.24	-	0.639	-	<0.5	0.8	-	NAD		8145	15.2	18	0.6	4.9	0.1	2	26.6
1.00	TP02	13/04/2017	10-12	32		25.2	8.71	-	0.0085	-	<0.5	1.1	-	NAD		8272	8.6	17	0.6	0.8	0.1	<1	22.5
4.50	TP02	13/04/2017	13-15	33		31.7	8.54	-	0.4432	-	<0.5	0.9	-	NAD		8851	8.5	22	0.7	4.5	0.2	3	25.6
0.50	TP03	13/04/2017	16-18	34		28.6	7.55	-	0.0029	-	<0.5	0.2	-	NAD		17380	9.5	30	1.2	2.1	<0.1	<1	47.3
0.80	TP03	13/04/2017	19-21	35		34.6	7.76	-	-	4.2	-	-	0.13	-		-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36		30.6	7.97	-	0.4328	-	<0.5	0.7	-	NAD		9144	6.2	18	0.7	3.8	0.2	1	25.3
1.00	TP04	13/04/2017	25-27	37		8.9	8.74	-	0.0034	-	<0.5	1.2	-	NAD		2868	6.5	16	<0.5	0.2	0.5	5	10.8
2.30	TP04	13/04/2017	28-30	38		7.2	8.93	-	0.0023	-	<0.5	<0.2	-	NAD		2232	6.1	13	<0.5	0.2	0.6	5	10.7
0.50	TP05	13/04/2017	31-33	39		18.4	6.22	-	0.0021	-	<0.5	<0.2	-	NAD		4995	7.8	14	<0.5	0.3	<0.1	<1	26
0.80	TP05	13/04/2017	34-36	40		23.5	8.26	-	-	3	-	-	0.11	-		-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41		11.5	8.66	-	0.0035	-	<0.5	<0.2	-	NAD		2714	6	11	<0.5	0.3	0.5	6	11.9
1.00	TP06	13/04/2017	40-42	42		37	8.25	-	0.0061	-	<0.5	0.2	-	NAD		12020	28.4	60	1.2	1.6	0.4	4	41.6
0.50	TP07	13/04/2017	43-45	43		24.1	7.09	-	<0.0015	-	<0.5	0.5	-	NAD		17860	24.1	30	1.3	2.1	<0.1	<1	49.4
1.00	TP07	13/04/2017	46-48	44		28.9	7.38	-	-	4.1	-	-	0.11	-		-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45		29.5	8.31	-	0.5705	-	<0.5	0.8	-	NAD		7372	6.6	20	0.6	5.6	0.2	3	24.4
0.50	TP08	13/04/2017	52-54	46		12.4	8.41	-	0.0048	-	<0.5	1	-	NAD		6567	7.2	37	0.5	0.6	0.3	2	18.1
2.00	TP08	13/04/2017	55-57	47		9.6	8.82	-	0.0053	-	<0.5	<0.2	-	NAD		3177	4.9	12	<0.5	0.4	0.5	7	13
0.50	TP09	13/04/2017	58-60	48		23.9	8.68	-	<0.0015	-	<0.5	<0.2	-	NAD		8159	5.6	23	0.6	0.8	0.1	<1	24
1.80	TP09	13/04/2017	61-63	49		36.9	8.25	-	0.1019	-	<0.5	1	-	NAD		7156	8.3	19	0.8	1.2	0.1	6	30.5
0.50	TP10	13/04/2017	64-66	50		25.9	7.47	-	-	4	-	-	0.12	-		-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51		25.1	8.87	-	0.0025	-	<0.5	<0.2	-	NAD		8281	5.5	17	0.6	0.6	<0.1	<1	26.6
4.70	TP10	13/04/2017	70-72	52		34.1	8.53	-	0.2201	-	<0.5	0.2	-	NAD		8335	6.9	19	0.6	2	0.1	1	24
SGV commercial (SOM 6%)																	640				230		
CL:AIRE GAC commercial (SOM 1%)																							
CL:AIRE GAC commercial (SOM 2.5%)																							
CL:AIRE GAC commercial (SOM 6%)																							
S4UL commercial (SOM 1%)																							
S4UL commercial (SOM 2.5%)																							
S4UL commercial (SOM 6%)																	640		12	240000	190	68000	8600 (CrIII)

Method Detection Limit					<0.3	<20	<5	<0.1	<0.7	<1	<0.01	<50	<1	<5	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	Chromium VI	Iron	Lead	Mercury	Nickel	Selenium	Sulphur as S	Total Sulphate as SO_4^{2-}	Vanadium	Zinc	Dibutyltin	Tributyltin	Triphenyltin	POLYCYCLIC AROMATIC HYDROCARBONS	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<0.3	5246	19	<0.1	11.1	<1	0.06	508	7	56	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	L01	25/05/2017	70-72	2	<0.3	4702	9	<0.1	6.6	<1	0.07	538	6	25	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
7.00	L01	25/05/2017	76-78	3	<0.3	14600	7	<0.1	14	<1	0.71	2645	18	35	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	L05	10/04/2017	10-12	4	<0.3	24700	24	<0.1	22.6	2	0.23	2327	33	85	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	L05	10/04/2017	13-15	5	<0.3	20930	19	<0.1	19.9	1	0.23	1692	26	73	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<0.3	38140	21	<0.1	37.9	3	0.28	426	52	87	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<0.3	37360	19	<0.1	32.6	2	<0.01	385	60	65	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<0.3	4404	9	<0.1	6.8	<1	0.09	592	8	15	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<0.3	22590	13	<0.1	22.9	<1	0.01	195	39	54	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<0.3	17420	9	<0.1	14.9	<1	0.38	1522	20	37	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	LD03	16/05/2017	1-3	15	<0.3	35460	19	<0.1	32.7	<1	0.02	291	60	82	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
2.00	LD03	16/05/2017	7-9	16	<0.3	23350	9	<0.1	22.4	<1	0.07	508	31	53	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
6.00	LD03	16/05/2017	19-21	17	<0.3	3480	<5	<0.1	9.6	<1	0.05	221	3	13	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<0.3	24360	13	<0.1	22.5	<1	0.49	1481	31	55	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<0.3	21800	13	<0.1	27.1	<1	0.48	1324	26	62	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	LD05	10/04/2017	16-18	22	<0.3	19050	34	<0.1	31.6	2	0.02	1144	31	137	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<0.3	44840	22	<0.1	33.5	1	0.01	309	64	83	<100	<100	<100		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<0.3	2931	7	<0.1	7.8	<1	0.03	205	6	14	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP01	13/04/2017	1-3	29	<0.3	20960	15	<0.1	24.7	1	<0.01	174	47	59	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
3.90	TP01	13/04/2017	7-9	31	<0.3	24270	10	<0.1	21.7	1	0.73	1654	26	42	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP02	13/04/2017	10-12	32	<0.3	18680	9	<0.1	16.7	<1	0.01	281	26	39	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
4.50	TP02	13/04/2017	13-15	33	<0.3	21220	10	<0.1	20.5	<1	0.46	1488	22	45	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP03	13/04/2017	16-18	34	<0.3	35340	16	<0.1	32.4	2	<0.01	101	46	67	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
3.00	TP03	13/04/2017	22-24	36	<0.3	21950	13	<0.1	19.2	<1	0.53	1659	25	47	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP04	13/04/2017	25-27	37	<0.3	6862	12	<0.1	14.6	<1	0.01	154	6	24	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
2.30	TP04	13/04/2017	28-30	38	<0.3	6083	8	<0.1	12.7	<1	0.01	139	6	24	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP05	13/04/2017	31-33	39	<0.3	13120	8	<0.1	7.3	<1	<0.01	69	16	24	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
2.00	TP05	13/04/2017	37-39	41	<0.3	7213	8	<0.1	18.5	<1	0.01	131	7	28	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP06	13/04/2017	40-42	42	<0.3	32880	14	<0.1	65.9	3	0.01	346	40	94	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP07	13/04/2017	43-45	43	<0.3	40890	20	<0.1	30.7	2	<0.01	133	68	71	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
3.80	TP07	13/04/2017	49-51	45	<0.3	18190	10	<0.1	18	1	0.49	2118	19	40	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP08	13/04/2017	52-54	46	<0.3	15280	10	<0.1	15.6	<1	0.01	162	19	41	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
2.00	TP08	13/04/2017	55-57	47	<0.3	6420	9	<0.1	18	<1	0.01	114	7	31	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP09	13/04/2017	58-60	48	<0.3	18120	10	<0.1	17.2	<1	0.01	324	24	39	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.80	TP09	13/04/2017	61-63	49	<0.3	15430	11	<0.1	22.1	<1	0.05	514	21	52	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
1.00	TP10	13/04/2017	67-69	51	<0.3	21490	11	<0.1	18.5	<1	<0.01	162	26	44	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
4.70	TP10	13/04/2017	70-72	52	<0.3	19890	10	<0.1	22	<1	0.3	892	20	45	-	-	-		<0.05	<0.03	<0.04	<0.06	<0.04
SGV commercial (SOM 6%)								26		13000													
CL:AIRE GAC commercial (SOM 1%)																130000							
CL:AIRE GAC commercial (SOM 2.5%)																101000							
CL:AIRE GAC commercial (SOM 6%)																241000							
S4UL commercial (SOM 1%)																			84000	83000	520000	170	35
S4UL commercial (SOM 2.5%)																			97000	97000	540000	170	35
S4UL commercial (SOM 6%)					33			58	980	12000			9000	730000					100000	100000	540000	180	36

Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	Benzo(b)fluoranthene	Benzo(ghi) perylene	Benzo(bj)fluoranthene	Benzo(k)fluoranthene	Chrysene	Coronene	Dibenzo(ah) anthracene	Fluoranthene	Fluorene	Indeno(123cd) pyrene	Naphthalene	Phenanthrene	Pyrene	Total 16/17 PAHs	HYDROCARBONS TPH-CWG	Aliphatics EC C5-C6	Aliphatics EC>C6-C8	Aliphatics EC>C8-C10	Aliphatics EC>C10-C12
Method Detection Limit					<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6/<0.64		<0.1	<0.1	<0.1	<0.2
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
3.00	L01	25/05/2017	70-72	2	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
7.00	L01	25/05/2017	76-78	3	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
1.00	L05	10/04/2017	10-12	4	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
3.00	L05	10/04/2017	13-15	5	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
0.50	LD03	16/05/2017	1-3	15	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
2.00	LD03	16/05/2017	7-9	16	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
6.00	LD03	16/05/2017	19-21	17	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
4.00	LD04	13/04/2017	48	21	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
0.50	LD05	10/04/2017	16-18	22	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		<0.1	<0.1	<0.1	<0.2
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<0.02	<0.04	<0.07	<1	<0.02	<0.6	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.05		<0.1	<0.1	<0.1	<0.2
0.50	TP01	13/04/2017	1-3	29	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.00	TP01	13/04/2017	4-6	30	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.00	TP02	13/04/2017	10-12	32	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
4.50	TP02	13/04/2017	13-15	33	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP03	13/04/2017	16-18	34	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.80	TP03	13/04/2017	19-21	35	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.00	TP04	13/04/2017	25-27	37	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
2.30	TP04	13/04/2017	28-30	38	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP05	13/04/2017	31-33	39	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.80	TP05	13/04/2017	34-36	40	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.00	TP06	13/04/2017	40-42	42	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP07	13/04/2017	43-45	43	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.00	TP07	13/04/2017	46-48	44	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP08	13/04/2017	52-54	46	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
2.00	TP08	13/04/2017	55-57	47	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP09	13/04/2017	58-60	48	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
1.80	TP09	13/04/2017	61-63	49	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
0.50	TP10	13/04/2017	64-66	50	<0.05	<0.04	<0.07	<0.02	<0.02	<0.04	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.64		-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
4.70	TP10	13/04/2017	70-72	52	<0.05	<0.04	<0.07	<0.02	<0.02	-	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.6		<0.1	<0.1	<0.1	<0.2
SGV commercial (SOM 6%)																							
CL:AIRE GAC commercial (SOM 1%)																							
CL:AIRE GAC commercial (SOM 2.5%)																							
CL:AIRE GAC commercial (SOM 6%)																							
S4UL commercial (SOM 1%)					44	3900		1200	350		3.5	23000	63000	500	190	22000	54000			3200	7800	2000	9700
S4UL commercial (SOM 2.5%)					44	4000		1200	350		3.6	23000	68000	510	460	22000	54000			5900	17000	4800	23000
S4UL commercial (SOM 6%)					45	4000		1200	350		3.6	23000	71000	510	1100	23000	54000			12000	40000	11000	47000

Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	Aliphatics EC>C12-C16	Aliphatics EC>C16-C21	Aliphatics EC>C21-C35	Total Aliphatic Hydrocarbons	Aromatics EC C5-C7	Aromatics EC>C7-C8	Aromatics EC>C8-C10	Aromatics EC>C10-C12	Aromatics EC>C12-C16	Aromatics EC>C16-C21	Aromatics EC>C21-C35	Total Aromatic Hydrocarbons	TPH (Aliphatic and Aromatic)	BTEX - Benzene	BTEX - Toluene	BTEX - Ethyl Benzene	BTEX - m & p Xylene	BTEX - o Xylene	MTBE
Method Detection Limit					<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<4	<7	62	62	<0.1	<0.1	<0.1	<0.2	<4	<7	33	33	95	<3	<3	<3	<5	<3	<2
3.00	L01	25/05/2017	70-72	2	<4	<7	64	64	<0.1	<0.1	<0.1	<0.2	<4	<7	31	31	95	<3	<3	<3	<5	<3	<2
7.00	L01	25/05/2017	76-78	3	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	L05	10/04/2017	10-12	4	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	16	79	95	95	<3	<3	<3	<5	<3	<2
3.00	L05	10/04/2017	13-15	5	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<4	<7	13	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	12	<3	<5	<3	<2
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<4	<7	34	34	<0.1	<0.1	<0.1	<0.2	<4	<7	30	30	64	<3	<3	<3	<5	<3	<2
0.50	LD03	16/05/2017	1-3	15	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
2.00	LD03	16/05/2017	7-9	16	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
6.00	LD03	16/05/2017	19-21	17	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<4	<7	10	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	24	24	<38	<3	<3	<3	<5	<3	<2
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	LD05	10/04/2017	16-18	22	<4	<7	37	37	<0.1	<0.1	<0.1	<0.2	<4	<7	75	75	112	<3	<3	<3	<5	<3	<2
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP01	13/04/2017	1-3	29	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5
3.90	TP01	13/04/2017	7-9	31	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	TP02	13/04/2017	10-12	32	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
4.50	TP02	13/04/2017	13-15	33	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP03	13/04/2017	16-18	34	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5
3.00	TP03	13/04/2017	22-24	36	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	TP04	13/04/2017	25-27	37	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
2.30	TP04	13/04/2017	28-30	38	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP05	13/04/2017	31-33	39	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5
2.00	TP05	13/04/2017	37-39	41	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	TP06	13/04/2017	40-42	42	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP07	13/04/2017	43-45	43	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5
3.80	TP07	13/04/2017	49-51	45	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP08	13/04/2017	52-54	46	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
2.00	TP08	13/04/2017	55-57	47	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP09	13/04/2017	58-60	48	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
1.80	TP09	13/04/2017	61-63	49	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5
1.00	TP10	13/04/2017	67-69	51	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
4.70	TP10	13/04/2017	70-72	52	<4	<7	<7	<19	<0.1	<0.1	<0.1	<0.2	<4	<7	<7	<19	<38	<3	<3	<3	<5	<3	<2
SGV commercial (SOM 6%)																		95000	4400000	2800000	3200000	2600000	
CL:AIRE GAC commercial (SOM 1%)																							7900000
CL:AIRE GAC commercial (SOM 2.5%)																							13000000
CL:AIRE GAC commercial (SOM 6%)																							24000000
S4UL commercial (SOM 1%)					59000	1600000			26000	56000	3500	16000	36000	28000	28000			27000	56000000	5700000	5900000	6600000	
S4UL commercial (SOM 2.5%)					82000	1700000			46000	110000	8100	28000	37000	28000	28000			47000	110000000	13000000	14000000	15000000	
S4UL commercial (SOM 6%)					90000	1800000			86000	180000	17000	34000	38000	28000	28000			90000	180000000	27000000	30000000	33000000	

Method Detection Limit						<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	<5	<5	<5	<5	<5
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	PCBs	PCB 77	PCB 81	PCB 105	PCB 114	PCB 118	PCB 123	PCB 126	PCB 156	PCB 157	PCB 167	PCB 169	PCB 189	Total 12 PCBs	PCB 28 #	PCB 52 #	PCB 101 #	PCB 138 #	PCB 153 #
						ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
3.00	L01	25/05/2017	70-72	2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.00	L01	25/05/2017	76-78	3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	L05	10/04/2017	10-12	4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	L05	10/04/2017	13-15	5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6		-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<50
1.00	LD01	11/04/2017	4-6	7		-	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD01	11/04/2017	10-12	9		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD02	13/04/2017	1-3	11		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
3.00	LD02	13/04/2017	10-12	13		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD03	16/05/2017	1-3	15		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
2.00	LD03	16/05/2017	7-9	16		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD03	16/05/2017	19-21	17		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD04	13/04/2017	38-40	18		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
3.00	LD04	13/04/2017	46-47	20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD05	10/04/2017	16-18	22		-	-	-	-	<50	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<50
2.00	LD05	10/04/2017	22-24	23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
1.00	LD06	13/04/2017	52-54	26		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP01	13/04/2017	1-3	29		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
1.00	TP01	13/04/2017	4-6	30		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
3.90	TP01	13/04/2017	7-9	31		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP02	13/04/2017	10-12	32		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
4.50	TP02	13/04/2017	13-15	33		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP03	13/04/2017	16-18	34		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
0.80	TP03	13/04/2017	19-21	35		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
3.00	TP03	13/04/2017	22-24	36		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP04	13/04/2017	25-27	37		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
2.30	TP04	13/04/2017	28-30	38		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP05	13/04/2017	31-33	39		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
0.80	TP05	13/04/2017	34-36	40		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
2.00	TP05	13/04/2017	37-39	41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP06	13/04/2017	40-42	42		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
0.50	TP07	13/04/2017	43-45	43		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
1.00	TP07	13/04/2017	46-48	44		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
3.80	TP07	13/04/2017	49-51	45		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP08	13/04/2017	52-54	46		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
2.00	TP08	13/04/2017	55-57	47		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP09	13/04/2017	58-60	48		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
1.80	TP09	13/04/2017	61-63	49		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	TP10	13/04/2017	64-66	50		-	-	-	-	<5	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5
1.00	TP10	13/04/2017	67-69	51		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<60	-	-	-	-	-
4.70	TP10	13/04/2017	70-72	52		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SGV commercial (SOM 6%)																							
CL:AIRE GAC commercial (SOM 1%)																							
CL:AIRE GAC commercial (SOM 2.5%)																							
CL:AIRE GAC commercial (SOM 6%)																							
S4UL commercial (SOM 1%)																							
S4UL commercial (SOM 2.5%)																							
S4UL commercial (SOM 6%)																							

Method Detection Limit					<5	<35		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	PCB 180 #	Total 7 PCBs #	PHENOLS	Resorcinol	Catechol	Phenol	m/p-Cresol	o-Cresol	Cresols	Xylenols	1-Naphthol	2,3,5-Trimethylphenol	2-Isopropylphenol	Phenols - Total by HPLC	SEMI VOLATILE ORGANIC COMPOUNDS	Hexachlorobenzene	Diethyl phthalate	Dimethyl phthalate	Dibenzofuran
					ug/kg	ug/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	-	-		<0.01	<0.01	0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
3.00	L01	25/05/2017	70-72	2	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
7.00	L01	25/05/2017	76-78	3	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	L05	10/04/2017	10-12	4	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
3.00	L05	10/04/2017	13-15	5	-	-		<0.01	<0.01	<0.01	<0.02	0.06	0.06	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<50	<350		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	LD01	11/04/2017	4-6	7	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2.00	LD01	11/04/2017	7-9	8	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
3.00	LD01	11/04/2017	10-12	9	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
8.00	LD01	12/04/2017	52-54	10	-	-		<0.01	<0.01	<0.01	<0.02	0.02	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	LD02	13/04/2017	1-3	11	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
1.00	LD02	13/04/2017	4-6	12	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
3.00	LD02	13/04/2017	10-12	13	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
4.00	LD02	13/04/2017	13-16	14	-	-		<0.01	<0.01	0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	LD03	16/05/2017	1-3	15	<5	<35		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
2.00	LD03	16/05/2017	7-9	16	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
6.00	LD03	16/05/2017	19-21	17	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	LD04	13/04/2017	38-40	18	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
1.00	LD04	13/04/2017	41-43	19	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
3.00	LD04	13/04/2017	46-47	20	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
4.00	LD04	13/04/2017	48	21	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	LD05	10/04/2017	16-18	22	<50	<350		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
2.00	LD05	10/04/2017	22-24	23	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
0.50	LD06	13/04/2017	49-51	25	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	LD06	13/04/2017	52-54	26	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
3.00	LD06	13/04/2017	58-60	28	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP01	13/04/2017	1-3	29	-	-		<0.01	<0.01	<0.01	<0.02	0.02	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	TP01	13/04/2017	4-6	30	<5	<35		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
3.90	TP01	13/04/2017	7-9	31	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	TP02	13/04/2017	10-12	32	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
4.50	TP02	13/04/2017	13-15	33	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP03	13/04/2017	16-18	34	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.80	TP03	13/04/2017	19-21	35	<5	<35		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
3.00	TP03	13/04/2017	22-24	36	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	TP04	13/04/2017	25-27	37	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
2.30	TP04	13/04/2017	28-30	38	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP05	13/04/2017	31-33	39	-	-		<0.01	<0.01	<0.01	<0.02	0.02	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.80	TP05	13/04/2017	34-36	40	<5	<35		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2.00	TP05	13/04/2017	37-39	41	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	TP06	13/04/2017	40-42	42	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP07	13/04/2017	43-45	43	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.00	TP07	13/04/2017	46-48	44	<5	<35		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
3.80	TP07	13/04/2017	49-51	45	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP08	13/04/2017	52-54	46	-	-		<0.01	<0.01	<0.01	<0.02	0.02	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
2.00	TP08	13/04/2017	55-57	47	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP09	13/04/2017	58-60	48	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
1.80	TP09	13/04/2017	61-63	49	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
0.50	TP10	13/04/2017	64-66	50	<5	<35		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
1.00	TP10	13/04/2017	67-69	51	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
4.70	TP10	13/04/2017	70-72	52	-	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.15		<10	<100	<100	<10
SGV commercial (SOM 6%)										3200								3200					
CL:AIRE GAC commercial (SOM 1%)													160000								150000000		
CL:AIRE GAC commercial (SOM 2.5%)													180000								220000000		
CL:AIRE GAC commercial (SOM 6%)													180000								290000000		
S4UL commercial (SOM 1%)										440								440		110000			
S4UL commercial (SOM 2.5%)										690								690		120000			
S4UL commercial (SOM 6%)										1300								1300		120000			
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Method Detection Limit					<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	Carbazole	Butylbenzyl phthalate	Bis(2-ethylhexyl) phthalate	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	4-Nitrophenol	4-Methylphenol	4-Chloro-3-methylphenol	2-Nitrophenol	2-Methylphenol	2-Chlorophenol	2,6-Dinitrotoluene	2,4-Dinitrotoluene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dimethylphenol	2,4-Dichlorophenol	2-Chloronaphthalene	2-Methylnaphthalene
					µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	L01	25/05/2017	70-72	2	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
7.00	L01	25/05/2017	76-78	3	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	L05	10/04/2017	10-12	4	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	L05	10/04/2017	13-15	5	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD03	16/05/2017	1-3	15	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	LD03	16/05/2017	7-9	16	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
6.00	LD03	16/05/2017	19-21	17	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD05	10/04/2017	16-18	22	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP01	13/04/2017	1-3	29	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP02	13/04/2017	10-12	32	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4.50	TP02	13/04/2017	13-15	33	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP03	13/04/2017	16-18	34	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP04	13/04/2017	25-27	37	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.30	TP04	13/04/2017	28-30	38	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP05	13/04/2017	31-33	39	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP06	13/04/2017	40-42	42	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP07	13/04/2017	43-45	43	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP08	13/04/2017	52-54	46	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	TP08	13/04/2017	55-57	47	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP09	13/04/2017	58-60	48	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.80	TP09	13/04/2017	61-63	49	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4.70	TP10	13/04/2017	70-72	52	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SGV commercial (SOM 6%)																							
CL:AIRE GAC commercial (SOM 1%)						940000000	85000000				160000000*			160000000*		1900000	3700000			16000000		390000	
CL:AIRE GAC commercial (SOM 2.5%)						940000000	86000000				180000000*			180000000*		1900000	3700000			24000000		960000	
CL:AIRE GAC commercial (SOM 6%)						950000000	86000000				180000000*			180000000*		1900000	3800000			30000000		2200000	
S4UL commercial (SOM 1%)															3500000						3500000		
S4UL commercial (SOM 2.5%)															4000000						4000000		
S4UL commercial (SOM 6%)															4300000						4300000		

* 2-, 3- and 4- methylphenol total

Method Detection Limit					<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	Phenol	Pentachlorophenol	N-nitrosodi-n-dipropylamine	n Dioctyl phthalate	n Dibutyl phthalate	Nitrobenzene	Isophorone	Hexachloroethane	Hexachlorocyclopentadiene	2-Nitroaniline	3-Nitroaniline	4-Bromophenylphenylether	4-Chloroaniline	4-Chlorophenylphenylether	4-Nitroaniline	Azobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene
					µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	L01	25/05/2017	70-72	2	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
7.00	L01	25/05/2017	76-78	3	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	L05	10/04/2017	10-12	4	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	L05	10/04/2017	13-15	5	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD03	16/05/2017	1-3	15	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	LD03	16/05/2017	7-9	16	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
6.00	LD03	16/05/2017	19-21	17	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	LD05	10/04/2017	16-18	22	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP01	13/04/2017	1-3	29	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP02	13/04/2017	10-12	32	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4.50	TP02	13/04/2017	13-15	33	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP03	13/04/2017	16-18	34	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP04	13/04/2017	25-27	37	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.30	TP04	13/04/2017	28-30	38	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP05	13/04/2017	31-33	39	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP06	13/04/2017	40-42	42	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP07	13/04/2017	43-45	43	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP08	13/04/2017	52-54	46	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.00	TP08	13/04/2017	55-57	47	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP09	13/04/2017	58-60	48	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1.80	TP09	13/04/2017	61-63	49	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4.70	TP10	13/04/2017	70-72	52	<10	<10	<10	<100	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SGV commercial (SOM 6%)					3200000																		
CL:AIRE GAC commercial (SOM 1%)								89000000	15000000			22000											
CL:AIRE GAC commercial (SOM 2.5%)								89000000	15000000			53000											
CL:AIRE GAC commercial (SOM 6%)								89000000	15000000			120000											
S4UL commercial (SOM 1%)					440000	400000															30000	4400000	2000000
S4UL commercial (SOM 2.5%)					690000	400000															73000	10000000	4800000
S4UL commercial (SOM 6%)					1300000	400000															170000	25000000	11000000

Method Detection Limit					<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	1.2.4-Trichlorobenzene	Hexachlorobutadiene	VOLATILE ORGANIC COMPOUNDS	Dichlorodifluoromethane	Methyl Tertiary Butyl Ether	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Dichloromethane	trans-1,2-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	2,2-Dichloropropane	Bromochloromethane	Trichloromethane	1,1,1-Trichloroethane
					µg/ kg	µg/ kg		µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
3.00	L01	25/05/2017	70-72	2	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
7.00	L01	25/05/2017	76-78	3	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	L05	10/04/2017	10-12	4	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	67	<3	<3	<3	<4	<3	<3	<3
3.00	L05	10/04/2017	13-15	5	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	LD01	11/04/2017	4-6	7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
3.00	LD01	11/04/2017	10-12	9	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	LD02	13/04/2017	1-3	11	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
3.00	LD02	13/04/2017	10-12	13	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	LD03	16/05/2017	1-3	15	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
2.00	LD03	16/05/2017	7-9	16	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
6.00	LD03	16/05/2017	19-21	17	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	LD04	13/04/2017	38-40	18	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	71	<3	<3	<3	<4	<3	<3	<3
3.00	LD04	13/04/2017	46-47	20	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	LD05	10/04/2017	16-18	22	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
2.00	LD05	10/04/2017	22-24	23	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	LD06	13/04/2017	52-54	26	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP01	13/04/2017	1-3	29	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	TP01	13/04/2017	4-6	30	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
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4.50	TP02	13/04/2017	13-15	33	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP03	13/04/2017	16-18	34	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.80	TP03	13/04/2017	19-21	35	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	TP04	13/04/2017	25-27	37	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
2.30	TP04	13/04/2017	28-30	38	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP05	13/04/2017	31-33	39	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.80	TP05	13/04/2017	34-36	40	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	TP06	13/04/2017	40-42	42	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP07	13/04/2017	43-45	43	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.00	TP07	13/04/2017	46-48	44	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP08	13/04/2017	52-54	46	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
2.00	TP08	13/04/2017	55-57	47	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP09	13/04/2017	58-60	48	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
1.80	TP09	13/04/2017	61-63	49	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
0.50	TP10	13/04/2017	64-66	50	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
4.70	TP10	13/04/2017	70-72	52	<10	<10		<2	<2	<3	<2	<1	<2	<2	<6	<30	<3	<3	<3	<4	<3	<3	<3
SGV commercial (SOM 6%)																							
CL:AIRE GAC commercial (SOM 1%)									7900000	1000			960000		26000	270000	22000	280000	14000				
CL:AIRE GAC commercial (SOM 2.5%)									13000000	1200			1300000		46000	360000	40000	450000	24000				
CL:AIRE GAC commercial (SOM 6%)									24000000	1600			2100000		92000	560000	81000	850000	47000				
S4UL commercial (SOM 1%)					220000	31000					59											99000	660000
S4UL commercial (SOM 2.5%)					530000	66000					77											170000	1300000
S4UL commercial (SOM 6%)					1300000	120000					120											350000	3000000

Method Detection Limit					<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	1,1-Dichloropropene	Tetrachloromethane	1,2-Dichloroethane	Benzene	Trichloroethene	1,2-Dichloropropane	Dibromomethane	Bromodichloromethane	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	1,3-Dichloropropane	Tetrachloroethene	Dibromochloromethane	1,2-Dibromoethane	Chlorobenzene	1,1,1,2-Tetrachloroethane	Ethylbenzene
					µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
3.00	L01	25/05/2017	70-72	2	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
7.00	L01	25/05/2017	76-78	3	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	L05	10/04/2017	10-12	4	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
3.00	L05	10/04/2017	13-15	5	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<3	<4	<4	<3	<3	<6	<3	<3	<4	5	<3	<3	<3	<3	<3	<3	<3	<3	<3
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<3	<4	<4	<3	<3	<6	<3	<3	<4	9	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	LD03	16/05/2017	1-3	15	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
2.00	LD03	16/05/2017	7-9	16	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
6.00	LD03	16/05/2017	19-21	17	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	LD05	10/04/2017	16-18	22	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP01	13/04/2017	1-3	29	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	TP02	13/04/2017	10-12	32	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
4.50	TP02	13/04/2017	13-15	33	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP03	13/04/2017	16-18	34	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	TP04	13/04/2017	25-27	37	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
2.30	TP04	13/04/2017	28-30	38	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP05	13/04/2017	31-33	39	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	TP06	13/04/2017	40-42	42	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP07	13/04/2017	43-45	43	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP08	13/04/2017	52-54	46	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
2.00	TP08	13/04/2017	55-57	47	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP09	13/04/2017	58-60	48	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1.80	TP09	13/04/2017	61-63	49	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
4.70	TP10	13/04/2017	70-72	52	<3	<4	<4	<3	<3	<6	<3	<3	<4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
SGV commercial (SOM 6%)								95000						4400000									2800000
CL:AIRE GAC commercial (SOM 1%)										3300		2100				94000							
CL:AIRE GAC commercial (SOM 2.5%)										5900		3700				190000							
CL:AIRE GAC commercial (SOM 6%)										12000		7600				400000							
S4UL commercial (SOM 1%)						2900	670	27000	1200					56000000				19000			56000	110000	5700000
S4UL commercial (SOM 2.5%)						6300	970	47000	2600					110000000				42000			130000	250000	13000000
S4UL commercial (SOM 6%)						14000	1700	90000	5700					180000000				95000			290000	560000	27000000
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Method Detection Limit					<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	p/m-Xylene	o-Xylene	Styrene	Tribromomethane	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	Propylbenzene	2-Chlorotoluene	1,3,5-Trimethylbenzene	4-Chlorotoluene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	4-Isopropyltoluene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	n-Butylbenzene
					µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes																							
1.00	L01	25/05/2017	67-69	1	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
3.00	L01	25/05/2017	70-72	2	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
7.00	L01	25/05/2017	76-78	3	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	L05	10/04/2017	10-12	4	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
3.00	L05	10/04/2017	13-15	5	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
Durnish Lands boreholes																							
0.50	LD01	11/04/2017	1-3	6	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	LD03	16/05/2017	1-3	15	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
2.00	LD03	16/05/2017	7-9	16	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
6.00	LD03	16/05/2017	19-21	17	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	LD05	10/04/2017	16-18	22	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP01	13/04/2017	1-3	29	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	TP02	13/04/2017	10-12	32	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
4.50	TP02	13/04/2017	13-15	33	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP03	13/04/2017	16-18	34	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	TP04	13/04/2017	25-27	37	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
2.30	TP04	13/04/2017	28-30	38	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP05	13/04/2017	31-33	39	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	TP06	13/04/2017	40-42	42	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP07	13/04/2017	43-45	43	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP08	13/04/2017	52-54	46	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
2.00	TP08	13/04/2017	55-57	47	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP09	13/04/2017	58-60	48	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
1.80	TP09	13/04/2017	61-63	49	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
4.70	TP10	13/04/2017	70-72	52	<5	<3	<3	<3	<3	<3	<4	<2	<4	<3	<3	<3	<5	<6	<4	<4	<4	<4	<4
SGV commercial (SOM 6%)																							
CL:AIRE GAC commercial (SOM 1%)							3300000		1400000			97000	4100000					42000					
CL:AIRE GAC commercial (SOM 2.5%)							6500000		3300000			220000	9700000					99000					
CL:AIRE GAC commercial (SOM 6%)							11000000		7700000			520000	21000000					220000					
S4UL commercial (SOM 1%)					5900000	6600000				270000											30000	4400000	
S4UL commercial (SOM 2.5%)					14000000	15000000				550000											73000	10000000	
S4UL commercial (SOM 6%)					30000000	33000000				1100000											170000	25000000	

Method Detection Limit					<4	<4	<7	<4	<27	<7
Depth	Sample Identity	Sample Date	Exova Jones Environmental Sample ID	Sample No.	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene	Hexachlorobutadiene	Naphthalene	1,2,3-Trichlorobenzene
					µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg	µg/ kg
Jetty Extension site boreholes										
1.00	L01	25/05/2017	67-69	1	<4	<4	<7	<4	<27	<7
3.00	L01	25/05/2017	70-72	2	<4	<4	<7	<4	<27	<7
7.00	L01	25/05/2017	76-78	3	<4	<4	<7	<4	<27	<7
1.00	L05	10/04/2017	10-12	4	<4	<4	<7	<4	<27	<7
3.00	L05	10/04/2017	13-15	5	<4	<4	<7	<4	<27	<7
Durnish Lands boreholes										
0.50	LD01	11/04/2017	1-3	6	<4	<4	<7	<4	<27	<7
1.00	LD01	11/04/2017	4-6	7	-	-	-	-	-	-
2.00	LD01	11/04/2017	7-9	8	<4	<4	<7	<4	<27	<7
3.00	LD01	11/04/2017	10-12	9	-	-	-	-	-	-
8.00	LD01	12/04/2017	52-54	10	<4	<4	<7	<4	<27	<7
0.50	LD02	13/04/2017	1-3	11	-	-	-	-	-	-
1.00	LD02	13/04/2017	4-6	12	<4	<4	<7	<4	<27	<7
3.00	LD02	13/04/2017	10-12	13	-	-	-	-	-	-
4.00	LD02	13/04/2017	13-16	14	<4	<4	<7	<4	<27	<7
0.50	LD03	16/05/2017	1-3	15	<4	<4	<7	<4	<27	<7
2.00	LD03	16/05/2017	7-9	16	<4	<4	<7	<4	<27	<7
6.00	LD03	16/05/2017	19-21	17	<4	<4	<7	<4	<27	<7
0.50	LD04	13/04/2017	38-40	18	-	-	-	-	-	-
1.00	LD04	13/04/2017	41-43	19	<4	<4	<7	<4	<27	<7
3.00	LD04	13/04/2017	46-47	20	-	-	-	-	-	-
4.00	LD04	13/04/2017	48	21	<4	<4	<7	<4	<27	<7
0.50	LD05	10/04/2017	16-18	22	<4	<4	<7	<4	<27	<7
2.00	LD05	10/04/2017	22-24	23	-	-	-	-	-	-
6.00	LD05	11/04/2017	34-36	24	-	-	-	-	-	-
0.50	LD06	13/04/2017	49-51	25	<4	<4	<7	<4	<27	<7
1.00	LD06	13/04/2017	52-54	26	-	-	-	-	-	-
2.00	LD06	13/04/2017	55-57	27	-	-	-	-	-	-
3.00	LD06	13/04/2017	58-60	28	<4	<4	<7	<4	<27	<7
0.50	TP01	13/04/2017	1-3	29	<4	<4	<7	<4	<27	<7
1.00	TP01	13/04/2017	4-6	30	-	-	-	-	-	-
3.90	TP01	13/04/2017	7-9	31	<4	<4	<7	<4	<27	<7
1.00	TP02	13/04/2017	10-12	32	<4	<4	<7	<4	<27	<7
4.50	TP02	13/04/2017	13-15	33	<4	<4	<7	<4	<27	<7
0.50	TP03	13/04/2017	16-18	34	<4	<4	<7	<4	<27	<7
0.80	TP03	13/04/2017	19-21	35	-	-	-	-	-	-
3.00	TP03	13/04/2017	22-24	36	<4	<4	<7	<4	<27	<7
1.00	TP04	13/04/2017	25-27	37	<4	<4	<7	<4	<27	<7
2.30	TP04	13/04/2017	28-30	38	<4	<4	<7	<4	<27	<7
0.50	TP05	13/04/2017	31-33	39	<4	<4	<7	<4	<27	<7
0.80	TP05	13/04/2017	34-36	40	-	-	-	-	-	-
2.00	TP05	13/04/2017	37-39	41	<4	<4	<7	<4	<27	<7
1.00	TP06	13/04/2017	40-42	42	<4	<4	<7	<4	<27	<7
0.50	TP07	13/04/2017	43-45	43	<4	<4	<7	<4	<27	<7
1.00	TP07	13/04/2017	46-48	44	-	-	-	-	-	-
3.80	TP07	13/04/2017	49-51	45	<4	<4	<7	<4	<27	<7
0.50	TP08	13/04/2017	52-54	46	<4	<4	<7	<4	<27	<7
2.00	TP08	13/04/2017	55-57	47	<4	<4	<7	<4	<27	<7
0.50	TP09	13/04/2017	58-60	48	<4	<4	<7	<4	<27	<7
1.80	TP09	13/04/2017	61-63	49	<4	<4	<7	<4	<27	<7
0.50	TP10	13/04/2017	64-66	50	-	-	-	-	-	-
1.00	TP10	13/04/2017	67-69	51	<4	<4	<7	<4	<27	<7
4.70	TP10	13/04/2017	70-72	52	<4	<4	<7	<4	<27	<7
SGV commercial (SOM 6%)										
CL:AIRE GAC commercial (SOM 1%)										
CL:AIRE GAC commercial (SOM 2.5%)										
CL:AIRE GAC commercial (SOM 6%)										
S4UL commercial (SOM 1%)					2000000		220000	31000	190000	102000
S4UL commercial (SOM 2.5%)					4800000		530000	66000	460000	250000
S4UL commercial (SOM 6%)					11000000		1300000	120000	1100000	590000
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Appendix C

Groundwater screening tables

METHOD DETECTION LIMIT				INORGANICS	<0.5	<0.3	<0.05	<0.006	<0.03	<5	<0.03	<1	<0.01	<0.1	<0.1
Sample ID	Sample Date.	Lab Sample Number	Sample No.		Sulphate as SO4	Chloride	Nitrate as N	Nitrite as N	Ortho Phosphate as P	Total Cyanide	Ammoniacal Nitrogen as N	Total Alkalinity as CaCO3	pH	Dibutyltin	Tributyltin
					mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	pH Units	ug/l	ug/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1		90	267.9	0.12	0.014	<0.03	1587	<0.03	682	7.3	<0.1	<0.1
LD02	10/08/2017	7-12	2		137.7	525.2	0.55	0.06	<0.03	1090	0.1	466	7.36	<0.1	<0.1
LD03	10/08/2017	13-18	3		1918.4	13829	<0.05	<0.006	<0.03	3326	<0.03	204	7.74	<0.1	<0.1
LD04	10/08/2017	19-24	4		1258.5	7814.3	<0.05	<0.006	<0.03	1760	7.89	1126	7.22	<0.1	<0.1
LD05	10/08/2017	25-30	5		91.4	267	0.12	0.014	<0.03	2637	0.22	646	7.32	<0.1	<0.1
LD06	10/08/2017	31-36	6		198.3	195.4	2.4	<0.006	<0.03	1627	<0.03	558	7.53	<0.1	<0.1
1. WHO Health 2011								3							
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016					187.5	24-187.5	37.5	0.375							
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)														0.0002	0.0002
4. Environmental Protection Agency Interim Guideline Values 2003					200	30	25	0.1	0.03	10			≥6.5 and ≤9.5		
5. European Communities (Drinking Water) Regulations 2014 Ireland							50	0.5		50					
6. Atkins WSV Commercial															

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<0.1	<20	<2.5	<3	<0.5	<12	<0.5	<0.2	<7	<1.5	<0.006	<20
Sample ID	Sample Date.	Lab Sample Number	Sample No.	Triphenyltin	Aluminium	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Copper	Chromium	Chromium (hexavalent)	Iron
				ug/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	µg/l	µg/l	mg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<0.1	261	52.5	36	<0.5	268	<0.5	285.5	<7	9.3	<0.006	37220
LD02	10/08/2017	7-12	**2**	<0.1	250	7.5	15	<0.5	259	<0.5	290.3	<7	8.3	<0.006	1458
LD03	10/08/2017	13-18	**3**	<0.1	134	4.1	179	<0.5	2500	<0.5	369	<7	6.7	<0.006	1537
LD04	10/08/2017	19-24	**4**	<0.1	355	11.8	53	<0.5	2459	<0.5	321.2	<7	4	<0.006	7391
LD05	10/08/2017	25-30	**5**	<0.1	<20	13.3	18	<0.5	227	<0.5	179.3	<7	<1.5	<0.006	<20
LD06	10/08/2017	31-36	**6**	<0.1	<20	10.9	135	<0.5	537	<0.5	109.3	<7	<1.5	<0.006	<20
1. WHO Health 2011						10	700		2400	3		2000	50		
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016					150	7.5							37.5	0.0075	
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)				0.0002						0.2					
4. Environmental Protection Agency Interim Guideline Values 2003					200	10	100		1000	5	200	30	30		200
5. European Communities (Drinking Water) Regulations 2014 Ireland									1000	5		2000	50		
6. Atkins WSV Commercial															

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<5	<0.1	<2	<1	<2	<0.1	<3	<0.1	<1.5	<3		<10
Sample ID	Sample Date.	Lab Sample Number	Sample No.	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Vanadium	Zinc	TOTAL PETROLEUM HYDROCARBONS	Aliphatics >C5-C6
				µg/l	mg/l	µg/l	µg/l	µg/l	mg/l	µg/l	mg/l	µg/l	µg/l		µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<5	56.1	6122	<1	7	15.4	<3	486.6	7.9	18		<10
LD02	10/08/2017	7-12	**2**	<5	42.4	344	<1	5	13.6	<3	273.5	4.5	12		<10
LD03	10/08/2017	13-18	**3**	<5	1062	779	<1	7	291.7	<3	8473	<1.5	126		<10
LD04	10/08/2017	19-24	**4**	<5	661.6	415	<1	34	186.4	<3	5237	<1.5	31		<10
LD05	10/08/2017	25-30	**5**	<5	34.1	667	<1	23	11	<3	143.2	<1.5	17		<10
LD06	10/08/2017	31-36	**6**	<5	24.1	77	<1	4	9.2	<3	335.8	<1.5	20		<10
1. WHO Health 2011				10			6	70		40					
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016				7.5			0.75						75		
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)				1.3				8.6							
4. Environmental Protection Agency Interim Guideline Values 2003				10	50	50	1	20	5		150		100		
5. European Communities (Drinking Water) Regulations 2014 Ireland				10			1	20		10					
6. Atkins WSV Commercial							428								198000

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
Sample ID	Sample Date.	Lab Sample Number	Sample No.	Aliphatics >C6-C8	Aliphatics >C8-C10	Aliphatics >C10-C12	Aliphatics >C12-C16	Aliphatics >C16-C21	Aliphatics >C21-C35	Total Aliphatics	Aromatics >C5-C7	Aromatics >C7-C8	Aromatics >EC8-EC10	Aromatics >EC10-EC12	Aromatics >EC12-EC16
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
LD02	10/08/2017	7-12	2	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
LD03	10/08/2017	13-18	3	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
LD04	10/08/2017	19-24	4	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
LD05	10/08/2017	25-30	5	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
LD06	10/08/2017	31-36	6	<10	<10	<5	<10	<10	<10	<10	<10	<10	<10	<5	<10
1. WHO Health 2011															
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003															
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial				144000	2900	2230					8460	9090000	96500	380000	

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<10	<10	<10	<10	POLYAROMATIC HYDROCARBONS (PAHS)	<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
Sample ID	Sample Date.	Lab Sample Number	Sample No.	Aromatics >EC16-EC21	Aromatics >EC21-EC35	Total Aromatics	TPH (Ali & Aro)		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene
				µg/l	µg/l	µg/l	µg/l		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
LD02	10/08/2017	7-12	**2**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
LD03	10/08/2017	13-18	**3**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
LD04	10/08/2017	19-24	**4**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
LD05	10/08/2017	25-30	**5**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
LD06	10/08/2017	31-36	**6**	<10	<10	<10	<10		<0.013	<0.013	<0.013	<0.015	<0.016	<0.01	<0.01
1. WHO Health 2011													0.7		
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016							7.5						0.0075		
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)											0.1		0.00017		
4. Environmental Protection Agency Interim Guideline Values 2003							10				10000		0.01	0.5	0.05
5. European Communities (Drinking Water) Regulations 2014 Ireland													0.01	0.1+	0.1+
6. Atkins WSV Commercial															

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
Sample ID	Sample Date.	Lab Sample Number	Sample No.	Benzo(g,h,i)perylene	Chrysene	Coronene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Total of 17 PAHs	POLYCHLORINATED BIPHENYLS
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
LD02	10/08/2017	7-12	**2**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
LD03	10/08/2017	13-18	**3**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
LD04	10/08/2017	19-24	**4**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
LD05	10/08/2017	25-30	**5**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
LD06	10/08/2017	31-36	**6**	<0.011	<0.011	<0.1	<0.01	<0.012	<0.014	<0.011	<0.1	<0.011	<0.013	<0.295	
1. WHO Health 2011															
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016														0.075	
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)								0.0063			2				
4. Environmental Protection Agency Interim Guideline Values 2003				0.05				1		0.05	1			0.1	
5. European Communities (Drinking Water) Regulations 2014 Ireland				0.1+						0.1+					
6. Atkins WSV Commercial											99800				

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
Sample ID	Sample Date.	Lab Sample Number	Sample No.	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	Total 7 PCBs	PHENOLS	Resorcinol	Catechol	Phenol
				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		mg/l	mg/l	mg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
LD02	10/08/2017	7-12	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
LD03	10/08/2017	13-18	3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
LD04	10/08/2017	19-24	4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
LD05	10/08/2017	25-30	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
LD06	10/08/2017	31-36	6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7		<0.01	<0.01	<0.01
1. WHO Health 2011															
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003											0.01				0.0005
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial															269

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1	SEMI VOLATILE ORGANIC COMPOUNDS	<0.1	<1	<1
Sample ID	Sample Date.	Lab Sample Number	Sample No.	m/p-cresol	o-cresol	Total cresols	Xylenols	1-naphthol	2,3,5-trimethyl phenol	2-isopropylphenol	Total Speciated Phenols HPLC		Methyl Tert-Butyl Ether	Phenol	2-Chlorophenol
				mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		1	<1	<1
LD02	10/08/2017	7-12	2	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		<0.1	<1	<1
LD03	10/08/2017	13-18	3	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		<0.1	<1	<1
LD04	10/08/2017	19-24	4	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		<0.1	<1	<1
LD05	10/08/2017	25-30	5	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		<0.1	<1	<1
LD06	10/08/2017	31-36	6	<0.02	<0.01	<0.03	<0.06	<0.01	<0.01	<0.01	<0.1		<0.1	<1	<1
1. WHO Health 2011															
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016													10		
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003													30	0.5	200
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial													33800000	269000000	

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
Sample ID	Sample Date.	Lab Sample Number	Sample No.	bis(2-Chloroethyl)ether	1,4-Dichlorobenzene	1,2-Dichlorobenzene	2-Methylphenol (o-Cresol)	Hexachloroethane	n-Nitroso-n-dipropylamine	4-Methylphenol	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	bis(2-Chloroethoxy)methane
				µg/l	µg/l	µg/l	µg/l	µg/l		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
LD02	10/08/2017	7-12	**2**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
LD03	10/08/2017	13-18	**3**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
LD04	10/08/2017	19-24	**4**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
LD05	10/08/2017	25-30	**5**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
LD06	10/08/2017	31-36	**6**	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<0.5	<1	<0.5
1. WHO Health 2011					300	1000									
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003						10					10				
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial								50000						30900000	

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Sample ID	Sample Date.	Lab Sample Number	Sample No.	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-methylphenol	2-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	2-Nitroaniline	Dimethyl phthalate
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
LD02	10/08/2017	7-12	2	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
LD03	10/08/2017	13-18	3	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
LD04	10/08/2017	19-24	4	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
LD05	10/08/2017	25-30	5	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
LD06	10/08/2017	31-36	6	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
1. WHO Health 2011							0.6				200				
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)					0.4										
4. Environmental Protection Agency Interim Guideline Values 2003											200				
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial													62700		

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
Sample ID	Sample Date.	Lab Sample Number	Sample No.	2,6-Dinitrotoluene	3-Nitroaniline	Dibenzofuran	4-Chlorophenylphenylether	2,4-Dinitrotoluene	Diethyl phthalate	4-Nitroaniline	Azobenzene	4-Bromophenylphenylether	Hexachlorobenzene	Pentachlorophenol	Carbazole
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
LD02	10/08/2017	7-12	2	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
LD03	10/08/2017	13-18	3	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
LD04	10/08/2017	19-24	4	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
LD05	10/08/2017	25-30	5	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
LD06	10/08/2017	31-36	6	<1	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<0.5
1. WHO Health 2011														9	
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)														0.4	
4. Environmental Protection Agency Interim Guideline Values 2003													0.03	2	
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial															

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<1.5	<1	<5	<1	<10	VOLATILE ORGANIC COMPOUNDS	<2	<3	<0.1	<1	<3	<3
Sample ID	Sample Date.	Lab Sample Number	Sample No.	n-Dibutyl phthalate	Butylbenzyl phthalate	bis(2-Ethylhexyl) phthalate	n-Dioctyl phthalate	4-Nitrophenol		Dichlorodifluoromethane	Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane
				µg/l	µg/l	µg/l	µg/l	µg/l		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
LD02	10/08/2017	7-12	2	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
LD03	10/08/2017	13-18	3	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
LD04	10/08/2017	19-24	4	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
LD05	10/08/2017	25-30	5	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
LD06	10/08/2017	31-36	6	<1.5	<1	<5	<1	<10		<2	<3	<0.1	<1	<3	<3
1. WHO Health 2011												0.3			
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016						6						0.375			
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)						1.3									
4. Environmental Protection Agency Interim Guideline Values 2003				2		8									
5. European Communities (Drinking Water) Regulations 2014 Ireland												0.5			
6. Atkins WSV Commercial											5500	249		4180000	

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
Sample ID	Sample Date.	Lab Sample Number	Sample No.	1,1-Dichloroethene	Dichloromethane (DCM)	trans-1,2-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	2,2-Dichloropropane	Bromochloromethane	Chloroform	1,1,1-Trichloroethane	Carbontetrachloride	1,1-Dichloropropene	Benzene
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
LD02	10/08/2017	7-12	**2**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
LD03	10/08/2017	13-18	**3**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
LD04	10/08/2017	19-24	**4**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
LD05	10/08/2017	25-30	**5**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
LD06	10/08/2017	31-36	**6**	<3	<5	<3	<3	<3	<1	<2	<2	<2	<2	<3	<0.5
1. WHO Health 2011					20			50			300		4		10
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016					15			0.375							0.75
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)					20								12		8
4. Environmental Protection Agency Interim Guideline Values 2003											12	500			1
5. European Communities (Drinking Water) Regulations 2014 Ireland											100~				1
6. Atkins WSV Commercial				65600	1500000	65700	1110000	54600			369000	1270000	3310		8460

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
Sample ID	Sample Date.	Lab Sample Number	Sample No.	1,2-Dichloroethane	Trichloroethene	1,2-Dichloropropane	Dibromomethane	Bromodichloromethane	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	Tetrachloroethene	1,3-Dichloropropane	Dibromochloromethane
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
LD02	10/08/2017	7-12	**2**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
LD03	10/08/2017	13-18	**3**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
LD04	10/08/2017	19-24	**4**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
LD05	10/08/2017	25-30	**5**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
LD06	10/08/2017	31-36	**6**	<2	<3	<2	<3	<2	<2	<5	<2	<2	<3	<2	<2
1. WHO Health 2011				30	20	40		60		700	20		40		100
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016				2.25	7.5=					525			7.5=		
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)				10											
4. Environmental Protection Agency Interim Guideline Values 2003				3	70					10			40		
5. European Communities (Drinking Water) Regulations 2014 Ireland				3	10-			100~					10-		100~
6. Atkins WSV Commercial				3540		11100		6820		9090000		208000	174000		38700

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
Sample ID	Sample Date.	Lab Sample Number	Sample No.	1,2-Dibromoethane	Chlorobenzene	1,1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylene	o-Xylene	Styrene	Bromoform	Isopropylbenzene	1,1,2,2-Tetrachloroethane	Bromobenzene	1,2,3-Trichloropropane
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	**1**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
LD02	10/08/2017	7-12	**2**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
LD03	10/08/2017	13-18	**3**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
LD04	10/08/2017	19-24	**4**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
LD05	10/08/2017	25-30	**5**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
LD06	10/08/2017	31-36	**6**	<2	<2	<2	<1	<2	<1	<2	<2	<3	<4	<2	<3
1. WHO Health 2011							300	Total 500		20	100				
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003					1		10	10							
5. European Communities (Drinking Water) Regulations 2014 Ireland											100~				
6. Atkins WSV Commercial					1300000	96700	1250000	413000	503000	3530000	1770000	389000	650000	87700	

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Sample ID	Sample Date.	Lab Sample Number	Sample No.	n-Propylbenzene	2-Chlorotoluene	1,3,5-Trimethylbenzene	4-Chlorotoluene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	1,3-Dichlorobenzene	4-iso-Propyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017															
LD01	10/08/2017	1-6	1	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
LD02	10/08/2017	7-12	2	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
LD03	10/08/2017	13-18	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
LD04	10/08/2017	19-24	4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
LD05	10/08/2017	25-30	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
LD06	10/08/2017	31-36	6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1. WHO Health 2011													300		1000
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016															
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)															
4. Environmental Protection Agency Interim Guideline Values 2003															10
5. European Communities (Drinking Water) Regulations 2014 Ireland															
6. Atkins WSV Commercial				1100000					9830						

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values

METHOD DETECTION LIMIT				<2	<3	<3	<3
Sample ID	Sample Date.	Lab Sample Number	Sample No.	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene	Hexachlorobutadiene	1,2,3-Trichlorobenzene
				µg/l	µg/l	µg/l	µg/l
ROUND 1 - 15th June 2017							
LD01	10/08/2017	1-6	**1**	<2	<3	<3	<3
LD02	10/08/2017	7-12	**2**	<2	<3	<3	<3
LD03	10/08/2017	13-18	**3**	<2	<3	<3	<3
LD04	10/08/2017	19-24	**4**	<2	<3	<3	<3
LD05	10/08/2017	25-30	**5**	<2	<3	<3	<3
LD06	10/08/2017	31-36	**6**	<2	<3	<3	<3
1. WHO Health 2011				1		0.6	
2. European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016							
3. European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (AA-EQS Other surface water)					0.4		0.4
4. Environmental Protection Agency Interim Guideline Values 2003					0.4	0.1	
5. European Communities (Drinking Water) Regulations 2014 Ireland							
6. Atkins WSV Commercial							

Exceedance of 2 or 3

Exceedance of 4

*, =, +, - sum of values