ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The Burrow CFERM scheme

Appendix 10B

Volume 3

ROGERSTOWN OUTER ESTUARY (PORTRANE – RUSH) COASTAL DEFENCE PROJECT

Preliminary Ground Investigation Report (GIR)

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1 AIMS AND LIMITATIONS OF REPORT

1.1 Objective of report

RPS have been engaged by the Fingal County Council (FCC) to provide a coastal flood and erosion risk assessment and options report for the for the Rogerstown Outer Estuary (Portrane – Rush) Coastal Defence Project. A preliminary Ground Investigation Report (GIR) is required to support this report.

This GIR has been prepared by RPS to summarise and interpret ground conditions present within the site and to provide a preliminary conceptual site model based on the results of the desk study, and preliminary ground investigations completed in 2022.

The structure of the report is based on the typical content structure of a geotechnical report outlined in Chapter 7 of *CIRIA C731: The International Levee Handbook* (CIRIA, 2013) which complies with the reporting requirements for a GIR outlined in Eurocode 7 (National Standards Authority of Ireland, 2013). Additional sections have been added where deemed appropriate to provide additional context.

1.2 Intended use of report and limitations of liability

This report is intended for use in the preliminary design of the coastal scheme proposed within the Rogerstown CFRAM study area only.

The report utilises data prepared by others as part of recent ground investigations. RPS is not liable for any errors or omissions in this data. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

2 INTRODUCTION

2.1 Site Location

The site is located along the Portrane beach, and banks of the Rogerstown Estuary, in Co. Dublin as shown in Figure 2-1.

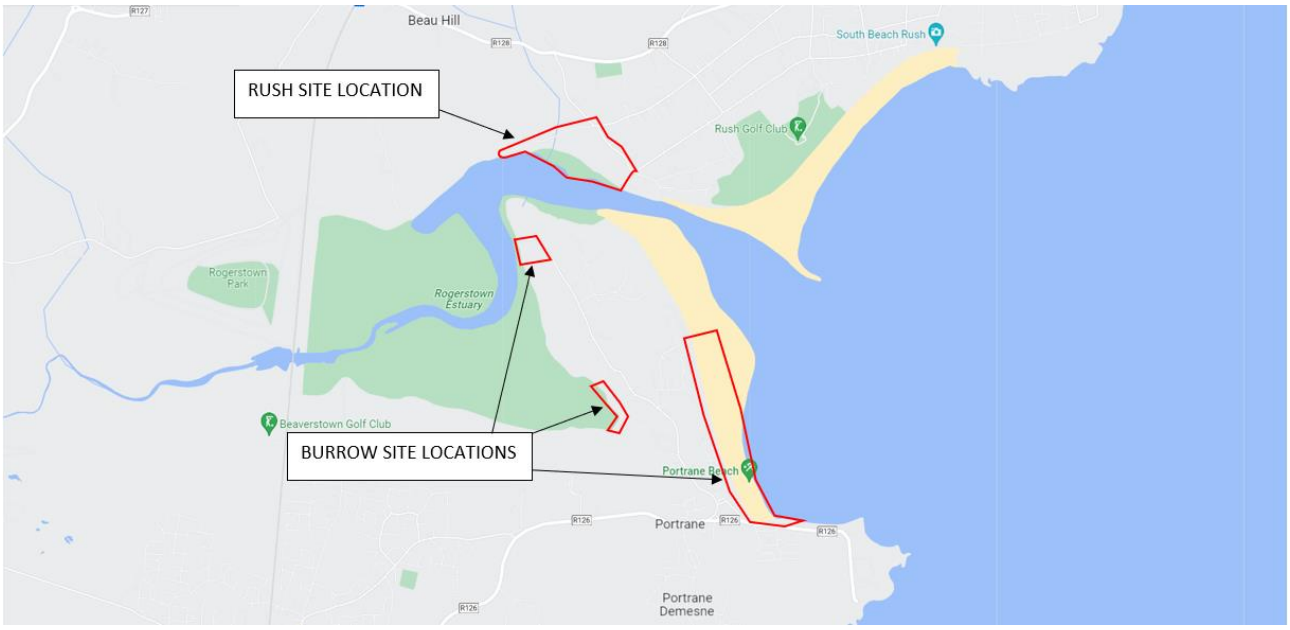

Figure 2-1: Site Location

2.2 Site Setting

The site is located along on the banks of the Rogerstown Estuary and Portrane Beach. The Rush area is located to the north of the estuary. The Burrow area is located on the Portrane peninsula located to the south-east of the estuary.

2.2.1 The Rush

The proposed work within the Rush to the north of the estuary comprises of improvement of the seawalls already present along Channel Road, and South Shore Road. Seawall heights of c. 1.0 to 1.5 m above existing road levels are proposed. This would be an increase of c. 0.5 m in areas where existing seawalls are present.

South Shore Road comprises of a flat residential road. An existing stone wall of approximately c. 0.5 m height is present to the west of the road which is proposed to be upgraded. The area between the wall and the estuary is a flat well grassed green.

Channel Road comprises of a road retained by existing mass gravity retaining wall along the edge of the estuary. The wall is approximately 3m high and retains the sealed road. The land immediately adjacent to this wall occupied by housing, farmland, infrastructure and industrial areas, and is typically southward sloping.

2.2.2 Burrow

The proposed work within the Burrow to the south-east of the estuary comprises of improvement of the seawalls already present along Marsh Lane, and construction of a new sea wall along a small length of Quay Road, improvement of embankments located adjacent to Marsh Lane and Burrow Road, and construction of T-Groynes along Portrane Beach.

Marsh Lane is located in the south-west corner of the peninsula forming the Burrow. The site includes Marsh Lane which comprises of a narrow road retaining by mass gravity concrete retaining wall c. 1.5 m high. The residential area adjacent to the North of Marsh Lane is also included in this site and is located along the edge of the residential properties. The site has a slight westerly slope. An existing embankment comprising of loosely mounded local materials is present along the western side of the residential properties. Seawall heights of c. 1.0 m above existing road levels are proposed. This would be an increase of c. 0.5 m in areas where existing seawalls are present. Flood defence embankment heights of c. 1.0 to 1.5 m are also proposed along some of this area adjacent to the sea wall.

Burrow Road is located in the north-west of the peninsula forming the Burrow. The area is located on the estuary side of the Burrow and is typically westward sloping. The proposed defence works within this area are to protect two residential properties. An existing embankment comprising of loosely mounded local materials is currently present around these properties. Flood defence embankment heights of c. 1.0 to 1.5 m above existing ground levels are proposed here.

Portrane beach is located along the coastal (eastern) side of the peninsula forming the Burrow. The beach slopes towards the sea with a steep wave cut sand bluff of approximately 1 to 2 m height forming the landward side of the beach. Concrete blocks have temporarily been placed across the beach in areas to temporarily protect the cliff from erosion. T-Groynes are proposed along the beach to reduce erosion and allow for sand to be re-deposited.

Quay Road is located in the south-east of the peninsula forming the Burrow. The site is located to the north-east of the intersection between Burrow Road and Quay Road. The site has a slight north-east slope. Public toilets and a grassed area are currently present across the site. The area is adjacent to a small sand bluff above Portrane Beach of approximately 2 m height. A seawall c. 1 m in height above road level is proposed in this area.

2.3 Site Geology

The Geological Survey Ireland 100k bedrock (Geological Survey Ireland, 2021)and quaternary sediments (Geological Survey Ireland, 2021) layers available on the Geological Survey Ireland Spatial Resources website were reviewed (Geological Survey Ireland, 2021).

The bedrock geology of the site comprises of Tober Colleen Formation, Malahide Formation, or Donabate Formation as shown in the figures included in Appendix D. The Tober Colleen Formation comprises of shale, limestone and conglomerate. The Malahide Formation comprises of limestone or shale. The Donabate Formation comprises of sandstone and conglomerate.

The surface geology of the site comprises of windblown sands, marine beach sands, estuarine deposits, alluvial deposits (silts and clays), and Irish sea till (clay, silt, sand and gravel) derived from limestone as shown in the figures included in Appendix D. Made Ground is also anticipated in areas due to human activity such as construction of roads and construction of residential properties.

The site geology for the varying areas is summarised in Table 2-1.

Table 2-1: Summary of Geologies

Rush / Burrow	Area	Surface Geology	Bedrock Geology
Rush	Channel Road	Estuarine deposits or Irish Sea Till derived from Lower Palaeozoic sandstones and shales	Tober Colleen Formation comprising of shale, limestone and conglomerate
	South Shore Road	Windblown sands	Tober Colleen Formation comprising of shale, limestone and conglomerate
Burrow	Marsh Lane	Estuarine deposits or Windblown sands	Malahide Formation comprising of limestone or shale
	Burrow Road	Estuarine deposits	Tober Colleen Formation comprising of shale, limestone and conglomerate

Rush / Burrow	Area	Surface Geology	Bedrock Geology
	Portrane Beach	Marine beach sands or Windblown sands	Malahide Formation comprising of limestone or shale
	Quay Road	Irish Sea Till derived from Lower Palaeozoic sandstones and shales	Donabate Formation comprising of sandstone and conglomerate

3 DESK STUDY

A desk study was conducted on the site prior to specification of the ground investigations. No existing investigations or publicly available boreholes were available for the site.

The desk study covered the review of publicly available historic maps, geological maps and aerial photos. Findings from the review of geological maps is outlined in Section 2.3, while findings from review of historic maps and aerial photos are outlined below.

3.1 Historic Maps

Historic maps available on the Ordnance Survey Ireland (OSI) online GeoHive portal were reviewed as part of the desk study. The available maps are from the 1800s and 1900s and show the regression of the coast line on the exposed eastern side of Portrane between time of publication and present. The coast line in other areas appears similar to today.

The maps with proposed works, and an outline of the current state of the coastline are shown in Appendix D.

3.2 Historic Aerials

Historic aerials available on the Ordnance Survey Ireland (OSI) online GeoHive portal were reviewed as part of the desk study. The available maps are from the 1995 and 2018 and show regression of the coast line on the exposed eastern side of Portrane between the date they were taken and present. The coast line in the earliest of these aerials appears to show retreat from the coast line drawn in the Historic maps discussed above. The coast line in other areas of the site appears similar to today.

The aerials with proposed works, and an outline of the current state of the coastline are shown in Appendix D.

4 OBJECTIVES OF INVESTIGATIONS

The ground investigations have been undertaken in order to prepare a preliminary geotechnical Conceptual Site Model (CSM) of the site for use in preliminary design of coastal defence measures.

The modifications / improvements are required to ensure the flood defence system is sufficient to protect the area from coastal flood processes resulting from 1 in 200 year events. This includes upgrades of existing flood defence embankments and seawalls, or construction of new flood defence embankments or seawalls.

5 METHODS OF INVESTIGATION

Intrusive ground investigations were undertaken with laboratory testing following the field component of these works. The site investigation was undertaken in accordance with Eurocode 7 Part 2: Ground Investigation and testing (National Standards Authority of Ireland, 2007) and the Code of practice for ground investigations (British Standards Institution, 2015).

A site walkover surveying was undertaken at the same time as intrusive ground investigations. This is covered in Section 7.

5.1 Intrusive Investigations

Intrusive ground investigations were undertaken by Ground Investigations Ireland (GII) between 14 January 2022 and 11 March 2022. Intrusive investigations comprised of:

- Cable percussive borehole drilling;
- Rotary follow on drilling for some cable percussive boreholes;
- Window sampling with dynamic penetration testing.

The factual Ground Investigation report was issued on 31 May 2022.

5.1.1 Sampling frequency

Sampling primarily comprised of bulk and disturbed samples from window samplers and boreholes. Two undisturbed UT sample were taken from a single borehole where soft cohesive soils were encountered. Additional undisturbed samples were unable to be taken due to the primarily granular in nature of soils encountered which are and unsuitable for undisturbed sampling.

Environmental samples were taken from the upper one to two metres where Made Ground or material with potential for contamination from boreholes and window samples was encountered.

Sampling is recorded on investigation logs included within the factual GI report (Appendix B).

5.1.2 In situ testing methods and frequency

Standard Penetration Tests (SPT) were undertaken at approximately 1m intervals within cable percussive boreholes in accordance with EN ISO 22476-3.

Dynamic Probing (DP) was undertaken at each window sampler location using DPH equipment complying with the requirements of BS 1377: Part 9. Blow counts were recorded for 100 mm intervals.

SPT and DP testing results are recorded on investigation logs included within the factual GI report (Appendix B).

5.1.3 Laboratory testing and quantities

The following geotechnical testing was undertaken on selected samples taken as part of the ground investigations:

- Moisture content tests – 105 no.
- Atterberg limit tests – 22 no.
- Particle size distribution tests – 74 no.
- Laboratory vane tests – 1 no.
- Undrained unconsolidated triaxial tests – 1 no.
- Oedometer tests – 2 no.

The following geo-environmental testing was undertaken on selected samples taken as part of the ground investigations:

- pH, Chloride and Sulphate as SO4 - 21 no.
- Suite E – 6 no.

5.1.4 Instrumentation and installation records

Standpipes were installed in 4 no. boreholes following completion of drilling at these locations. Groundwater was recorded between 1 mBGL and 2.5 mBGL in the monitoring installations during subsequent groundwater monitoring.

Instrumentation installation details are included in investigation logs. Investigation logs and groundwater monitoring results are included in factual ground investigation (Appendix B).

6 DEVIATIONS FROM PLANNED SCOPE OF WORK

Between the period of tender award and investigation commencement, the proposed coastal defence works within some areas were removed following landowner objections. Subsequently, ground investigations within these areas were deleted. These areas are shown in Figure 6-1 to Figure 6-3.

Figure 6-1: Investigations removed between tender award and ground investigation commencement (South-west end of Portrane peninsula adjacent to Burrow Rd)

Figure 6-2: Investigations removed between tender award and ground investigation commencement (North end of Portrane peninsula)

Figure 6-3: Investigations removed between tender award and ground investigation commencement (Adjacent ot rail bridge below Baleally Lane)

In addition to the above deletions, further adjustments to the investigations were made during the investigations due to access or service constraints. A summary of all significant deviations to ground investigations is included in Table 6-1. Minor location adjustments were also made due to local access and service constraints which are not recorded as deviations in the below. Locations with CP/RC in the proposed GI was re-labelled as BH by the contractor in the factual GI report. These terms are used interchangeably in this report.

Table 6-1: Summary of significant deviations from planned scope of work

Location ID	Deviation	Reason for Deviation
WS/DP01	None	-
BH02	None	-
WS/DP03	None	-
WS/DP04	None	-
BH05	Relocated	Unable to drill where proposed due to local access constraints. Relocated 25m south-east to easily accessible location
TP06	Changed to WS/DP	Modified to window sampler and relocated 7.5 m north-west to minimise residential property disturbance.
TP07	Removed	No landowner consent for ground investigations within the area
TP08	Removed	Coastal defence works within area removed following landowner objections. Ground investigations subsequently deleted.
TP09		
TP10		
BH11		
TP12		
TP13		
TP14	Relocated / Changed to BH	Unable to dig/drill where proposed as no landowner consent. Relocated inside residential property and modified to window sampler to minimise residential property disturbance. BH switched from location 16 to 15 to minimise backyard disturbance.
TP15		
BH16		
TP17		
TP18	Removed	Coastal defence works within area removed following landowner objections. Ground investigations subsequently deleted.
BH19		
TP20		

Location ID	Deviation	Reason for Deviation
WS/DP21	None	-
WS/DP22	None	-
WS/DP23	None	-
WS/DP24	None	-
WS/DP25	None	-
WS/DP26	Relocation	Relocation 5 to 15m up the beach to avoid tide.
WS/DP27		
WS/DP28	None	-
BH29	Method adjustment	Upper 3m drilled using window sampler.
WS/DP30	None	-
BH31	Relocation	Relocation c. 10m to ramp edge to maintain local access
WS/DP32	DP only	Dynamic probing only due to inability to penetrate with window sampler
BH33	None	-
WS/DP34	Relocation / DP only	Relocation c. 15m to maintain local access and avoid local services. Dynamic probing only due to inability to penetrate with window sampler
WS/DP35	DP only	Dynamic probing only due to inability to penetrate with window sampler
WS/DP36	Changed to BH	BH switched from location 38 to location 36 to ensure sufficient width to maintain road access
WS/DP37	None	-
BH38	Changed to WS/DP	BH switched from location 38 to location 36 to ensure sufficient width to maintain road access
WS/DP39	None	-
WS/DP40	Relocation	Relocation c. 5 to 10m to west to avoid works in the road.
WS/DP41		
WS/DP42		
WS/DP43		
WS/DP44		
BH45		
WS/DP46		
WS/DP47	Removed	No landowner consent for ground investigations within the area

7 SITE WALKOVER SURVEY

Site walkover surveying was undertaken during the ground investigations by a geotechnical engineer. Visual cues relating to site geotechnical conditions were noted which have been considered in the preparation of the preliminary CSM.

Observations from the walkover survey are detailed in the below sections, while photos are included in Appendix E. The location of photos is shown in the site plan included in Appendix A.

7.1 Marsh Lane

The area is located on the estuarian side of the Rush peninsula. The area of the wall upgrade is located along the coastal edge of an existing road retained by a concrete wall. The land to the north west of the road of the road comprises marsh vegetated with reeds and other estuarian flora. A stream crosses below the road into the area, flowing from the south east. Bankside exposures along the stream indicate that the area is underlain by soft silt and clay.

The area of the defence embankment is located along the coastal edge of Marsh Lane to the north of the wall upgrade discussed above. The area comprises of a relatively flat area of well vegetated land. Stone and construction equipment is currently located within the area.

The proposed embankment will extend along the coast in front of existing residential properties. An existing non-engineered embankment is present along this boundary. The area is overgrown. A track runs along the base of the existing embankment which is frequented by walkers.

The area is shown in photos P34 to P46.

7.2 Burrow Road

The area is located on the estuarian side of the Rush peninsula. The northern extent of the area comprises a narrow, paved country road built above the houses to the south. The land below the road slopes to the south-west towards the coast.

The western extent of the proposed embankment is to be located along the coastal edge of the houses. An existing soil mound is located in this location. The top and east face of the existing embankment is well grassed while the soil is occasionally exposed on the coastal face of the mound due to wave induced erosion. Exposed soil along the coastal face of was observed to be Made Ground comprising sandy gravelly clay probably of glacial origin. Occasional rubble debris was observed along the coastal side of this embankment. A stony beachfront is located to the west of the embankment.

The southern extent of the embankment comprises of mounded soil located along the southern boundary of the houses. The mound is unmaintained and overgrown. The adjacent area comprises of an unoccupied farm paddock.

The area is shown in photos P25 to P33.

7.3 Portrane Beach

The southern end of the beach is located below the Quay Road and Burrow Road intersection. The exposed bluff along the southern extent comprises sandy gravelly clay. Evidence of fill is also present in some areas overlying natural materials and a sandy beach is located to the east of the bluff. Occasional pre-cast concrete wave dissipation structures have been placed along the beach to reduce erosion of the exposed bluff.

The centre and northern portions of the area also comprise a sandy beach with periodic precast concrete wave dissipation structures present. The bluff between the beach and residential/ rural areas behind the beach to the west is composed of sand, with clay being the dominant material in the bluff to the south of the area. The bluff was observed to be up to 5m high in some locations. Evidence of recent erosion is apparent due to the presence of well grassed topsoil at beach level. Temporary erosion protection measures to protect individual properties were also observed along the bluff comprising sandbags and/or rubble stockpiles along the bluff edge.

The area is shown in photos P51 to P72.

7.4 Quay Road

The area comprises a well grassed flat green. Timber bollards are currently present along the road edge, with a toilet block also located within the area. The green is flat, with a soil bluff forming the boundary between beach and the green. The Quay Rd coastal bluff between the green and beach is approximately 2 m high. The southernmost section is protected by rock rip rap. The bluff along the Burrow Rd length between the green and beach is unprotected and exposed. The bluff comprises sandy gravelly clay consistent with the glacial till anticipated within the area.

The area is shown in photos P47 to P50.

7.5 South Shore Road

The proposed seawall in this area is located on the coastal side of the yacht storage park in the south, before running along the seaward edge of South Shore Road north of the yacht storage facility.

The area below the yacht park is retained by an existing concrete retaining wall to the south. A rip rap slope face protects the western edge. A concrete path is located along the top of this slope.

The northern edge of the yacht park borders an open green area which occupies the land between the beach and South Shore Road. The green is well grassed and flat. The coastal boundary of this park comprises a moderately sloping stony beach.

An existing stone wall approximately 0.5m high separates South Shore Road from the green area. Breaks are present in the wall to provide access to the green. Sandbags used as temporary flood control measures were present across some of these wall breaks.

A culverted stream discharges to the estuary from the beneath the junction of South Shore Rd and Channel Rd. The north western edge of the green in this area is formed by a soil bluff of approximately 1 m height.

The area is shown in photos P1 to P10.

7.6 Channel Road

The proposed upgraded seawall in this area is located on the coastal side of the road which runs west from the junction with South Shore Rd.

The existing stone and concrete seawall is approximately 0.7m is above the height of the road. The wall incorporates periodic drainage holes to attenuate any flooding from the area. The road crosses a stream via a stone and concrete bridge which ties into the existing wall.

Approximately halfway along Channel Road to the west the wall appears to be newer and concrete only. The top of the wall is at the level of the road. A steep layer of rock rip rap has been placed along the downslope side of the wall. The rip rap has been locally dislodged at some locations along the walls' length.

A ramp leading down to beach level is located at the western end of Channel Rd. The coastline here comprises an approximately 2m high soil bluff. Rubble has been placed across the base of the bluff.

The area is shown in photos P11 to P24.

8 INTERPRETATION OF SUBSURFACE CONDITIONS

8.1 Ground Conditions

The below sections provide a summary of typical ground conditions encountered in each area.

Encountered and interpretated ground conditions for each investigation location are shown graphically in the ground investigation plan and profiles included in Appendix A, and Conceptual Site Model (CSM) presented in Appendix F.

8.1.1 Marsh Lane

Typical ground conditions encountered within the Marsh Lane area are summarised in Table 8-1.

Table 8-1: Summary of encountered ground conditions – Marsh Lane

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	0.1 – 0.2	Topsoil (1)	Brown slightly gravelly sandy TOPSOIL
0 – 0.2	0.3 – 1.3	Made Ground (2)	TARMACADAM / Coarse Gravel (804 fill) / Loose brown clayey gravelly coarse SAND / slightly gravelly slightly sandy CLAY
0.4 – 0.7	1.1 – 1.4	Windblown Sands (3)	Loose to medium dense brown gravelly SAND
0.5 – 2.0	0.5 – 6.7	Estuarine Deposits (4)	Soft grey slightly sandy clayey SILT or silty CLAY with shells / Loose grey sandy GRAVEL
1.0 – 4.6	9.5 – 17.0	Glacial Till (5)	Firm to stiff slightly sandy slightly gravelly silty CLAY with occasional cobbles / Medium dense grey sandy clayey fine to coarse angular to subangular GRAVEL
18	-	Malahide Formation (6)	Medium strong grey fossiliferous LIMESTONE. Partially weathered. (Possible Boulder)

Notes:

1. Topsoil not encountered in BH02 or BH05. Forms part of Made Ground layer where overlays Made Ground.
2. Made Ground composition varies across the site.
3. Inferred in WS03, WS04, BH05, WS06.
4. Composition of Estuarine deposits vary across the site. Typically soft or loose.
5. Depth to Glacial Till appears to increase from south to north.
6. Only encountered in BH05.

Windblown sands appear to be present over the Estuarine deposits in the northern portion of the site only. The depth to Glacial Till appeared shallower in the south of the site which corresponds with the conditions shown in the Geological maps discussed in Section 2.3.

8.1.2 Burrow Road

Typical ground conditions encountered within the Burrow Road area are summarised in Table 8-2.

Table 8-2: Summary of encountered ground conditions – Burrow Road

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	0.1 – 0.3	Topsoil	Brown slightly gravelly sandy TOPSOIL
0.1 – 0.3	c. 2	Made Ground (1)	Sandy silty gravelly CLAY
0.15 – 1.05	c. 8.9	Estuarine Deposits (2)	Loose grey/brown slightly gravelly fine SAND with shell fragments
9.2	-	Glacial Till (3)	Very stiff grey slightly sandy CLAY

Notes:

Depth (mBGL)	Thickness (m)	Unit	Typical Description

1. Made Ground not drilled through, however noted based on site walkover and presence of existing embankment in areas. Description based on exposures visible at time of walkover
2. Composition of Estuarine deposits vary across the site. Typically soft or loose. Possible presence of some Windblown Sands above this layer.
3. Only encountered in BH15

8.1.3 Portrane Beach

Typical ground conditions encountered within the Portrane Beach area are summarised in Table 8-3.

Table 8-3: Summary of encountered ground conditions – Portrane Beach

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	> 4	Marine Beach Sand (1)	Loose to medium dense grey slightly gravelly SAND

Notes:

1. Encountered to max depth of 3 mBGL in window samples before hole collapse. Dynamic probes penetrated to a maximum depth of 3.9m.

8.1.4 Quay Road

Typical ground conditions encountered within the Quay Road area are summarised in Table 8-4.

Table 8-4: Summary of encountered ground conditions – Quay Road

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	0.1 – 0.15	Topsoil	Brown slightly gravelly sandy TOPSOIL
0.1 – 0.15	0.3 – 1.2	Made Ground (1)	Brown slightly sandy slightly gravelly CLAY with glass, brick and concrete fragments
0.3 – 1.2	c. 3.5	Windblown sands (2)	Loose to medium dense light brown slightly gravelly fine to coarse SAND
3.8	c. 7.0	Glacial Till (3)	Stiff brown slightly sandy slightly gravelly CLAY with occasional cobbles
10.8	-	Donabate Formation (4)	Extremely weak to weak red fine to coarse grained SANDSTONE. Destructed to highly weathered

Notes:

1. Composition of Made Ground varies across the site.
2. Inferred as windblown sands based on geology map. Some materials from this layer may be Marine beach sands may also be present.
3. Glacial till only encountered in BH29.
4. Donabate formation only encountered in BH29.

8.1.5 Channel Road

Typical ground conditions encountered within the Channel Road area are summarised in Table 8-5.

Table 8-5: Summary of encountered ground conditions – Channel Road

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	0.2 – 0.9	Made Ground (1)	TARMACADAM / Coarse Gravel / Brown clayey gravelly fine to coarse SAND
0.6 – 0.9	c. 4	Estuarine Deposits (2)	Loose very clayey fine to coarse SAND / GRAVEL or Soft grey slightly sandy slightly gravelly silty CLAY

Depth (mBGL)	Thickness (m)	Unit	Typical Description
0.2 – 4.6	3.2 – 5.6	Glacial Till (3)	Stiff brown slightly sandy slightly gravelly CLAY or Medium dense to dense clayey GRAVEL / SAND
4.0 – 6.3	-	Tober Colleen Formation (4)	Medium strong to strong fine grained grey LIMESTONE interbedded with weak dark grey MUDSTONE. Distinctly weathered to unweathered

Notes:

1. Composition of Made Ground varies across the site. Topsoil encountered over Made Ground in road verge.
2. Only encountered in WS/DP38 and WS/DP39
3. Glacial till not encountered in WS/DP39
4. Donabate formation only encountered in BH29.

8.1.6 South Shore Road

Typical ground conditions encountered within the South Shore Road area are summarised in Table 8-6.

Table 8-6: Summary of encountered ground conditions – South Shore Road

Depth (mBGL)	Thickness (m)	Unit	Typical Description
Surface	0.1 – 0.45	Topsoil (1)	TARMACADAM / Coarse Gravel / Brown clayey gravelly fine to coarse SAND
0 – 0.45	0.25 – 1.5	Made Ground (2)	Brown slightly gravelly slightly sandy clay with grass, plastic and glass
0.6 – 1.6	c. 7.7	Estuarine Deposits (3)	Loose the medium dense light brown slightly gravelly SAND with shell fragments
9.3	-	Glacial Till (4)	Very stiff grey slightly sandy silty CLAY

Notes:

1. Topsoil encountered over Made Ground and is included in Made Ground unit in CSM. Not encountered in WS46.
2. Composition of Made Ground varies across the site.
3. Clay and silt lenses logged in layer.
4. Glacial till only encountered in BH45

8.2 Ground Materials

Individual ground material units are discussed in the below sections. Characteristic strength and stiffness parameters determined based on the results of the ground investigations are summarised in Section 8.2.10

8.2.1 Topsoil

Topsoil was encountered across the surface in vegetated areas of the site. Topsoil will be stripped from the site where present prior to construction of any of the proposed measures. Detailed classification of this layer is not necessary.

8.2.2 Made Ground

Made ground was encountered across all areas except Portrane Beach. The below is based on all made ground encountered across the site. The composition of Made Ground will vary across the site. Local conditions should be considered in design.

8.2.2.1 Description

The composition and description of Made Ground varied significantly across the site. Made ground below roads was typically described as of TARMACADAM / Coarse Gravel (804 fill). Elsewhere, Made Ground was described as Loose brown clayey gravelly coarse SAND / slightly gravelly slightly sandy CLAY, brown slightly sandy slightly gravelly CLAY with glass, brick and concrete fragments, and brown slightly gravelly slightly sandy clay with grass, plastic and glass

8.2.2.2 Classification

Moisture content tests were undertaken on 26 no. samples taken from within this layer with results ranging from 4.7 % and 51 % with mean value of 16.2 %.

Atterberg Limit tests were undertaken on the percentage of materials passing the 425 µm sieve from 5 no. samples taken from within this layer which were logged as silt or clay. Testing indicated that two of these samples were non plastic. The percentage of materials recorded as passing the 425 µm sieve from the remaining 3 samples ranged from 25 % and 60 % with mean value of 43 %. Liquid Limits results from these 3 samples ranged from 27 % and 37 % with mean value of 33 %. Plasticity Index values ranged from 13 % and 19 % with mean value of 16 %.

Particle Size Distribution tests were undertaken on 12 no. samples taken from within this layer. 100% of materials passed the 63 mm sieve (Cobble /Gravel boundary). The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 16 % and 82 % with mean value of 50 %. The percentage of materials passing the 63 µm sieve (Sand / Silt boundary) ranged from 3 % and 28 % with mean value of 13 %.

A saturated unit weight of 19 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.2.3 Strength

3 no. SPTs were undertaken within this layer. SPT N values ranged from 12 and 42 with mean value was 23. 24 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 2 and 59 with a mean value of 19. This correlates to an undrained shear strength between 8 kPa and > 200 kPa where Made Ground comprises of clay of silt.

Review of typical angle of shearing resistance outline in CIRIA R143: The Standard Penetration Test (CIRIA, 1995) correlates to an angle of internal friction of between 30° and 33° for SPT between 10 and 20.

A characteristic drained angle of internal friction of 32° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted.

8.2.2.4 Stiffness and Compressibility

A characteristic drained modulus of elasticity (E') of 12 MPa and undrained modulus of elasticity (E_u) of 20 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6, and SPT to Eu correlation of 1 (CIRIA, 1995).

8.2.2.5 Environmental

pH, sulphate and chloride tests were conducted on 21 no. samples taken from this layer.

Recorded pH values ranged between 7.5 and 9.12 with mean value of 8.34. Water soluble sulphate levels as SO_4 2:1 ranged from 0.0006 and 0.46 g/l with a mean value of 0.11 g/l. The chloride tests recorded soluble chloride results from 1.3 mg/kg and 1,598 mg/kg with mean value of 193 mg/kg.

Five suite E tests were also undertaken on materials from this layer. The results indicated that all test results except one were within the limits for Inert waste. The material tested from WS46 between 0and 0.7 mBGL was above the Chloride content limit of 800 mg/kg but within the limits for stable non-reactive waste, all other tested values met inert limits.

8.2.3 Windblown Sand

Windblown sands were encountered in the areas of Marsh Lane, Quay Road and Burrow Road. The materials have similar descriptions to some of those of the sand of the Estuarine Deposits and may be part of the Windblown Sand layer.

8.2.3.1 Description

This layer is typically described as loose to medium dense light brown slightly gravelly fine to coarse SAND

8.2.3.2 Classification

Moisture content tests were undertaken on 9 no. samples taken from within this layer with results ranging from 4.6 % and 17 % with mean value of 10.6 %.

A single Atterberg limit test was undertaken in materials from this layer. The test was originally scheduled as the material was logged as a clay / silt. The Atterberg limit test determined the material to be non-plastic, while gradings confirmed the material contained less than 30 % clay or silt.

Particle Size Distribution tests were undertaken on 8 no. samples taken from within this layer. 100% of materials passed the 63 mm sieve (Cobble /Gravel boundary). The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 32 % and 91 % with mean value of 59 %. The percentage of materials passing the 63 μm sieve (Sand / Silt boundary) ranged from 1 % and 9 % with mean value of 4 %.

A saturated unit weight of 18 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.3.3 Strength

A single SPT was undertaken within this layer which recorded an SPT N value of 7. 8 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 1 and 50 with a mean value of 19.

Review of typical angle of shearing resistance outline in CIRIA R143: The Standard Penetration Test (CIRIA, 1995) correlates to an angle of internal friction of between 30° and 33° for SPT between 10 and 20.

A characteristic drained angle of internal friction of 31° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted.

8.2.3.4 Stiffness and Compressibility

A characteristic drained modulus of elasticity (E') of 10 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6 (CIRIA, 1995).

8.2.3.5 Environmental

pH, sulphate and chloride tests were conducted on 2 no. samples taken from this layer.

Recorded pH values were 8.35 and 8.92 with mean value of 8.64. Water soluble sulphate as SO_4 2:1 values were 0.024 and 0.047 g/l with a mean value of 0.04 g/l. The chloride tests recorded soluble chloride results of 21 mg/kg and 305 mg/kg with mean value of 163 mg/kg.

8.2.4 Marine Beach Sand

Marine beach sands were only encountered along Portrane Beach. These materials were similar in many ways to some of the Estuarine deposits and windblown sands encountered. The distinction between this unit from other similar units is primarily based on the presence on the coastal side of the Portrane peninsula.

8.2.4.1 Description

These materials were primarily described as loose to dense slightly gravelly fine SAND with occasional shells.

8.2.4.2 Classification

Moisture content tests were undertaken on 11 no. samples taken from within this layer with results ranging from 5.6 % and 25 % with mean value of 15 %.

Particle Size Distribution tests were undertaken on 9 no. samples taken from within this layer. 100% of materials passed the 63 mm sieve (Cobble /Gravel boundary). The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 46 % and 99 % with mean value of 84 %. The percentage of materials passing the 63 μm sieve (Sand / Silt boundary) ranged from 2 % and 16 % with mean value of 4 %.

A saturated unit weight of 18 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.4.3 Strength

7 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 3 and 53 with a mean value of 23.

Review of typical angle of shearing resistance outline in CIRIA R143: The Standard Penetration Test (CIRIA, 1995) correlates to an angle of internal friction of between 30° and 33° for SPT between 10 and 20.

A characteristic drained angle of internal friction of 31° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted.

8.2.4.4 Stiffness and Compressibility

A characteristic drained modulus of elasticity (E') of 10 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6 (CIRIA, 1995).

8.2.4.5 Environmental

No environmental testing was undertaken on the Marine Beach Sand. Testing of this material was not considered necessary to advance the preliminary design.

8.2.5 Estuarine Deposits

Estuarine Deposits were encountered in the areas of Marsh Lane, Burrow Road, Channel Road and South Shore Road. The materials appeared to primarily comprise of granular sand materials. Layers of clay and silt were also present in some areas. The materials have similar descriptions to some of those of the Windblown Sands and may be part of the Windblown Sand layer.

8.2.5.1 Description

Granular soils from this layer were described as soft grey slightly sandy clayey SILT or silty CLAY with shells of soft grey slightly sandy slightly gravelly silty CLAY.

The layer also included layers of cohesive materials described as loose grey sandy GRAVEL or loose grey/brown slightly gravelly fine SAND with shell fragments

8.2.5.2 Classification

8.2.5.2.1 Granular

Moisture content tests were undertaken on 28 no. samples taken from within this layer with results ranging from 5.4 % and 38 % with mean value of 16.8 %.

Particle Size Distribution tests were undertaken on 22 no. samples taken from within this layer. 100 % of the samples passed the 63 mm sieve (Cobble /Gravel boundary). The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 26 % and 100 % with mean value of 71 %. The percentage of materials passing the 63 μm sieve (Sand / Silt boundary) ranged from 2 % and 48 % with mean value of 8.5 %.

A saturated unit weight of 17 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.5.2.2 Cohesive

Moisture content tests were undertaken on 13 no. samples taken from within this layer with results ranging from 21 % and 39 % with mean value of 29.2 %.

Atterberg Limit tests were undertaken on the percentage of materials passing the 425 μm sieve from 6 no. samples taken from within this layer which were logged as silt or clay. The percentage of materials recorded as passing the 425 μm sieve ranged from 35 % and 100 % with mean value of 81 %. Liquid Limits results from these samples ranged from 32 % and 45 % with mean value of 38.5 %. Plasticity Index values ranged from 15% and 23 % with mean value of 19.5 %.

Particle Size Distribution tests were undertaken on 9 no. samples taken from within this layer. 100 % of the samples passed the 63 mm sieve (Cobble /Gravel boundary). The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 43 % and 100 % with mean value of 89 %. The percentage of materials passing the 63 μm sieve (Sand / Silt boundary) ranged from 24 % and 85 % with mean value of 69 %.

A saturated unit weight of 16 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.5.3 Strength

8.2.5.3.1 Granular

18 no. SPTs were undertaken within this layer. SPT N values ranged from 4 and 36 with mean value of 11. 13 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 1 and 50 with a mean value of 15.

Review of typical angle of shearing resistance outline in CIRIA R143: The Standard Penetration Test (CIRIA, 1995) correlates to an angle of internal friction of between 30°.

A characteristic drained angle of internal friction of 30° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted.

8.2.5.3.2 Cohesive

6 no. SPTs were undertaken within this layer. SPT N values ranged from 1 and 26 with mean value of 6. 9 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 1 and 53 with a mean value of 10. This correlates to an undrained shear strength between 4 kPa and > 200 kPa with value of 40 kPa using a Stroud's correlation (CIRIA, 1995) and c_u to SPT-N of 4. A conservative lower characteristic value of 25 kPa has been adopted for this layer.

Review of the liquid limits and clay fraction of these soils outlined above indicates an angle of internal friction (ϕ') of 25° to 30° using the Stark and Choi correlation (Stark, et al., 2005).

A characteristic drained angle of internal friction of 28° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted. The upper end of correlated values has been adopted based on the high granular content and conservative adoption of 0 kPa drained shear strength.

8.2.5.4 Stiffness and Compressibility

8.2.5.4.1 Granular

A characteristic drained modulus of elasticity (E') of 8 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6 (CIRIA, 1995).

8.2.5.4.2 Cohesive

A characteristic drained modulus of elasticity (E') of 5 MPa and undrained modulus of elasticity (E_u) of 8 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6, and SPT to Eu correlation of 1 (CIRIA, 1995).

A Coefficient of Consolidation (C_v) of 0.4 m^2/year has been adopted based on the oedometer test result with corresponding coefficient of volume change (m_v) of 1.5 m^2/MN.

8.2.5.5 Environmental

pH, sulphate and chloride tests were conducted on 4 no. samples taken from this layer.

Recorded pH values ranged between 8.39 and 9.18 with mean value of 8.70. Water soluble sulphate levels as SO_4 2:1 ranged from 0.012 and 0.51 g/l with a mean value of 0.16 g/l. The chloride tests recorded soluble chloride results from 12 mg/kg and 1,275 mg/kg with mean value of 366 mg/kg.

8.2.6 Glacial Till Deposits

Glacial Till was encountered within all areas other than along the Portrane Beach. This layer appears to underlie more recent layers across the site.

8.2.6.1 Description

This layer is typically described as stiff to very stiff gravelly sandy silty CLAY with varying cobble content. Materials logged as medium dense to dense clayey GRAVEL / SAND were recorded in this layer.

8.2.6.2 Classification

Moisture content tests were undertaken on 17 no. samples taken from within this layer with results ranging from 6.4 % and 33 % with mean value of 14.0 %. An additional result of 1.8 % was ignored as an outlier.

Atterberg Limit tests were undertaken on the percentage of materials passing the 425 µm sieve from 10 no. samples taken from within this layer which were logged as silt or clay. Testing indicated that three of these samples were non plastic. The percentage of materials recorded as passing the 425 µm sieve from the remaining 7 samples ranged from 51 % and 96 % with mean value of 76 %. Liquid Limits results from these 7 samples ranged from 26 % and 51 % with mean value of 36 %. Plasticity Index values ranged from 13 % and 27 % with mean value of 17 %.

Particle Size Distribution tests were undertaken on 14 no. samples taken from within this layer. The percentage of materials passing the 63 mm sieve (Cobble /Gravel boundary) ranged from 73 % to 100 % with mean value of 96 %. The percentage of materials passing the 2 mm sieve (Gravel / Sand boundary) ranged from 5 % and 99 % with mean value of 58 %. The percentage of materials passing the 63 µm sieve (Sand / Silt boundary) ranged from 1 % and 91 % with mean value of 34 %.

A saturated unit weight of 19 kN/m^3 has been adopted based on the material descriptions and experience with embankment fill and typical values for such materials (Look, 2014).

8.2.6.3 Strength

28 no. SPTs were undertaken within this layer. SPT N values ranged from 7 and 50+ (where refusal was meet). Ignoring the refusals as unrepresentative, the mean value was 25. 5 no. of the dynamic probes penetrated this layer. DPH values were correlated to SPT by summing blow counts over a 300 mm distance and dividing the resulting value by 1.5 as detailed in the factual Ground Investigation (Appendix B). Correlated SPT N values ranged from 4 and 45 with a mean value of 25. This correlates to an undrained shear strength between 28 kPa and > 200 kPa with characteristic value of 100 kPa using a Stroud's correlation (CIRIA, 1995) and c_u to SPT-N of 4.

Review of typical plasticity index and angle of shearing resistance outline in CIRIA C504: Engineering in glacial tills (CIRIA, 1999) correlates to an angle of internal friction of between 31° and 35° for glacial till with a plasticity index between 10% and 20%. CIRIA C504: Engineering in glacial tills (CIRIA, 1999) also indicates that even higher peak shear strengths can be expected where fines content is between 20 % and 40 % as is generally the case for these soils.

A characteristic drained angle of internal friction of 33° with corresponding characteristic drained shear strength (c') of 0 kPa has been adopted. The upper end of correlated values has been adopted based on the high granular content and conservative adoption of 0 kPa drained shear strength.

8.2.6.4 Stiffness and Compressibility

A characteristic drained modulus of elasticity (E') of 15 MPa and undrained modulus of elasticity (E_u) of 25 MPa has been adopted using an approximate SPT to E' correlation ratio of 0.6, and SPT to Eu correlation of 1 (CIRIA, 1995). These are in line with guidance by Buggy that typical relationship of E'/N for the materials PI of between 0.5MPa and 1.5MPa (Buggy, et al., 2016).

A Coefficient of Consolidation (C_v) of 5 m^2/year has been adopted based on the characteristic liquid limit for both the Glacial clay and silt combined with the Cv relationship outlined in *Performance of Road Embankments on Glacial Deposits in Ireland* (Buggy, et al., 2016). This correlates well with the other relationship discussed in this paper where Cv is approximately SPT-N / PI.

8.2.6.5 Environmental

pH, sulphate and chloride tests were conducted on 3 no. samples taken from this layer.

Recorded pH values ranged between 8.62 and 9.15 with mean value of 8.92. Water soluble sulphate levels as SO_4 2:1 ranged from 0.028 and 0.11 g/l with a mean value of 0.06 g/l. The chloride tests recorded soluble chloride results from 124 mg/kg and 1,283 mg/kg with mean value of 557 mg/kg.

8.2.7 Tober Colleen Formation Bedrock

Tober Colleen formation bedrock was only encountered in the Channel Road area. Laboratory testing was not undertaken on this layer. The materials are high strength and incompressible in nature and will not significantly affect the proposed development.

8.2.7.1 Description

Bedrock of the Tober Colleen formation was described as medium strong to strong fine grained grey LIMESTONE interbedded with weak to medium strong dark grey MUDSTONE. Distinctly weathered to unweathered. The layer was recorded as becoming less weathered and stronger with depth.

8.2.7.2 Classification

Based on the distinctly weathered to unweathered description and values outlined in Table 9.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014), the Limestone/Mudstone is likely to have a unit weight in the order of 21 to 25 kN/m^3.

8.2.7.3 Strength

The Limestone/Mudstone was described as weak in the upper one metre which corresponds to an indicative Unconfined Compressive Strength (UCS) of 5 to 12.5 MPa in Table 2 of *Geotechnical investigation and testing – Identification, description and classification of rock (ISO 14689:2017)* (British Standards Intitution, 2018).

The Limestone/Mudstone appears to be medium strong to strong below one metre penetration which corresponds to an indicative Unconfined Compressive Strength (UCS) of 25 to 100 MPa in Table 2 of *Geotechnical investigation and testing – Identification, description and classification of rock (ISO 14689:2017)* (British Standards Intitution, 2018)

8.2.7.4 Stiffness and Compressibility

The Limestone/Mudstone bedrock is relatively incompressible relative to the overlying layers. An indicative Young's Modulus (E) of 0.5 to 1.25 GPa may be anticipated in the upper 1m, with E from 2.5 to 10 GPa anticipated below this. This is based on an assumed E/UCS ratio of 100 taken from Table 11.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014).

8.2.8 Malahide Formation Bedrock

Malahide formation bedrock was only encountered in the Marsh Lane area. Laboratory testing was not undertaken on this layer. The materials are high strength and incompressible in nature and will not significantly affect the proposed development.

8.2.8.1 Description

Bedrock of the Malahide formation was described as medium strong grey fossiliferous LIMESTONE. Partially weathered.

8.2.8.2 Classification

Based on the partially weathered description and values outlined in Table 9.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014), the Limestone is likely to have a unit weight in the order of 23 to 25 kN/m^3.

8.2.8.3 Strength

The Limestone was described as medium strong which corresponds to an indicative Unconfined Compressive Strength (UCS) of 25 to 50 MPa in Table 2 of *Geotechnical investigation and testing – Identification, description and classification of rock (ISO 14689:2017)* (British Standards Intitution, 2018).

8.2.8.4 Stiffness and Compressibility

The Limestone bedrock is relatively incompressible relative to the overlying layers. An indicative Young's Modulus (E) of 2.5 to 5.0 GPa may be anticipated based on an assumed E/UCS ratio of 100 taken from Table 11.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014).

8.2.9 Donabate Formation Bedrock

Donabate formation bedrock was only encountered in the Quay Road area. Laboratory testing was not undertaken on this layer. The materials are high strength and incompressible in nature and will not significantly affect the proposed development.

8.2.9.1 Description

Bedrock of the Donabate formation was described as extremely weak to weak red fine to coarse grained SANDSTONE. Distinctly to highly weathered.

8.2.9.2 Classification

Based on the distinctly weathered description and values outlined in Table 9.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014), the Sandstone is likely to have a unit weight in the order of 20 to 23 kN/m^3.

8.2.9.3 Strength

The Sandstone was described as extremely weak to weak which corresponds to an indicative Unconfined Compressive Strength (UCS) of 0.6 to 12.5 MPa in Table 2 of *Geotechnical investigation and testing – Identification, description and classification of rock (ISO 14689:2017)* (British Standards Intitution, 2018).

8.2.9.4 Stiffness and Compressibility

The Limestone bedrock is relatively incompressible relative to the overlying layers. An indicative Young's Modulus (E) of 60 MPa to 1.25 GPa may be anticipated based on an assumed E/UCS ratio of 100 taken from Table 11.2 of the *Handbook of Geotechnical Investigation and Design Tables* (Look, 2014).

8.2.10 Summary of Material Parameters

Table 8-7 and Table 8-8 outline the assessed strength and stiffness parameters respectively as outlined in the above sections. These are considered suitable for preliminary design of the proposed coastal works.

Table 8-7: Summary of material strength parameters

Unit	Unit weight, ɣ (kN/m^3)	Undrained shear strength, s_u (kPa)	Angle of shearing resistance, ϕ' (˚)	Cohesion, c' (kPa)	Unconfined Compressive Strength, UCS (MPa)
Made Ground	18	50	32	0	-
Windblown Sand	18	-	31	0	-
Marine Beach Sand	18	-	31	0	-
Estuarine Deposits – Clay or Silt	16	25	28	0	-
Estuarine Deposits – Sand or Gravel	17	-	30	0	-
Glacial Till	19	50	33	0	-
Tober Colleen Formation Bedrock	21 - 25	-	-	-	5 – 100(1)
Malahide Formation Bedrock	23 - 25	-	-	-	25 – 50
Donabate Formation Bedrock	20 - 23	-	-	-	0.6 – 12.5

Notes:

1. 5 – 12.5 MPa for upper 1 m, 25 – 100 MPa below

Table 8-8: Summary of material stiffness parameters

Unit	Undrained modulus, E_u (MPa)	Drained modulus, E' (MPa)	Rock modulus, E (MPa)	Coefficient of volume compressibility, m_v (m^2/MN)	Coefficient of consolidation, c_v (m^2/yr)
Made Ground	20	10	-	-	-
Windblown Sand	-	10	-	-	-
Marine Beach Sand	-	10	-	-	-
Estuarine Deposits – Clay or Silt	8	5	-	1.5	0.4
Estuarine Deposits – Sand or Gravel	-	8	-	-	-
Glacial Till	25	15	-	0.07	5

Unit	Undrained modulus, E_u (MPa)	Drained modulus, E' (MPa)	Rock modulus, E (MPa)	Coefficient of volume compressibility, m_v (m^2/MN)	Coefficient of consolidation, c_v (m^2/yr)
Tober Colleen Formation Bedrock	-	-	500 – 10,000(1)	21 – 25	-
Malahide Formation Bedrock	-	-	25 – 50	23 – 25	
Donabate Formation Bedrock	-	-	0.6 – 12.5	20 – 23	

Notes:

1. 500 – 1,250 MPa for upper 1 m, 2,500 – 10,000 MPa below

8.3 Groundwater

Groundwater was struck within the investigations at depths of between 0.4 mBGL and 4.6 mBGL. Groundwater within standpipes was recorded at between 1.0 mBGL and 2.5 mBGL when monitored in the weeks following the investigation.

Due to the proximity of the standpipe locations to the estuary and coast, groundwater levels are anticipated to be linked to tidal levels. The above results to confirm that the shallow groundwater levels will fluctuate with tidal variations.

9 OTHER CHARACTERISTICS

Following established engineering practice, all of the Republic of Ireland is deemed to be in an area of '*very low seismicity*' as defined in IS EN 1998-1 – Eurocode 8 (National Standards Authority of Ireland, 2013).

Due to the above, no Irish National Annex exist. Section 3.2.1(5) of Eurocode 8 states *'In cases of very low seismicity, the provision of EN 1998 need not be observed'*. Further definition of the seismic ground setting is not necessary.

10 CONCLUSIONS

Based on the results of the desk study, site walkover, and ground investigations, sufficient information is available to advance the preliminary design of the coastal works.

A preliminary conceptual site model (CSM) has been prepared study area. The CSM presents the current understanding of geotechnical site conditions. The CSM is based on the interpretation of geotechnical conditions following completion of the desk study, site walkover and ground investigations.

The stratigraphic profile forming the CSM for each area of the site is shown graphically in Appendix F. Characteristic material parameters for strata identified within the CSM are summarised in Section 8.2.10. These preliminary characteristic values have been developed to broadly classify the site. Local conditions will vary from characteristic values and should be considered at detailed design.

10.1 Marsh Lane

Ground conditions encountered within the Marsh Lane area indicate that the existing ground comprises Made Ground overlying Estuarine sands, silts and clay. Glacial Till is present below the Estuarine deposits which is underlain by Malahide Formation bedrock at depth. Windblown sands appear to be present to the north of the proposed wall over the Estuarine deposits.

Some immediate and consolidation settlement below the proposed c. 1.0 m increase in wall can be anticipated due to the presence of soft compressible silt and clay below this area of the site. Settlements will be linked to the additional structural weight and may tolerable assuming increased loads from the additional height of wall are relatively minor. Nevertheless, settlement will need to be accounted for during detailed design. The settlements can be minimised by reducing the weight of construction as much as possible. Alternatively, use of an embedded wall such as a sheet pile wall outside of the existing wall may reduce the settlement impacts on the wall and existing road.

Immediate and consolidation settlement can also be anticipated below the proposed c. 1.0 m flood embankment north of here due to the presence of soft compressible silt and clay below this area of the site. Settlements below the embankment are likely to be tolerable but should be considered during detailed design. The designer should also consider the inclusion of protection along the front face of this embankment through use of rip rap to protect the embankment from wave driven erosion.

10.2 Burrow Road

Ground conditions encountered within the Burrow Road area indicate that the existing ground comprises Made Ground overlying Estuarine Sands, with Glacial Till encountered at depth. Windblown sands may be present in some of the more elevated area of the site at either end of the proposed works.

Significant geotechnical strength or settlement issues are not anticipated for the construction of the c. 1.5m high flood defence embankment. Conventional embankment construction is likely to be sufficient. The embankment may need to include surface protection such as rock armouring to protect the front face of this embankment from wave driven erosion.

The existing soil bluff along the coast within this area is exposed. Some wave driven erosion was noted as part of the site walkover. The designer should also consider the inclusion of protection along the front face of this embankment through use of rip rap to protect the embankment from wave driven erosion.

10.3 Portrane Beach

Ground conditions encountered along the Portrane Beach area indicate that the existing ground comprises sands of marine origin.

While some minor immediate settlements may be encountered while constructing the T-Groynes, significant geotechnical strength or settlement issues are not anticipated.

Design of the T-Groynes will need however to consider the potential for scouring below the structure which could lead to local undermining and instability. The designer should consider keying in all or part of the T-Groyne below the existing ground surface to reduce the risk of scouring.

Wave driven erosion was noted along the sand bluff up beach in this area. Construction of a revetment using rip rap in front of the bluff may aid in the reduction of future erosion.

10.4 Quay Road

Ground conditions encountered within the Quay Road area indicate that the existing ground comprises Made Ground overlying Windblown Sands, with Glacial Till and Donabate Formation bedrock encountered at depth.

Significant geotechnical strength or settlement issues are not anticipated for the construction of the c. 1m high wall. Conventional strip of spread foundations are likely to be sufficient to support the wall.

The existing soil bluff within this area is exposed. Some wave driven erosion was noted as part of the site walkover. Construction of a revetment using rip rap in front of the bluff may aid in the reduction of future erosion.

10.5 Channel Road

Ground conditions encountered within the Channel Road area indicate that the existing ground comprises Made Ground overlying Glacial Till with Tober Colleen Formation bedrock encountered at depth. Sands with lenses of clay and silt were encountered in the eastern 250 m length of the site over the Glacial Till (WS/DP37, WS/DP38 and WS/DP39).

In the eastern 250 m length of the site, loose sands have been identified along with lenses of soft clay or silt. This may result in some minor settlements below the c. 1m increase in height to the wall in the area. The settlements are likely to occur over the construction period based on the primarily granular nature of the soil. Due to the low height of the wall and relatively light increase in loading from the wall, the settlements are anticipated to be accommodated provided they are considered during detailed design. Conventional strip or spread foundations are likely to be sufficient to support the wall if completely rebuilt.

Glacial Till is present near to surface in the remainder of the site, with bedrock underlying this. Significant geotechnical strength or settlement issues are not anticipated for the c. 1.0m increase in height of the wall.

10.6 South Shore Road

Ground conditions encountered within the South Shore Road area indicate that the existing ground comprises Made Ground overlying Estuarine Sands with lenses of clay and silt. Glacial Till was encountered at depth.

Loose sands have been identified below the area along with lenses of soft clay or silt. This may result in some minor settlements below the c. 1m high wall proposed within the area. The settlements are likely to occur over the construction period based on the primarily granular nature of the soil. Due to the low height of the wall and relatively light loading from the wall, the settlements are anticipated to be accommodated provided they are considered during detailed design. Conventional strip or spread foundations are likely to be sufficient to support the wall.

11 REFERENCES

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APPENDICES

Appendix A
Ground Investigation Plan and Profile

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI1000.dwg

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	01.06.22	TC / CMG	FOR INCLUSION IN GIR	CMG

Model File Identifier	RCS-RPS-00-BW-DR-GI1000
File Identifier	RCS-RPS-00-BW-DR-GI1000
Status	S4
Rev	P01
Scale	1000 @ A1 2000 @ A3
Created on	MAY 22
Sheets	00 of 07
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	GROUND INVESTIGATION PLAN AND PROFILE

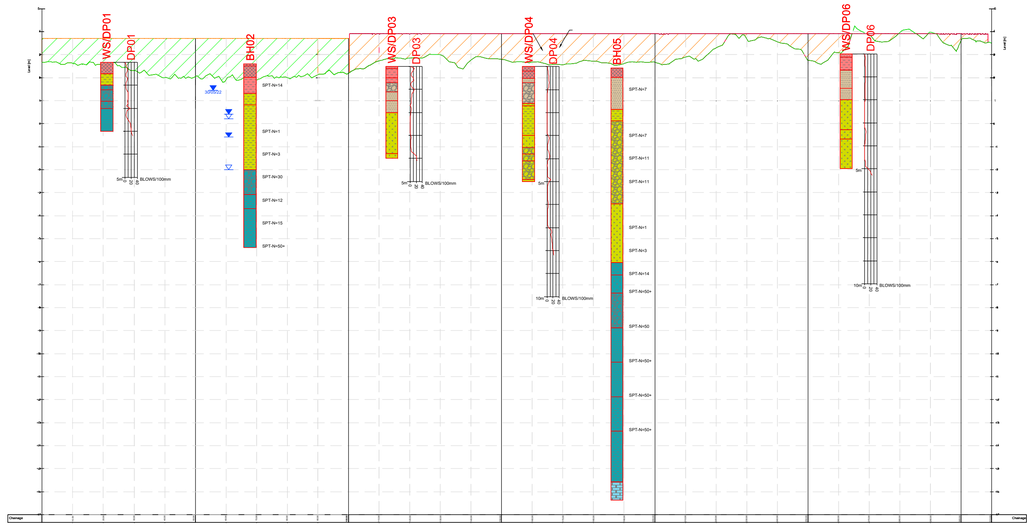
LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE
- PXX — WALKOVER PHOTO



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

Client

Comhairle Contae Fhine Gall
Fingal County Council

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Model File Identifier: RCS-RPS-00-BW-DR-GI1000

Scale	1000 @ A1 2000 @ A3
Created on	MAY 22
Sheets	01of 07
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
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File Identifier	RCS-RPS-00-BW-DR-GI1000
Status	S4
Rev	P01

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI1000.dwg

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
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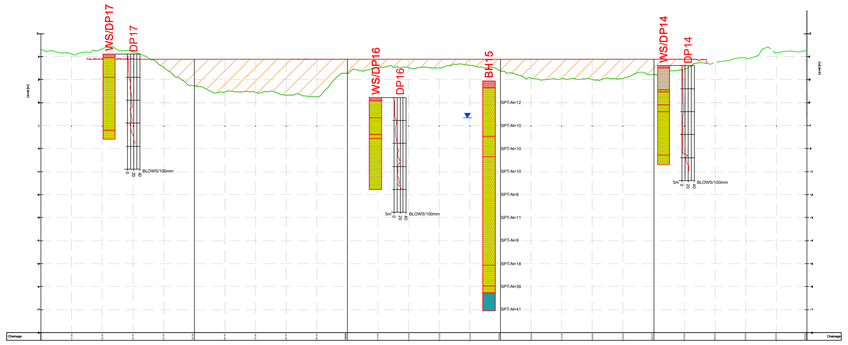
- PXX — WALKOVER PHOTO



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
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Client

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File Identifier	RCS-RPS-00-BW-DR-GI1000
Status	S4
Rev	P01

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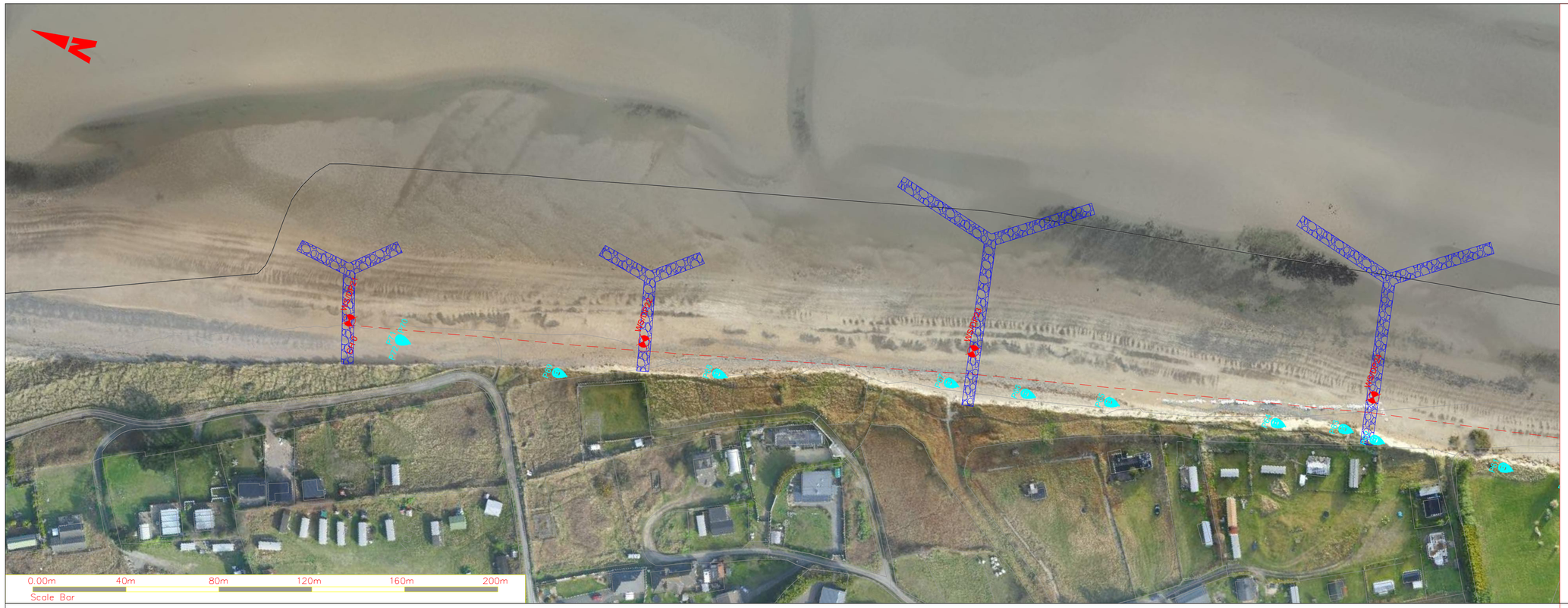

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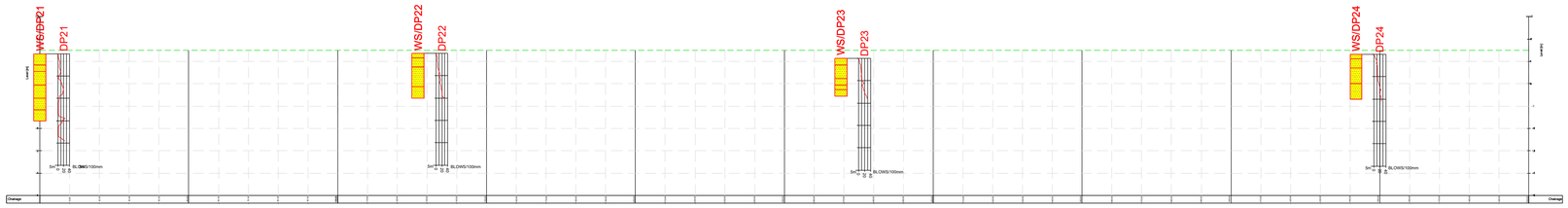
PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE
- PXX — WALKOVER PHOTO



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
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- MALAHIDE FORMAITON (BEDROCK)

Client

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Fingal County Council

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Model File Identifier: RCS-RPS-00-BW-DR-GI1000

Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 03 of 07

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: GROUND INVESTIGATION PLAN AND PROFILE

File Identifier: RCS-RPS-00-BW-DR-GI1000

Status: S4

Rev: P01

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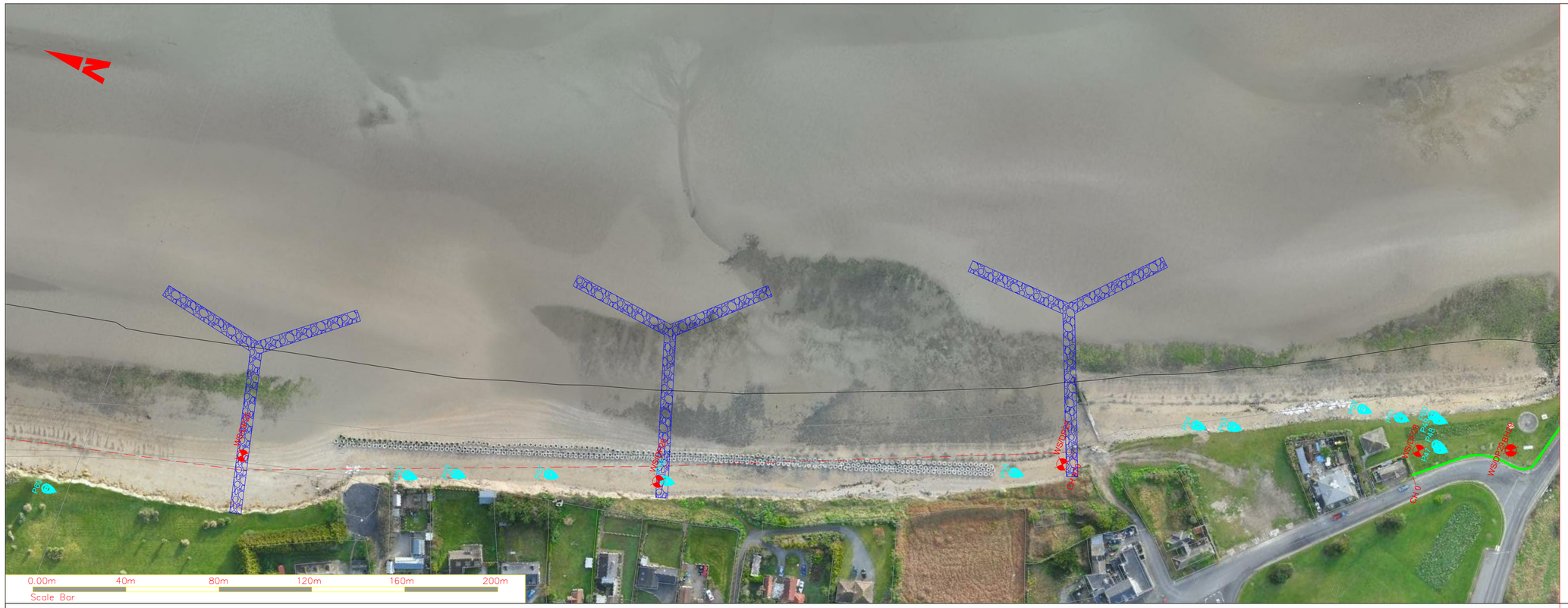

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

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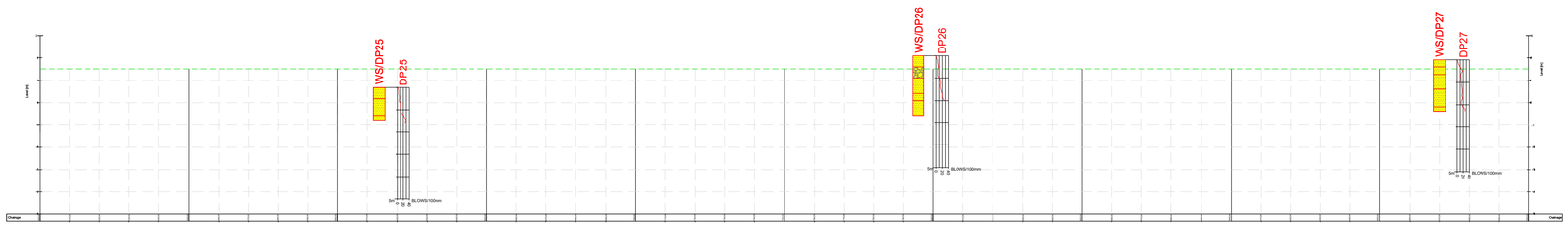
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE
- PXX — WALKOVER PHOTO



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
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Client

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P01	01.06.22	TC / GMG	FOR INCLUSION IN GIR	CMG

Model File Identifier: RCS-RPS-00-BW-DR-GI1000

Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 04 of 07

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: GROUND INVESTIGATION PLAN AND PROFILE

File Identifier: RCS-RPS-00-BW-DR-GI1000

Status: S4

Rev: P01

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LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
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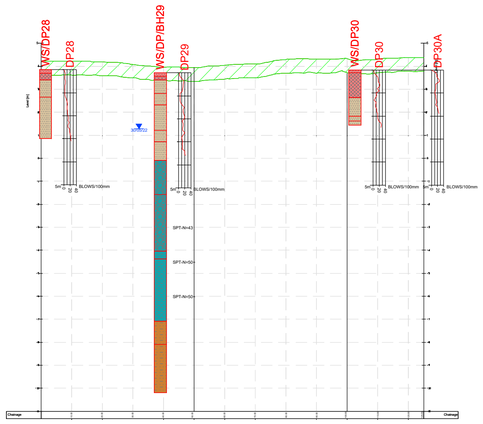

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
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Client

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Fingal County Council

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Scale: 1000 @ A1, 2000 @ A3

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Title: GROUND INVESTIGATION PLAN AND PROFILE

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Status: S4

Rev: P01

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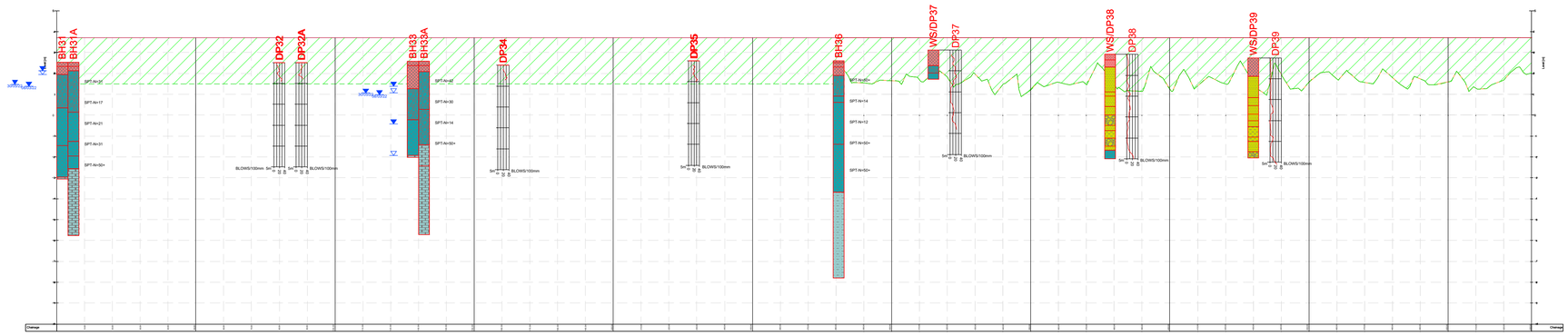

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE
- PXX — WALKOVER PHOTO

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

Client

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Fingal County Council

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Rev	P01

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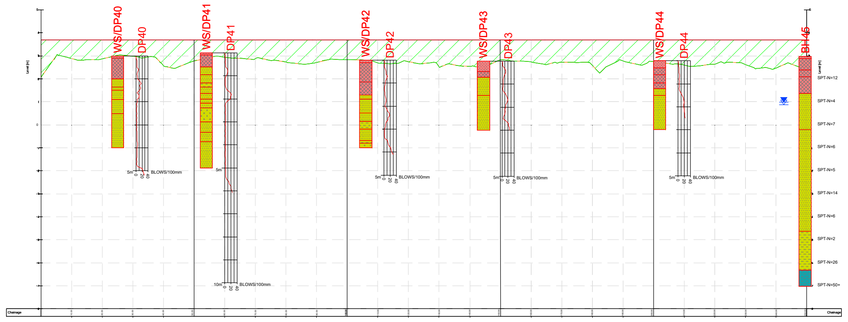

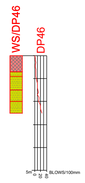

LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
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LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
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Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	GROUND INVESTIGATION PLAN AND PROFILE

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI1000.dwg

Appendix B
Factual Ground Investigation

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Ground Investigations Ireland

Rogerstown Coastal Flood and Erosion Relief Scheme

Fingal County Council

Ground Investigation Report

May 2022

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APPENDICES

1.0 Preamble

On the instructions of RPS Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between January and March 2022 at the site of the proposed Coastal Flood and Erosion Relief Scheme Rogerstown Co. Dublin.

2.0 Overview

2.1. Background

It is proposed to construct various coastal flood and erosion defences including sea walls, embankments, and Groynes at locations around the Coastline of the Rogerstown Estuary and Portrane Beach North of Dublin City. There are currently existing temporary or permanent sea defences at some of the locations being investigated. The proposed construction is envisaged to consist of conventional or piled foundations.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 26 No. Window Sample Boreholes to recover soil samples
- Carry out 31 No. Dynamic Probes to determine soil strength/density characteristics
- Carry out 7 No. Cable Percussion boreholes to a maximum depth of 10.0m BGL
- Carry out 5 No. Rotary Core Boreholes to a maximum depth of 18.80m BGL (2 as follow on from Cable percussion holes and 3 from base of cable percussion or window sample hole)
- Installation of 4 No. Groundwater monitoring wells
- Geotechnical & Environmental Laboratory testing
- Factual Report.

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.
The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Window Sampling

The window sampling was carried out at the locations shown in the location plan in Appendix 1 using a Tecopsa SPT Tec 10 percussion drilling rig. The window sampling consists of a 1m long steel tube with a cutting edge and an internal plastic liner which is mechanically driven into the ground utilising a 50kg weight falling a height of 500mm. Upon completion of the 1m sample, the tube is withdrawn and the plastic liner removed and sealed for logging and sub sampling by a Geotechnical Engineer/Engineering Geologist. The tube is replaced in the borehole and a subsequent 1m sample can be recovered. Occasionally outer casing or a reduced diameter tube is utilised to enable the window sample to progress in difficult drilling conditions. Geotechnical or environmental soil samples can be recovered from each of the liners following logging. The window sample records are provided in Appendix 2 of this Report.

3.3. Dynamic Probing

The dynamic probe tests (DPH) were carried out at the locations shown in the location plan in Appendix 1 in accordance with B.S. 1377: Part 9 1990. The test consists of mechanically driving a cone with a 50kg weight in 100mm intervals and monitoring the number of blows required. An equivalent Standard Penetration Test (SPT) 'N' value may be calculated by dividing the total number of blows over a 300mm drive length by 1.5. The dynamic probe logs are provided in Appendix 3 of this Report.

3.4. Cable Percussion Boreholes

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.
The standard method of boring in soil for site investigation is known as the Cable Percussion method. It consists of using a Shell in non cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the Shell. Where ground conditions made it necessary, the borehole was lined with 200mm diameter steel casing. While the use of the Cable Percussion method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason, thin lenses of granular material may not be noticed. Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.
Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60º cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the

test and also to estimate the bearing capacity and compressibility of the soil. The cable percussion borehole logs are provided in Appendix 4 of this Report.

3.5. Rotary Boreholes

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown on the location plan in Appendix 1. The rotary boreholes were completed from the ground surface or alternatively, where noted on the individual borehole log, from the base of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring.

The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the “overshoot” recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit, and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered. The rotary borehole logs are provided in Appendix 4 of this Report.

3.6. Surveying

The exploratory hole locations have been recorded using a KQ GEO Technologies KQ-M8 System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.7. Groundwater Monitoring Installations

Groundwater Monitoring Installation were installed upon the completion of selected boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm uPVC/HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report.

3.8. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.
Environmental & Chemical testing as required by the specification, including the Rilta Suite pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria.
Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), hydrometer, in Pro Soils Geotechnical Laboratory in the UK. Specialist shear strength testing consisting of quick undrained, and consolidation testing was carried out on undisturbed U100 or piston samples where recovered.
The results of the laboratory testing are included in Appendix 5 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were variable across the project area and generally comprised;

- Topsoil/Surfacing
- Made Ground
- Granular Deposits
- Cohesive Deposits
- Bedrock

TOPSOIL / SURFACING: Topsoil was encountered in some of exploratory holes and was present to a maximum depth of 0.3m BGL. Granular deposits were encountered from the surface in window sample holes drilled along Portrane beach. Tarmac surfacing was present in holes drilled along on Marsh Lane Chanel Road typically to a depth of between 0.05m to 0.10mBGL.

MADE GROUND: Made Ground deposits were encountered beneath the Topsoil/Surfacing at some locations generally around the northern part of the project area along Channel Road and Shore Road and were present to a depth of up to 1.6m BGL. These deposits varied, however were generally described as *brown clayey sandy Gravel or clayey gravelly Sand with occasional cobbles* and in some places contained *occasional fragments of concrete, glass, red brick, glass and plastic.*

COHESIVE DEPOSITS: Alluvial and Glacial derived Cohesive deposits were encountered in some of the boreholes and window samples across the project area with varying strength deposits encountered.
The presumed Glacial derived cohesive deposits and were typically described as *firm to very stiff brown or dark grey slightly sandy slightly gravelly CLAY with occasional cobbles*. These deposits had some or occasional cobble and boulder content where noted on the exploratory hole logs. The strength of these cohesive deposits varied however typically were firm or firm to stiff and increased with depth.
The presumed Alluvial derived cohesive deposits were described typically as either *grey slightly sandy silty CLAY or grey slightly sandy clayey SILT*. The secondary sand and gravel constituents varied across the site and with depth. The strength of the alluvial cohesive deposits were typically very soft or soft to firm.

GRANULAR DEPOSITS: Granular deposits were encountered within the majority of the holes and were and were typically described as G*rey or brown sandy fine to coarse GRAVEL or gravelly fine to coarse SAND.* The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional cobble content also present where noted on the exploratory hole logs.
Based on the SPT N values the deposits varied across the different areas ranging from very loose to dense however typically the density increases with depth. Groundwater strikes were noted in some of the boreholes in the granular deposits.

BEDROCK: Bedrock was encountered at depths of between 4.0m to 6.3m BGL in the boreholes BH31A, BH33 and BH36 in the northern part of the project area along Channel Road. These boreholes recovered Medium strong to very strong grey/dark grey fine to medium grained laminated LIMESTONE interbedded with weak black fine grained laminated Mudstone.
In the southern area of the site at the south end of Portrane Beach BH29 encountered weathered rock at a depth of 10.80m BGL and recovered red extremely weak to weak fine to coarse grained SANDSTONE.
BH05 encountered possible rock at a depth of 18m BGL described as medium strong to strong grey LIMESTONE, however this has been logged as a possible boulder.
The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however both indices show an increase with depth in each of the boreholes.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, standpipes were installed in BH02, BH29, BH31 and BH33 to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 6 of this Report.

APPENDIX 1 - Site Location Plan

Borehole

Window Sample
Dynamic Probe

Client:

Project Code:
11087-09-21

Project Title:
Rogerstown Coastal Flood and Erosion Relief Scheme

Drawing Title:
Site Location

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0 50 100 m

Drawn By:	Date:
MS	26/05/2022

Borehole

Window Sample
Dynamic Probe

Client:

Project Code:
11087-09-21

Project Title:
Rogerstown Coastal Flood and Erosion Relief Scheme - Map 1

Drawing Title:
Investigation Locations

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0 30 60 90 120 150

Drawn By:	Date:
MS	26/05/2022

Borehole

Window Sample
Dynamic Probe

Client:

Project Code:
11087-09-21

Project Title:
Rogerstown Coastal Flood and Erosion Relief Scheme - Map 2

Drawing Title:
Investigation Locations

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0 30 60 90 120 150

Drawn By:	Date:
MS	26/05/2022

Borehole

Window Sample
Dynamic Probe

Client:

Project Code:
11087-09-21

Project Title:
Rogerstown Coastal Flood and Erosion Relief Scheme - Map 2

Drawing Title:
Investigation Locations

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0 30 60 90 120 150 m

Drawn By:	Date:
MS	26/05/2022

Borehole

Window Sample
Dynamic Probe

Client:

Project Code:
11087-09-21

Project Title:
Rogerstown Coastal Flood and Erosion Relief Scheme - Map 2

Drawing Title:
Investigation Locations

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0 30 60 90 120 150 m

Drawn By:	Date:
MS	26/05/2022

APPENDIX 2 – Window Sample Records

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS01
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 2.70m	**Ground Level (mOD)** 2.67	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724693 E 751446.9 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	B				(0.50)	MADE GROUND. Dark brown slightly sandy slightly gravelly Topsoil with grass, red brick, ceramic fragments and pieces of rubber.		
0.50-1.00	B			2.17	0.50 (0.50)	Soft brown slightly sandy gravelly CLAY with roots and occasional cobbles. Gravel is subangular to subrounded fine to coarse.		
1.00-1.70	B			1.67	1.00 (0.20)	Loose grey sandy clayey fine to coarse angular to subangular GRAVEL.		
				1.47	1.20 (0.50)	Medium dense grey sandy clayey fine to coarse angular to subangular GRAVEL.		
1.70-2.00	B			0.97	1.70 (0.30)	Medium dense brown clayey sandy subangular to subrounded fine to coarse GRAVEL with subangular cobbles.		
2.00-3.00	B			0.67	2.00 (1.00)	Poor recovery. Recovery consists of brown slightly clayey slightly gravelly coarse SAND. Gravel is fine to medium subangular to subrounded. (Medium dense to dense) From 2.7m Dense		
				-0.33	3.00	Complete at 3.00m		

Remarks
Window sample refused at 3.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS01

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS03
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 4.00m	**Ground Level (mOD)** 2.49	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724745.6 E 751532 N	**Dates** 01/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.10	B			2.39	(0.10) 0.10	TOPSOIL with grass.		
0.10-0.50	B				(0.40)	Soft brown slightly sandy gravelly CLAY.		
0.50-0.70	B			1.99	0.50 (0.20)	Firm dark brown slightly sandy gravelly CLAY. (0.50 - 0.60m) brown clayey subangular fine to coarse GRAVEL.		
0.70-1.10	B			1.79	0.70 (0.40)	Loose grey slightly sandy subangular to subrounded fine to coarse GRAVEL.		
1.10-1.50	B			1.39	1.10 (0.40)	Loose to medium dense brown gravelly coarse SAND.		
1.50-2.00	B			0.99	1.50 (0.50)	Loose light brown slightly gravelly SAND. (1.50 - 1.65m) brown slightly clayey SAND.		
2.00-4.00	B			0.49	2.00 (1.80)	Very soft grey slightly sandy SILT with shell fragments and shells. Sand is fine.		
				-1.31	3.80 (0.20)	Stiff grey slightly sandy SILT with shell fragments and shells. Sand is fine.		
				-1.51	4.00	Complete at 4.00m		

Remarks
Window sample refused at 4.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS03

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS04
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 5.00m	**Ground Level (mOD)** 2.48	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724715.4 E 751565.1 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B				(0.20)	MADE GROUND. Brown slighlty sandy slightly gravelly Topsoil with roots and pieces of plastic.		
0.20-0.50	B			2.28	0.20	MADE GROUND. Brown sandy gravellly Clay. Gravel is subangular fine to coarse. (0.30 - 0.40m) brown Sand.		
0.50-0.70	B			1.98	(0.30) 0.50	Loose brown slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse.		
0.70-1.60	B			1.78	(0.20) 0.70	Very loose sandy subangular to subrounded fine to coarse GRAVEL.		
1.60-1.70	B			0.88	(0.90) 1.60	Very soft brown sandy CLAY.		
1.70-3.00	B			0.78	(0.10) 1.70	Very soft grey slightly sandy silty CLAY with shells.		
3.00-3.50	B			-0.52	(1.30) 3.00	Firm grey clayey SILT with shells.		
3.50-5.00	B			-1.02	(0.50) 3.50	Loose grey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded to subrounded.		
				-1.32	(0.30) 3.80	Medium dense grey sandy fine to coarse rounded to subrounded GRAVEL. Sand is fine to coarse.		
				-1.62	(0.30) 4.10	Very loose grey sandy fine to coarse rounded to subrounded GRAVEL. Sand is fine to coarse.		
				-2.42	(0.80) 4.90	Firm grey silty CLAY.		
				-2.52	5.00			

Remarks
Window sample refused at 5.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS04

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Site	Number
Rogerstown Coastal Flood and Erosion Relief Scheme	WS06

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler	87mm to 4.00m 65mm to 5.00m	3.04	Fingal County Council	11087-09-21
	Location	**Dates**	**Engineer**	**Sheet**
	724666.5 E 751652.9 N	18/01/2022	RPS	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70	B				(0.10)			
					(0.15)	Brown slightliy gravelly sandy TOPSOIL		
				2.89	0.15	Very soft to soft brown slightly gravelly slightly sandy CLAY. Gravel is subangular fine to coarse.		
					(0.55)			
0.70-1.50	B			2.34	0.70	Loose brown slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse		
					(0.80)			
						(1.30 - 1.40m) Very soft brown gravelly sandy CLAY lens.		
1.50-2.00	B			1.54	1.50	Loose grey slightly gravelly fine to coarse SAND.		
					(0.50)			
2.00-5.00	B			1.04	2.00	Very soft slightly sandy clayey SILT.		
					(1.30)			
				-0.26	3.30	Soft to firm slightly sandy clayey SILT.		
					(0.40)			
				-0.66	3.70	Very soft slightly sandy clayey SILT.		
					(1.30)			
				-1.96	5.00			

Remarks
Window sample refused at 5.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS06

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS14
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 4.00m	**Ground Level (mOD)** 3.61	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724236 E 752510.3 N	**Dates** 18/01/2022-18/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.05	B			3.51	(0.10) 0.10	TOPSOIL		
						Loose brown SAND with grass roots and pieces of clay.		
					(0.95)			
1.05-1.15	B			2.56	1.05			
					(0.10)	Soft to firm brown slightly sandy CLAY.		
1.15-2.00	B			2.46	1.15			
						Loose light brown gravelly silty SAND. Gravel is angular to subangular fine to coarse.		
					(0.55)			
				1.91	1.70			
						Medium dense light brown gravelly silty SAND. Gravel is angular to subangular fine to coarse.		
					(0.30)			
2.00-4.00	B			1.61	2.00			
						Loose grey/brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to coarse.		
					(1.90)			
				-0.29	3.90			
						Dense grey/brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to coarse. 4.0m to 4.3m No recovery		
					(0.40)			
				-0.69	4.30			
						Complete at 4.30m		

Remarks
Window sample refused at 4.30m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS14

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS16
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2..0 65mm to 4.00m	**Ground Level (mOD)** 2.23	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724144.9 E 752487.4 N	**Dates** 17/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.60	B				(0.15)	TOPSOIL.		
				2.08	0.15	Loose brown slightly gravelly slightly clayey SAND. Gravel is subrouded medium to coarse.		
					(0.75)			
				1.33	0.90	Medium dense brown slightly gravelly slightly clayey SAND. Gravel is subrouded medium to coarse.		
					(0.70)			
						(1.40 - 1.50m) gravelly coarse SAND lens.		
1.60-1.80	B			0.63	1.60	Medium dense brown slightly gravelly SAND. Gravel is subrounded fine to coarse.		
					(0.20)			
1.80-4.00	B			0.43	1.80	Medium dense to dense light brown slightly gravelly SAND with shells and shell fragments. Gravel is subrounded and fine.		
					(2.20)			
				-1.77	4.00	Complete at 4.00m		

Remarks
Window sample refused at 4.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS16

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS17
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 3.70m	**Ground Level (mOD)** 4.11	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724131.6 E 752543.6 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.15	B				(0.15)	Soft brown sandy gravelly CLAY with rootlets		
0.15-1.00	B			3.96	0.15	Loose brown slightly gravelly slightly silty fine to coarse SAND with occasional cobbles.		
					(0.85)			
1.00-3.30	B			3.11	1.00	Medium dense brown very gravelly fine to coarse SAND with occasional cobbles.		
					(2.30)			
3.30-3.70	B			0.81	3.30	Medium dense brown fine SAND.		
					(0.40)			
				0.41	3.70	Complete at 3.70m		

Remarks
Window sample refused at 3.70m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS17

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Site	Number
Rogerstown Coastal Flood and Erosion Relief Scheme	WS21

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler	87mm to 2.00m 65mm to 3.00m	1.34	Fingal County Council	11087-09-21
	Location	**Dates**	**Engineer**	**Sheet**
	725127.3 E 752050.1 N	21/01/2022	RPS	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	B				(0.50)	Medium dense light brown SAND.		
0.50-0.80	B			0.84	0.50 (0.30)	Medium dense grey SAND.		
0.80-1.40	B			0.54	0.80 (0.60)	Medium dense to dense light brown SAND.		
1.40-2.00	B			-0.06	1.40 (0.60)	Medium dense grey slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse. [1.40 - 1.50m) Black SAND. (1.70 - 1.80m) Grey coarse SAND.		
2.00-2.50	B			-0.66	2.00 (0.50)	Loose brown slightly gravelly SAND.		
2.50-3.00	B			-1.16	2.50 (0.50)	Loose grey slightly gravelly coarse SAND. Gravel is fine subangular to subrounded.		
				-1.66	3.00	Complete at 3.00m		

Remarks
Window sample refused at 3.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS21

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS22
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m	**Ground Level (mOD)** 1.36	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725162.1 E 751928 N	**Dates** 21/01/2022-21/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.60	B				(0.20)	Loose brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to medium.		
				1.16	0.20			
					(0.40)	Medium dense brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to medium.		
0.60-2.00	B			0.76	0.60			
					(0.90)	Medium dense brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to coarse. (0.90 - 1.0m) slightly gravelly coarse SAND. (1.0 - 1.10m) very gravelly coarse SAND with shell fragments.		
				-0.14	1.50			
					(0.50)	Dense brown slightly gravelly fine SAND. Gravel is subangular to subrounded fine to coarse.		
				-0.64	2.00	Complete at 2.00m		

Remarks
Window sample refused at 2.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS22

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS23
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 1.70m	**Ground Level (mOD)** 1.13	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725206.6 E 751793.4 N	**Dates** 21/01/2022-21/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.20	B				(0.30)	Loose brown slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse.		
				0.83	0.30	Medium dense brown slightly silty slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse.		
					(0.60)			
				0.23	0.90	Medium dense to dense brown gravelly coarse SAND with shell fragments. Gravel is subangular to rounded fine to coarse.		
					(0.30)			
1.20-1.50	B			-0.07	1.20	Medium dense to dense brown gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse. (1.30 - 1.35m) brown gravelly coarse SAND with shell fragments.		
					(0.20)			
				-0.27	1.40	Dense brown gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse.		
					(0.30)			
				-0.57	1.70	Complete at 1.70m		

Remarks
Window sample refused at 1.70m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS23

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS24
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m	**Ground Level (mOD)** 1.31	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725246.9 E 751624.8 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.60	B				(0.20)	Loose light brown fine SAND.		
				1.11	0.20	Medium dense light brown fine SAND.		
					(0.40)			
0.60-2.00	B			0.71	0.60	Medium dense brown gravelly fine to coarse SAND with shells and shell fragments.		
					(0.70)			
				0.01	1.30	Dense brown gravelly fine to coarse SAND with shells and shell fragments.		
					(0.70)			
				-0.69	2.00	Complete at 2.00m		

Remarks
Window sample refused at 2.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS24

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS25
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 1.50m	**Ground Level (mOD)** 0.68	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725283 E 751457 N	**Dates** 01/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	B				(0.50)	Medium dense light brown slightly gravelly SAND with shell fragments. Gravel is rounded to subangular fine to coarse.		
0.50-1.50	B			0.18	0.50	Medium dense brown slightly gravelly SAND with shell fragments. Gravel is rounded to subangular fine to coarse.		
					(0.80)	(0.85 - 0.95m) Slightly gravelly coarse SAND.		
				-0.62	1.30	Dense brown slightly gravelly SAND with shell fragments. Gravel is rounded to subangular fine to coarse.		
				-0.82	(0.20) 1.50	Complete at 1.50m		

Remarks
Window sample refused at 1.50m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS25

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS26
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 1.00m 65mm to 2.00m	**Ground Level (mOD)** 2.10	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725333.7 E 751285 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	B				(0.50)	Loose to medium dense brown slightly gravelly SAND with shells and shell fragments. Gravel is subangular to subrounded fine to coarse .		
0.50-1.00	B			1.60	0.50	Medium dense brown sandy subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
					(0.50)	(0.90 - 1.00m) Loose brown slightly gravelly SAND.		
1.00-1.75	B			1.10	1.00	Medium dense dark brown slightly gravelly SAND. Gravel is subangular to rounded fine to medium.		
					(0.70)			
1.75-2.00	B			0.40	1.70	Dense grey very gravelly SAND. Gravel is fine subangular to subrounded.		
					(0.30)			
				0.10	2.00	Poor recovery. Recovery consists of brown slighlty clayey slighlty gravelly coarse SAND. Gravel is fine to medium subangular to subrounded.		
					(0.70)			
				-0.60	2.70	Complete at 2.70m		

Remarks
Window sample refused at 2.70m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS26

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS27
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 1.00m 65mm to 2.30m	**Ground Level (mOD)** 1.91	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725400.1 E 751124.1 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	B				(0.30)	Loose brown gravelly coarse SAND with shell fragments. Gravel is subangular fine to medium.		
0.30-0.65	B			1.61	0.30			
					(0.35)	Medium dense brown very gravelly fine to medium SAND with subangular cobbles. Gravel is fine to coarse subangular to subrounded.		
0.65-2.30	B			1.26	0.65			
					(0.65)	Medium dense to dense brown slightly gravelly fine SAND with occasional shells. Gravel is subangular fine to medium.		
				0.61	1.30			
					(0.80)	Medium dense brown slightly gravelly fine SAND with occasional shells. Gravel is subangular fine to medium.		
				-0.19	2.10			
					(0.20)	Dense brown slightly gravelly fine SAND with occasional shells. Gravel is subangular fine to medium.		
				-0.39	2.30			
						Complete at 2.30m		

Remarks
Window sample refused at 2.30m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS27

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS28
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 3.00m	**Ground Level (mOD)** 3.85	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725458.1 E 750982 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.15	B				(0.15)	TOPSOIL.		
0.15-0.45	B			3.70	0.15	MADE GROUND: brown slightly sandy slightly gravelly Clay with glass and concrete fragments. Gravel is subangular to sunrounded fine to coarse.		
					(0.30)			
0.45-3.00	B			3.40	0.45	Loose light brown slightly gravelly SAND with shell fragments. Gravel is subangular to subrounded fine to coarse.		
					(0.75)			
						(1.00 - 1.05m) brown slightly gravelly sandy CLAY with rootlets.		
				2.65	1.20	Medium dense light brown slightly gravelly SAND with shell fragments. Gravel is subangular to subrounded fine to coarse.		
						(1.45 - 1.50m) Loose to medium dense brown sandy subangular to subrounded fine to medium GRAVEL. Sand is coarse.		
					(1.80)			
				0.85	3.00	(2.95 - 3.0m) brown sandy subangular to subrounded fine to medium GRAVEL. Sand is coarse.		
						Complete at 3.00m		

Remarks
Window sample refused at 3.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS28

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS29
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 3.00m	**Ground Level (mOD)** 3.71	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725471.8 E 750944.8 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	B				(0.15)	Soft brown sandy gravelly TOPSOIL with grass.		
0.00-0.30	EN			3.56	0.15			
					(0.15)	MADE GROUND sandy Gravel. Gravel is angular fine to coarse.		
0.30-1.40	B			3.41	0.30	Medium dense brown slightly gravelly fine to coarse SAND.		
					(0.60)			
				2.81	0.90	Loose brown slightly gravelly fine to coarse SAND.		
					(0.50)			
1.40-2.50	B			2.31	1.40	Medium dense light brown very gravelly fine to coarse SAND.		
					(1.10)			
2.50-2.70	B			1.21	2.50	Medium dense light brown slightly gravelly SAND.		
2.70-3.00	B				(0.50)	(2.70-2.80m) Medium dense sandy fine to coarse rounded to subrounded GRAVEL.		
				0.71	3.00	Complete at 3.00m		

Remarks
Window sample refused at 3.0m.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS29

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS30
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 2.40m	**Ground Level (mOD)** 3.83	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725520.3 E 750927.8 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.20	B			3.73	(0.10) 0.10	TOPSOIL.		
						MADE GROUND. Brown slightly clayey slightly sandy subangular to subrounded fine to coarse Gravel with red brick pieces, concrete and plastic.		
					(1.10)			
1.20-2.00	B			2.63	1.20	Medium dense brown gravelly fine to coarse SAND with shell fragments. Gravel is subangular to subrounded fine to coarse.		
					(0.80)			
2.00-2.40	B			1.83	2.00	Medium dense to dense brown gravelly coarse SAND with shells. Gravel is subangular to rounded fine to medium.		
					(0.20)			
				1.63	2.20	Dense brown gravelly coarse SAND with shells. Gravel is subangular to rounded fine to medium.		
					(0.20)			
				1.43	2.40	Complete at 2.40m		

Remarks
Window sample refused at 2.40m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS30

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS37
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 1.40m	**Ground Level (mOD)** 3.12	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724348.9 E 753180.8 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.75	B				(0.75)	MADE GROUND. Brown slightly clayey slightly sandy angular to subrounded fine to coarse GRAVEL.		
0.75-1.10	B			2.37	0.75	Medium dense to dense clayey GRAVEL. Gravel is angular to subangular fine to coarse.		
1.10-1.40	B			2.02	(0.35) 1.10	Dense brown slightly clayey gravelly SAND. Gravel is subnagular to subrounded fine to coarse.		
				1.72	(0.30) 1.40	Complete at 1.40m		

Remarks
Window sample refused at 1.40m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS37

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS38
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 5.00m	**Ground Level (mOD)** 2.91	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724406.8 E 753206.3 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.25	B				(0.25)	Very soft brown slightly sandy slightly gravelly TOPSOIL with rootlets.		
0.25-0.60	B			2.66	0.25	Loose brown slightly clayey fine to coarse SAND.		
					(0.35)			
0.60-1.80	B			2.31	0.60	Loose very clayey fine to coarse SAND.		
					(1.20)			
1.80-2.00	B			1.11	1.80	Loose to medium dense brown gravelly coarse SAND.		
					(0.20)			
2.00-2.50	B			0.91	2.00	Medium dense brown/grey slightly gravelly coarse SAND.		
					(0.50)			
2.50-2.90	B			0.41	2.50	Medium dense brown slightly clayey gravelly fine to coarse SAND with bands of clay.		
					(0.40)			
2.90-3.40	B			0.01	2.90	Loose grey very sandy subangular to subrounded fine to coarse GRAVEL with bands of clay.		
					(0.50)			
3.40-3.65	B			-0.49	3.40	Very loose grey silty fine SAND.		
					(0.25)			
3.65-4.00	B			-0.74	3.65	Soft grey slightly sandy slightly gravelly silty CLAY.		
					(0.35)			
4.00-4.40	B			-1.09	4.00	Very loose sandy fine to coarse subangular to subrounded GRAVEL.		
					(0.40)			
4.40-4.60	B			-1.49	4.40	Loose grey slightly gravelly fine to coarse. SAND.		
					(0.20)			
4.60-5.00	B			-1.69	4.60	Stiff grey slightly sandy slightly silty CLAY.		
					(0.40)			
				-2.09	5.00			

Remarks
Window sample refused at 5.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS38

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS39
Machine : Tec-10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 4.80m	**Ground Level (mOD)** 2.75	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724458.4 E 753217.5 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.90	B				(0.90)	MADE GROUND. Brown slightly sandy slightly gravelly Clay with grass and plastic. Gravel is subangular fine to coarse.		
0.90-1.90	B			1.85	0.90 (1.00)	Loose brown gravelly SAND.		
1.90-3.00	B			0.85	1.90 (0.40)	Loose grey slightly silty gravelly SAND.		
				0.45	2.30 (0.40)	Medium dense grey slightly silty gravelly SAND.		
				0.05	2.70 (0.30)	Loose grey slightly silty gravelly SAND.		
3.00-3.30	B			-0.25	3.00 (0.30)	(2.95 - 3.00m) Grey very sandy CLAY. Very loose brown-grey slightly gravelly SAND.		
3.30-4.00	B			-0.55	3.30 (0.50)	Very soft grey CLAY.		
				-1.05	3.80 (0.20)	Stiff grey CLAY.		
4.00-4.50	B			-1.25	4.00 (0.50)	Loose brown slightly gravelly SAND. Gravel is subangular to subrounded fine to coarse.		
4.50-4.80	B			-1.75	4.50 (0.30)	Loose brown sandy subangular to subrounded fine to coarse GRAVEL.		
				-2.05	4.80	Complete at 4.80m		

Remarks
Window sample refused at 4.80m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS39

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS40
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 3.00m 65mm to 4.00m	**Ground Level (mOD)** 3.00	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724559.7 E 753203.7 N	**Dates** 17/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00 0.00-1.00	B EN			2.90	(0.10) 0.10	TOPSOIL		
						MADE GROUND. Brown clayey gravelly fine to coarse Sand with red brick, metal and glass fragments.		
					(0.90)			
				2.00	1.00	Reworked Topsoil.		
1.00-1.10	B					Medium dense light brown slightly gravelly SAND.		
1.10-1.35	B				(0.35)			
				1.65	1.35	Medium dense dark brown/grey slightly gravelly SAND with shell fragments.		
1.35-1.50	B				(0.15)			
1.50-2.50	B			1.50	1.50	Medium dense grey slightly silty slightly gravelly SAND.		
					(0.40)			
				1.10	1.90	Loose grey slightly silty slightly gravelly SAND.		
					(0.60)			
2.50-4.00	B			0.50	2.50	Very loose grey silty fine SAND with clams.		
					(1.50)			
				-1.00	4.00	Complete at 4.00m		

Remarks
Window sample refused at 5.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS40

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS41
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 5.00m	**Ground Level (mOD)** 3.13	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724575.1 E 753178.4 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.60 0.00-0.60	B EN			3.03	(0.10) 0.10	TOPSOIL		
					(0.50)	MADE GROUND: Brown clayey gravelly fine to coarse Sand with rootlets, sticks, plastic and red brick fragments.		
0.60-0.95	B			2.53	0.60 (0.35)	Loose to medium dense brown slightly gravelly clayey SAND with rootlets.		
0.95-1.30	B			2.18	0.95 (0.35)	Loose light brown slightly clayey slightly gravelly fine to coarse SAND.		
1.30-1.50	B			1.83	1.30 (0.20)	Very soft brown slightly gravelly very sandy CLAY with wood and roots.		
1.50-1.75	B			1.63	1.50 (0.25)	Loose grey slightly silty fine SAND with roots.		
1.75-2.00	B			1.38	1.75 (0.25)	Medium dense grey/brown slightly gravelly SAND with shell fragments. Sand is fine.		
2.00-2.40	B			1.13	2.00 (0.20)	Medium dense grey slightly gravelly fine SAND.		
				0.93	2.20 (0.20)	Very loose grey slightly gravelly fine SAND.		
2.40-3.00	B			0.73	2.40 (0.60)	Soft grey slightly clayey sandy SILT with clams. (2.75 - 2.8m) brown slightly sandy organic CLAY. (2.90 - 3.0m) brown slightly sandy organic CLAY.		
3.00-3.45	B			0.13	3.00 (0.45)	Very loose brown slightly gravelly fine SAND.		
3.45-3.85	B			-0.32	3.45 (0.40)	Very loose grey slightly clayey slightly gravelly SAND with some clay bands.		
3.85-4.00	B			-0.72	3.85 (1.15)	Very loose grey gravelly very clayey fine to coarse SAND.		
				-1.87	5.00			

Remarks
Window sample refused at 5.00m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS41

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS42
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 3.60m	**Ground Level (mOD)** 2.81	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724605.4 E 753135.9 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.94 0.00-0.94	B EN			2.71	(0.10) 0.10	TOPSOIL		
					(0.84)	MADE GROUND. Brown clayey very sandy Gravel with rootlets and plastic fragments.		
0.94-1.50	B			1.87	0.94	MADE GROUND. Brown slightly gravelly fine to coarse Sand with occasional clay lenses.		
					(0.56)			
1.50-2.65	B			1.31	1.50	Loose brown gravelly fine to coarse SAND.		
					(0.20)			
				1.11	1.70	Medium dense brown gravelly fine to coarse SAND.		
					(0.60)			
				0.51	2.30	Medium dense to dense brown gravelly fine to coarse SAND.		
					(0.35)			
2.65-3.00	B			0.16	2.65	Firm to stiff brown slightly sandy CLAY.		
					(0.35)	(2.80 - 2.85m) Brown clayey SAND.		
3.00-3.50	B			-0.19	3.00	Loose brown gravelly coarse SAND.		
					(0.50)			
3.50-3.60	B			-0.69	3.50	Stiff grey silty CLAY.		
					(0.10)			
				-0.79	3.60	Stiff grey clayey SILT.		
					(0.20)			
				-0.99	3.80	Complete at 3.80m		

Remarks
Window sample refused at 3.80m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS42

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS43
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 3.00m	**Ground Level (mOD)** 2.77	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724631.8 E 753107.6 N	**Dates** 17/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.45	B				(0.45)	Brown slightly gravelly sandy TOPSOIL with grass rootlets and ceramic fragments.		
0.45-0.70	B			2.32	0.45	MADE GROUND. Brown slightly gravelly SAND.		
0.70-1.50	B			2.07	(0.25) 0.70	Medium dense dark brown gravelly fine to coarse SAND with shell fragments. (0.95 - 1.0m) Soft dark brown slightly sandy CLAY.		
1.50-3.00	B			1.27	(0.80) 1.50	Medium dense light brown fine to coarse SAND.		
				-0.23	(1.50) 3.00	Complete at 3.00m		

Remarks
Window sample refused at 3.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS43

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS44
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 3.00m	**Ground Level (mOD)** 2.78	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724679.3 E 753074.4 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	B				(0.30)	Brown slightly gravelly clayey Topsoil with grass, ceramic fragments, plastic and glass.		
0.00-1.20	EN			2.48	0.30			
0.30-0.60	B				(0.30)	MADE GROUND. Brown gravelly slightly clayey Sand with roots, glass and red brick fragments.		
0.60-0.95	B			2.18	0.60			
					(0.35)	MADE GROUND. Brown gravelly Sand. Sand is coarse.		
0.95-1.20	B			1.83	0.95			
					(0.25)	MADE GROUND. Sandy Clay/Peat with glass and red brick fragments.		
1.20-1.50	B			1.58	1.20			
					(0.30)	Medium dense light brown slightly gravelly shelly fine to coarse SAND.		
1.50-3.00	B			1.28	1.50			
					(1.50)	Dense brown slightly gravelly fine SAND.		
				-0.22	3.00			
						Complete at 3.00m		

Remarks
Window sample refused at 3.0m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.WS44

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Number** WS46
Machine : Tec 10 **Method :** Drive-in Windowless Sampler	**Dimensions** 87mm to 2.00m 65mm to 2.50m	**Ground Level (mOD)** 2.14	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724753.5 E 752968.2 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70 0.00-0.70	B EN				(0.70)	MADE GROUND. Brown slightly gravelly Sand with felt and plastic and red brick pieces.		
0.70-0.90	B			1.44	0.70 (0.20)	Loose brown-grey slightly gravelly fine to coarse. SAND.		
0.90-1.50	B			1.24	0.90 (0.60)	Medium dense brown slightly gravelly coarse SAND with shell fragments.		
1.50-2.00	B			0.64	1.50 (0.50)	Medium dense brown slightly gravelly fine SAND.		
2.00-2.50	B			0.14	2.00 (0.50)	Dense brown slightly gravelly fine to coarse SAND.		
				-0.36	2.50	Complete at 2.50m		

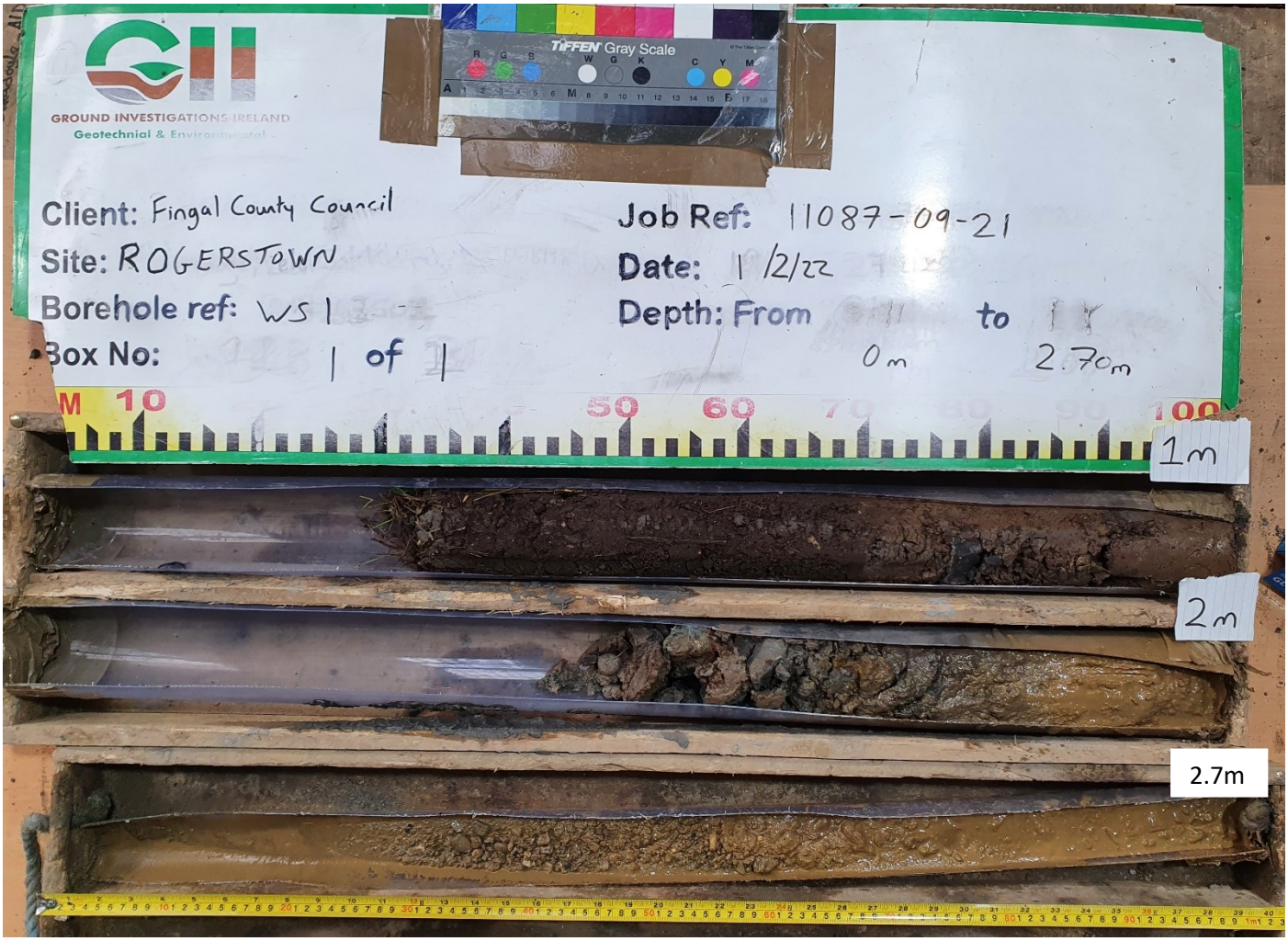
Remarks
Window sample refused at 2.50m BGL.

Scale (approx)	Logged By
1:25	RM

Figure No. 11087-09-21.WS46

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS01

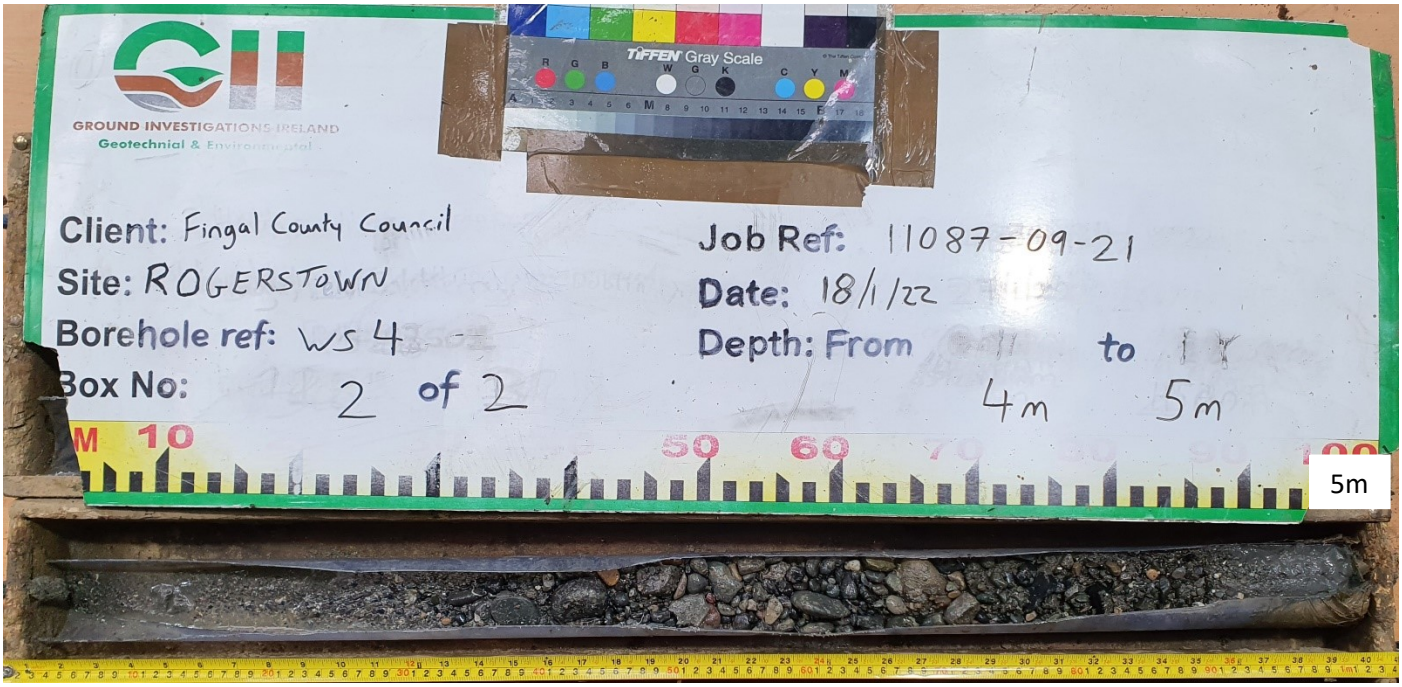


Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS03

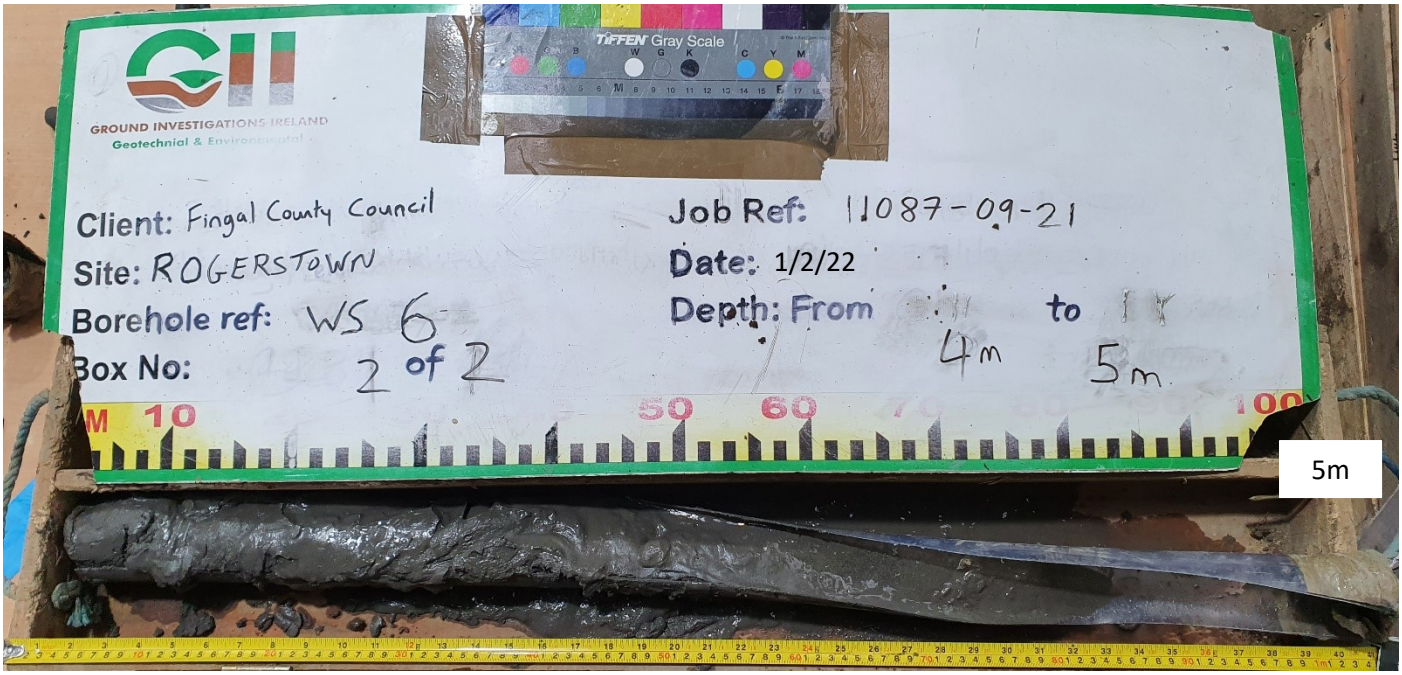
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS04



Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS06



Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS14

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

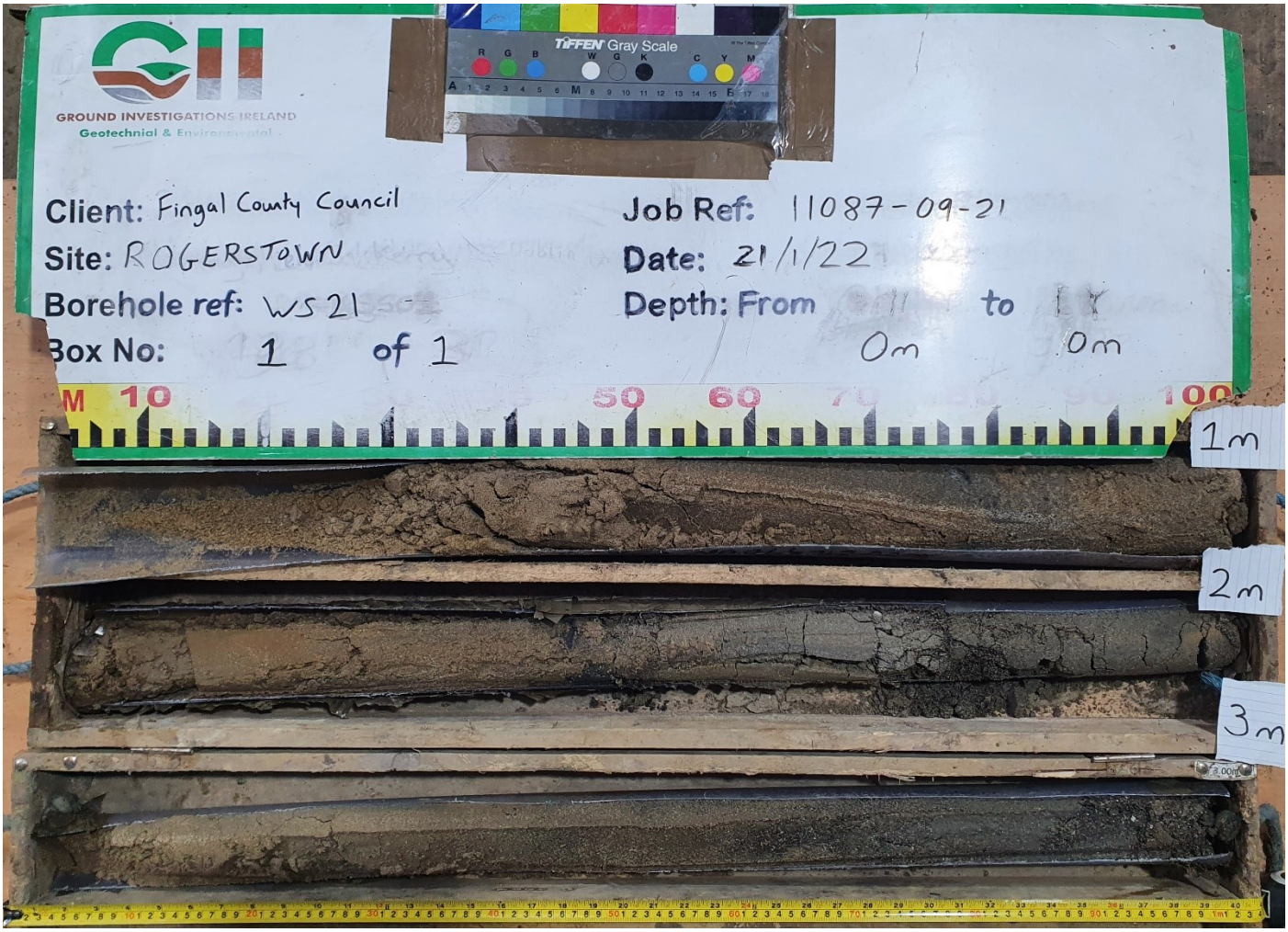
WS16

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS17

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS21

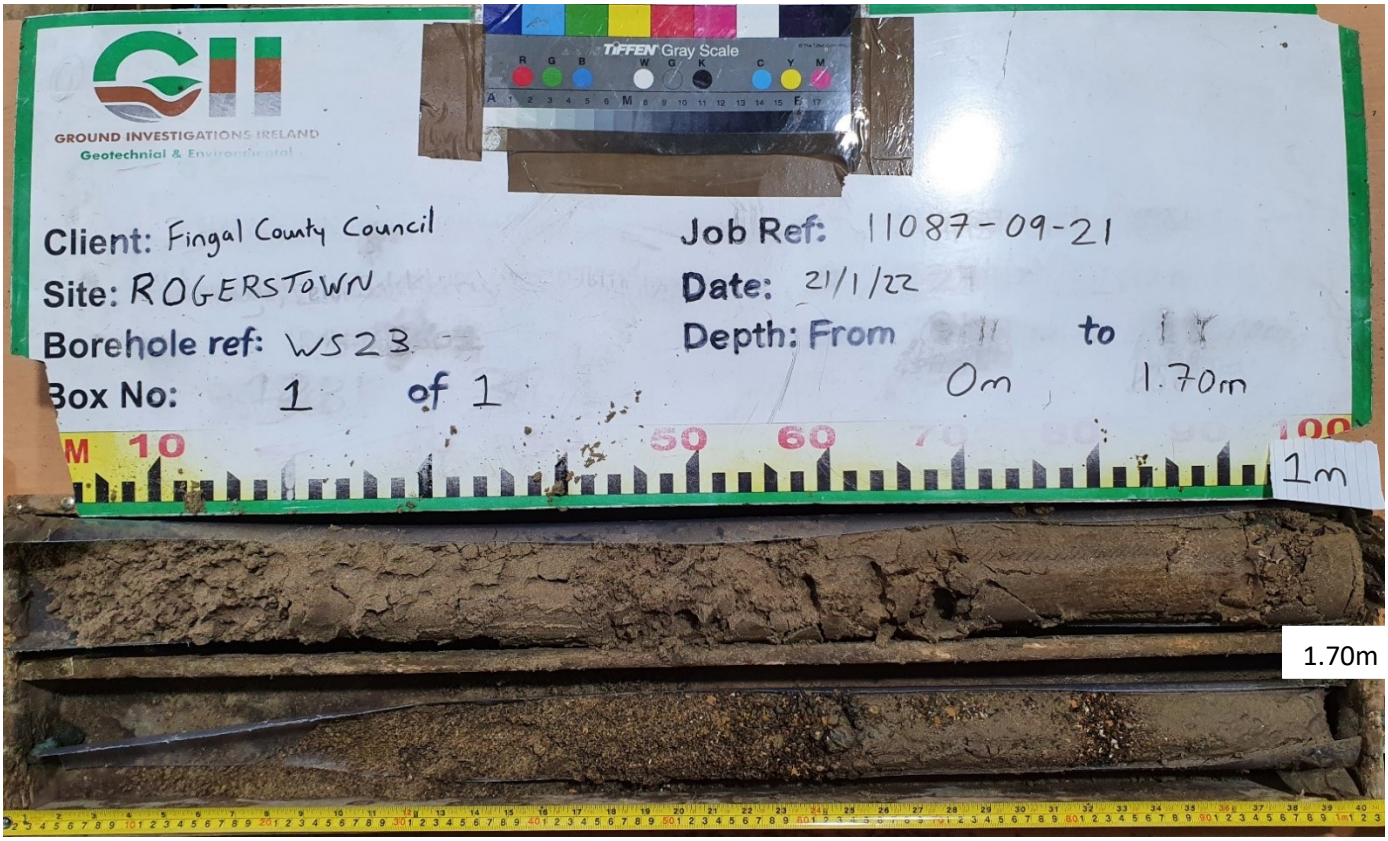


Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS22

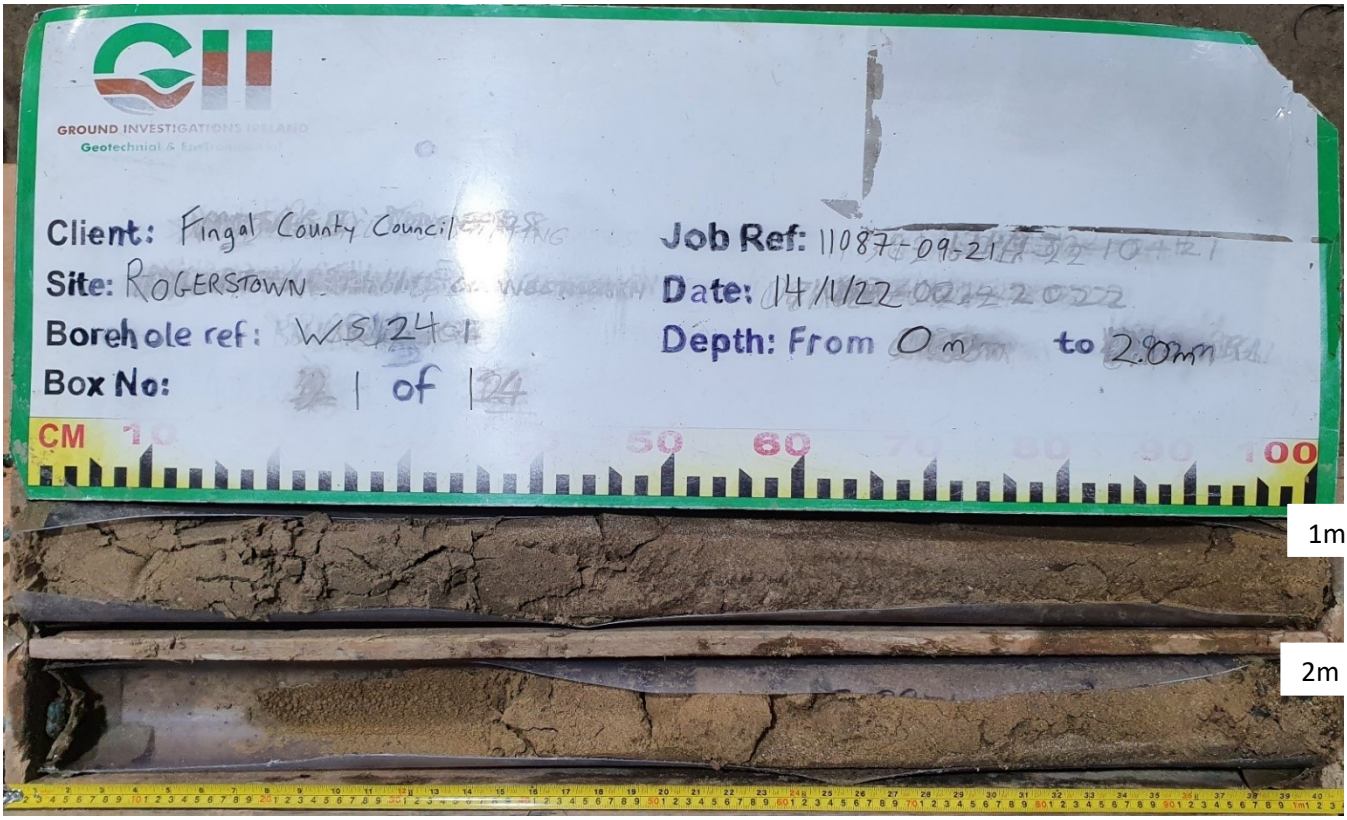
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS23



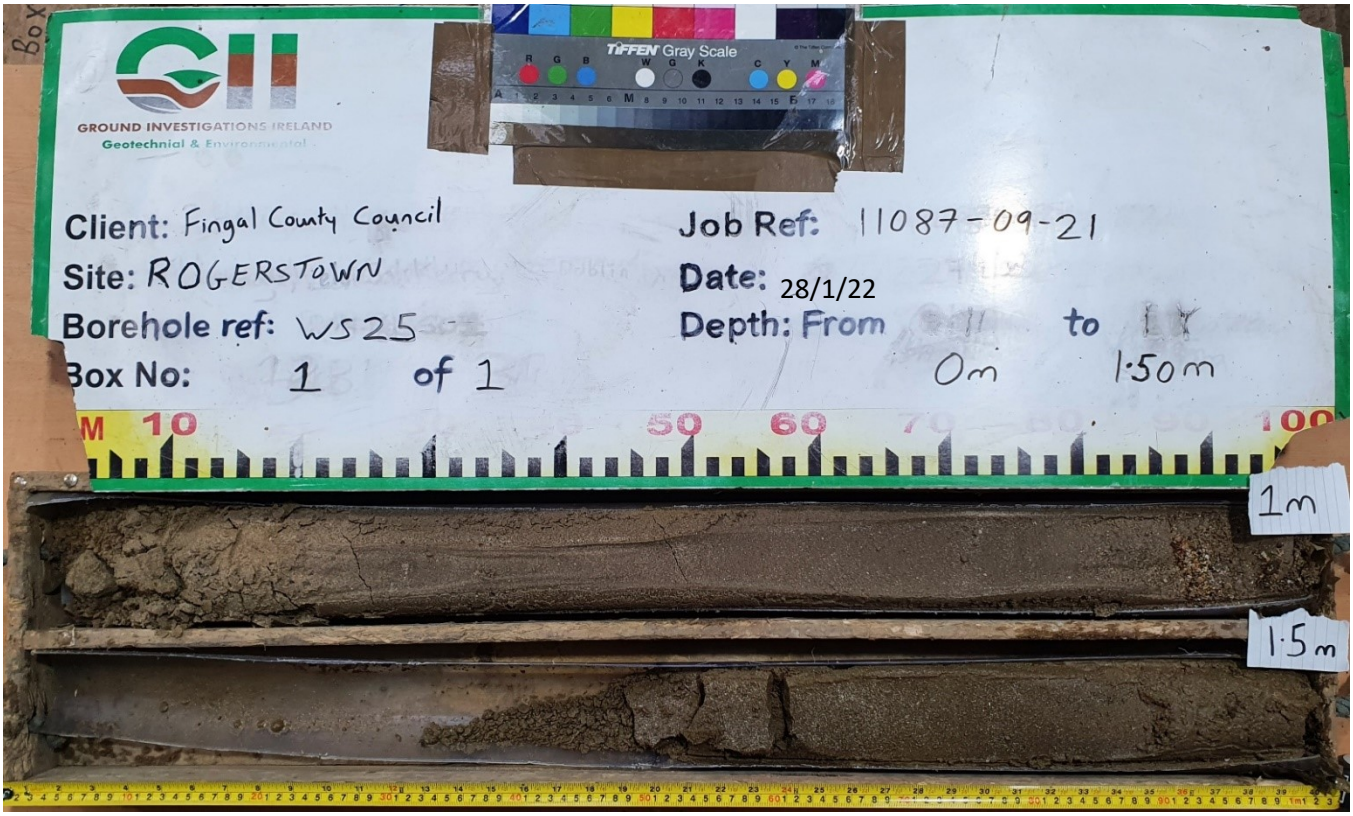
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS24



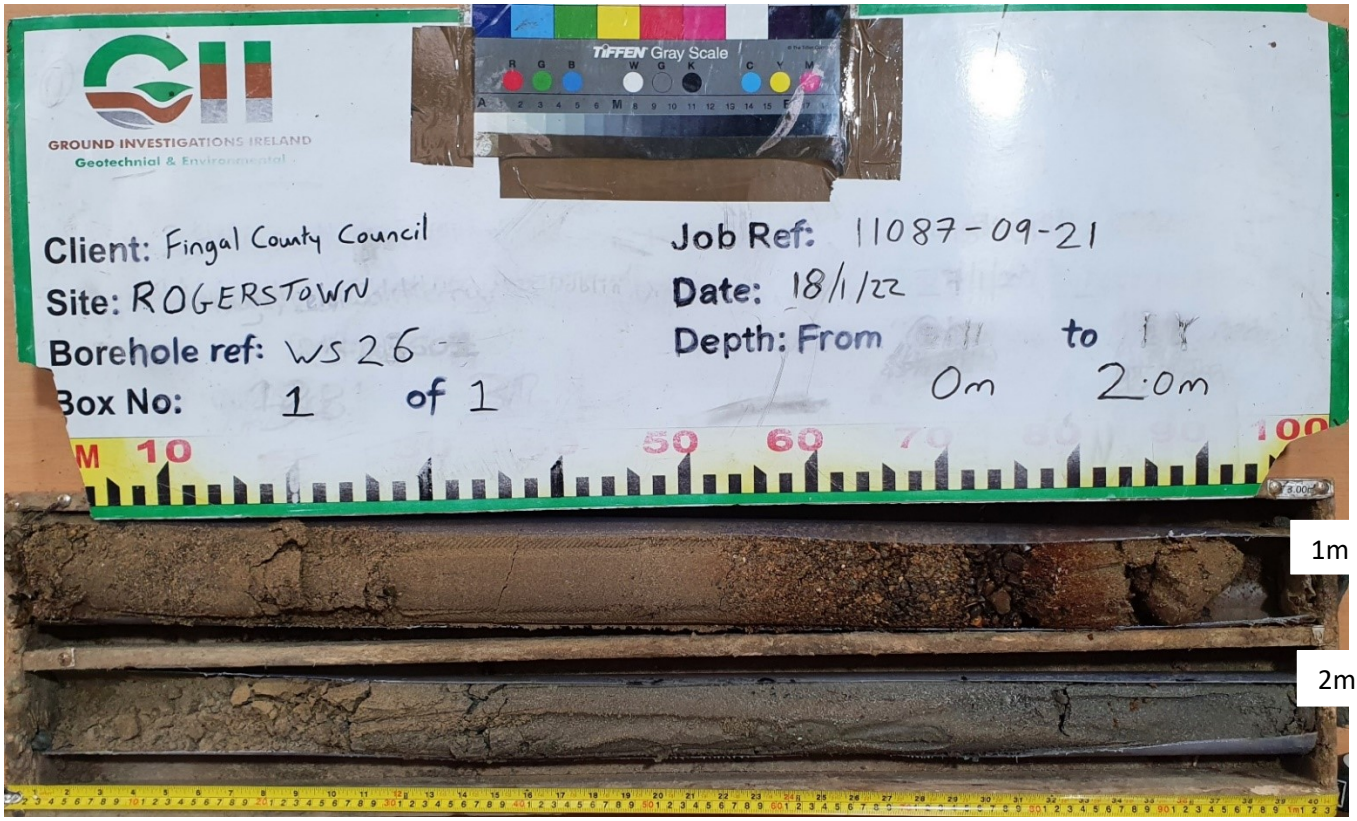
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS25



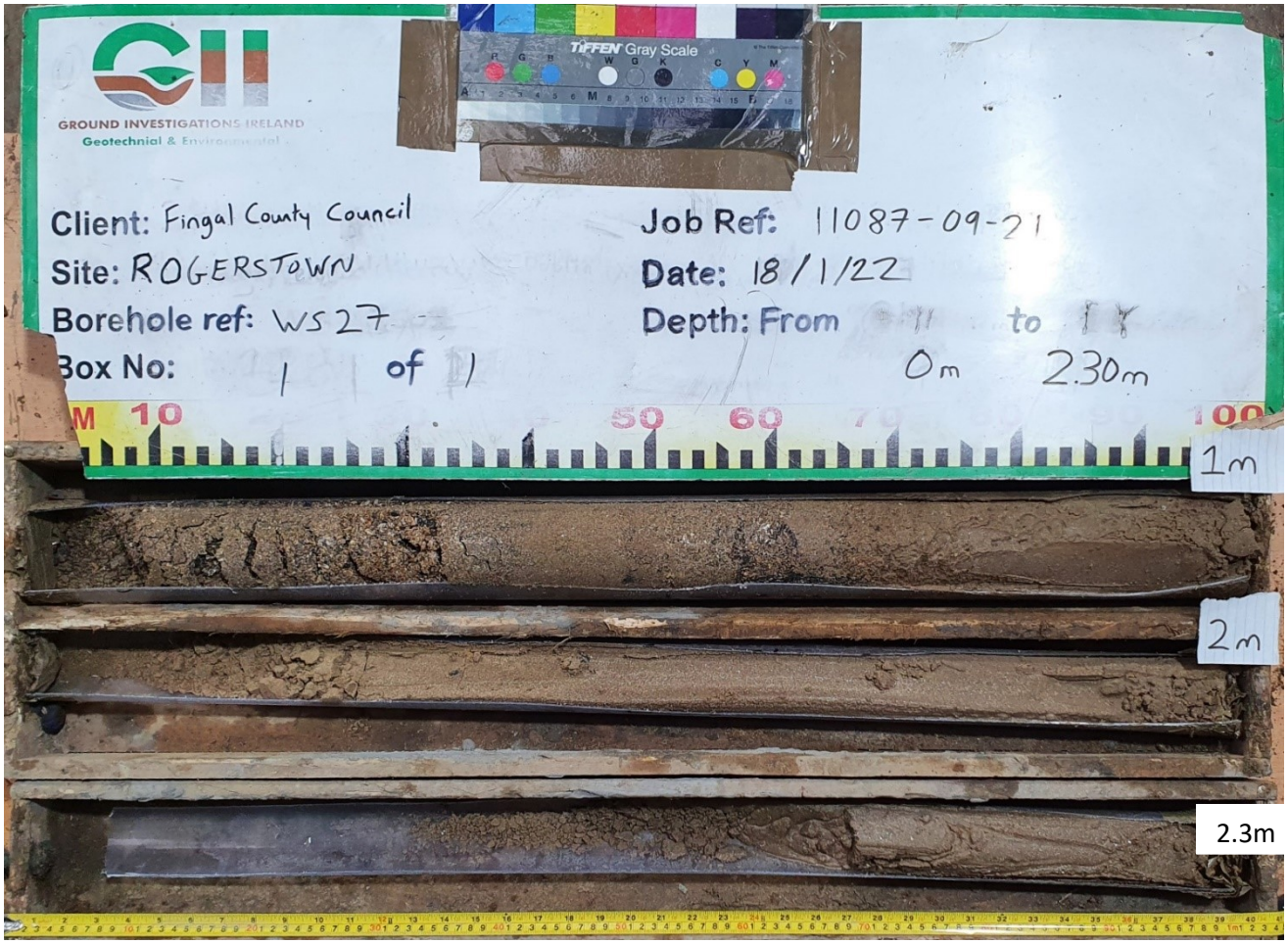
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS26



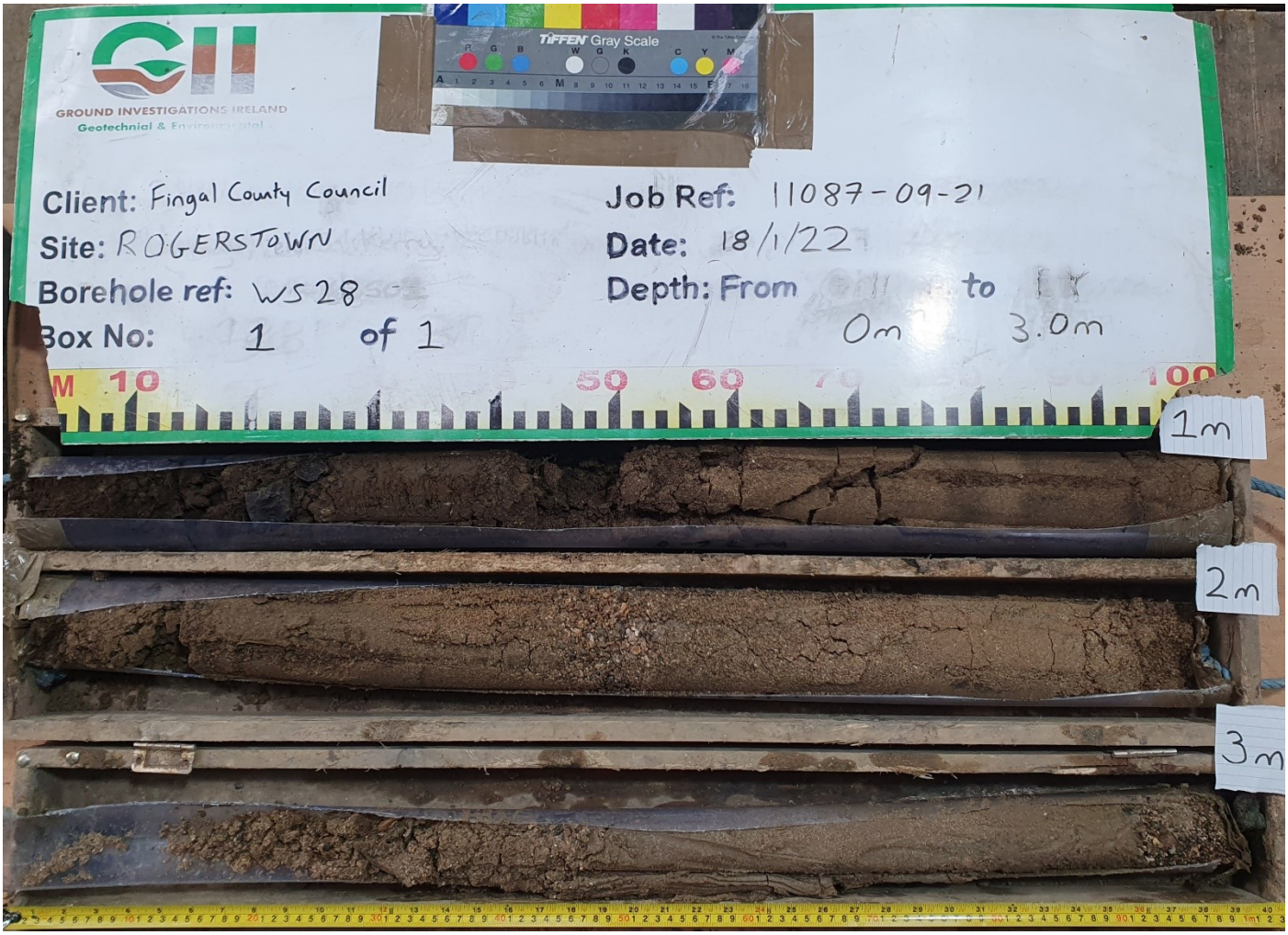
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS27



Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS28

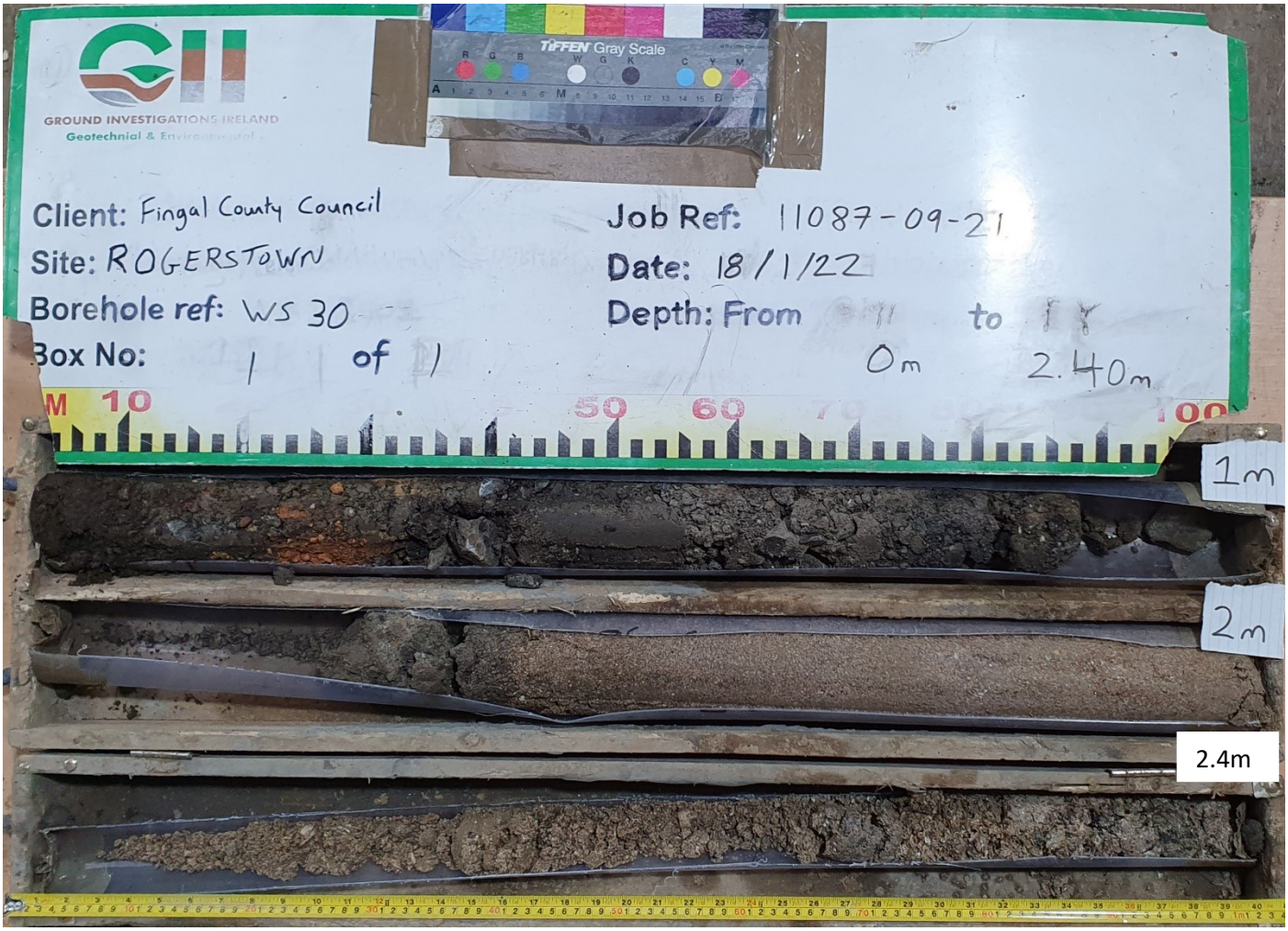


Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS29

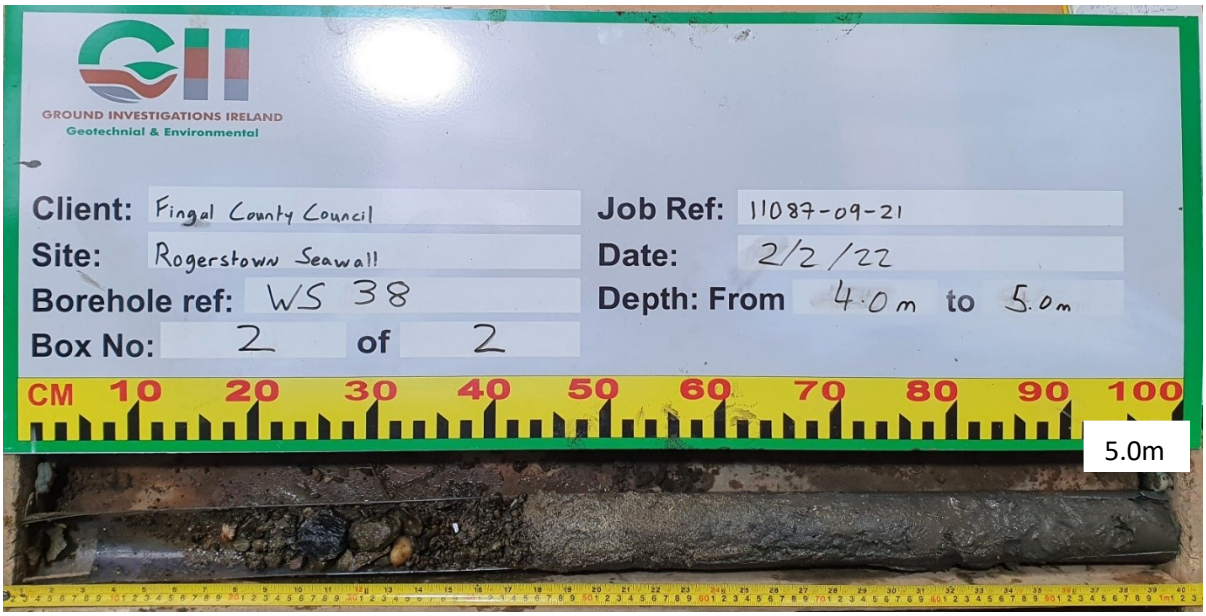
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS30



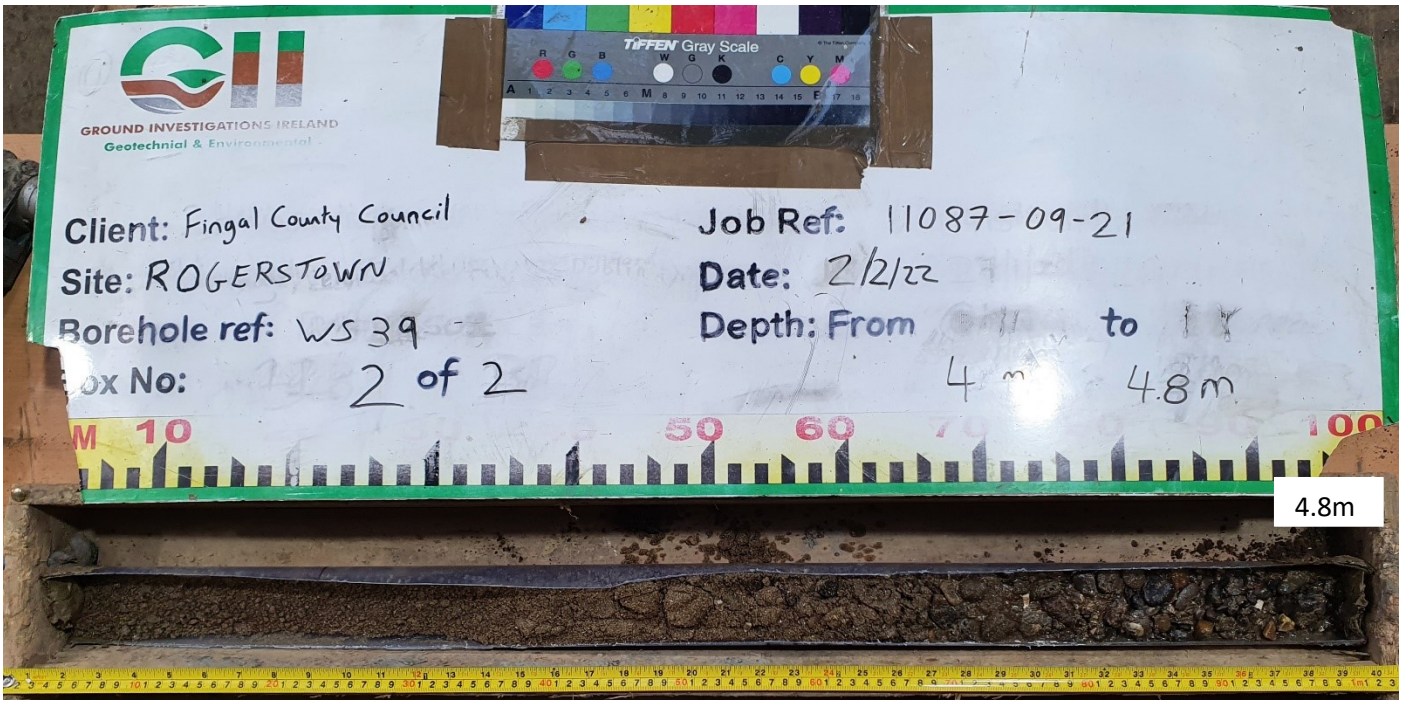
Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS38



Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS39

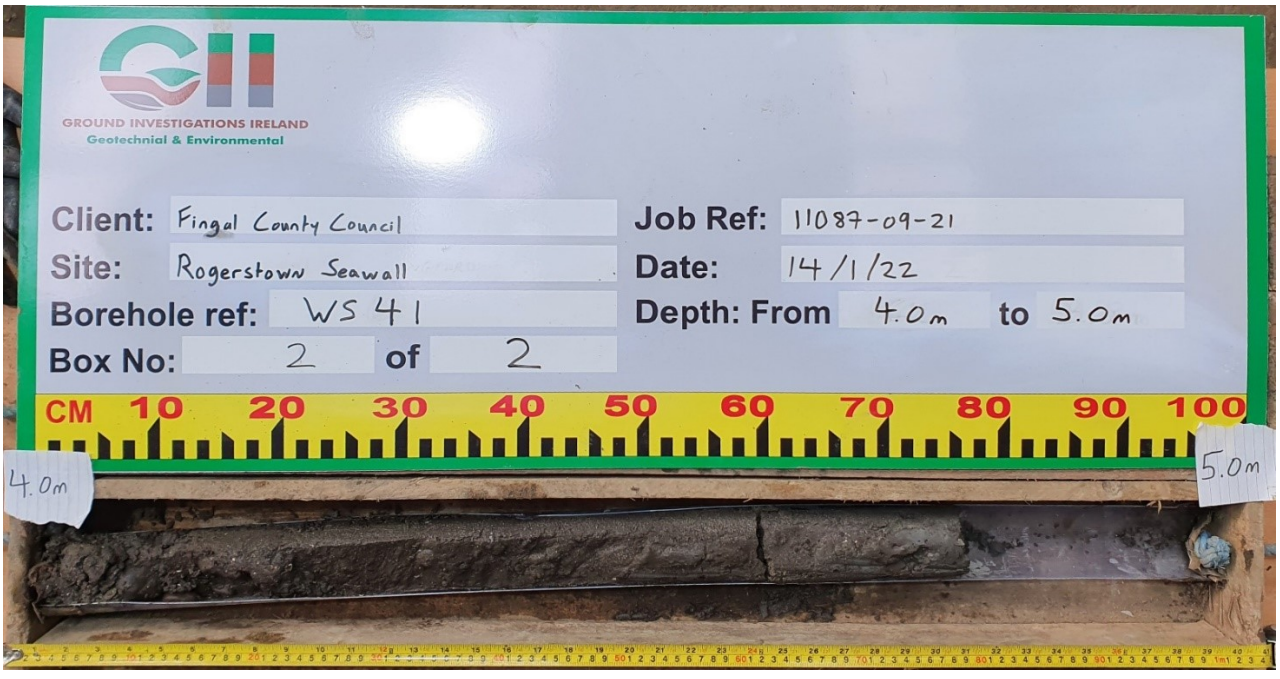


Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS40

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS41



Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS42

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS43

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS44

Rogerstown Coastal Flood and Erosion Relief Scheme
Window Sample Photographs

WS46

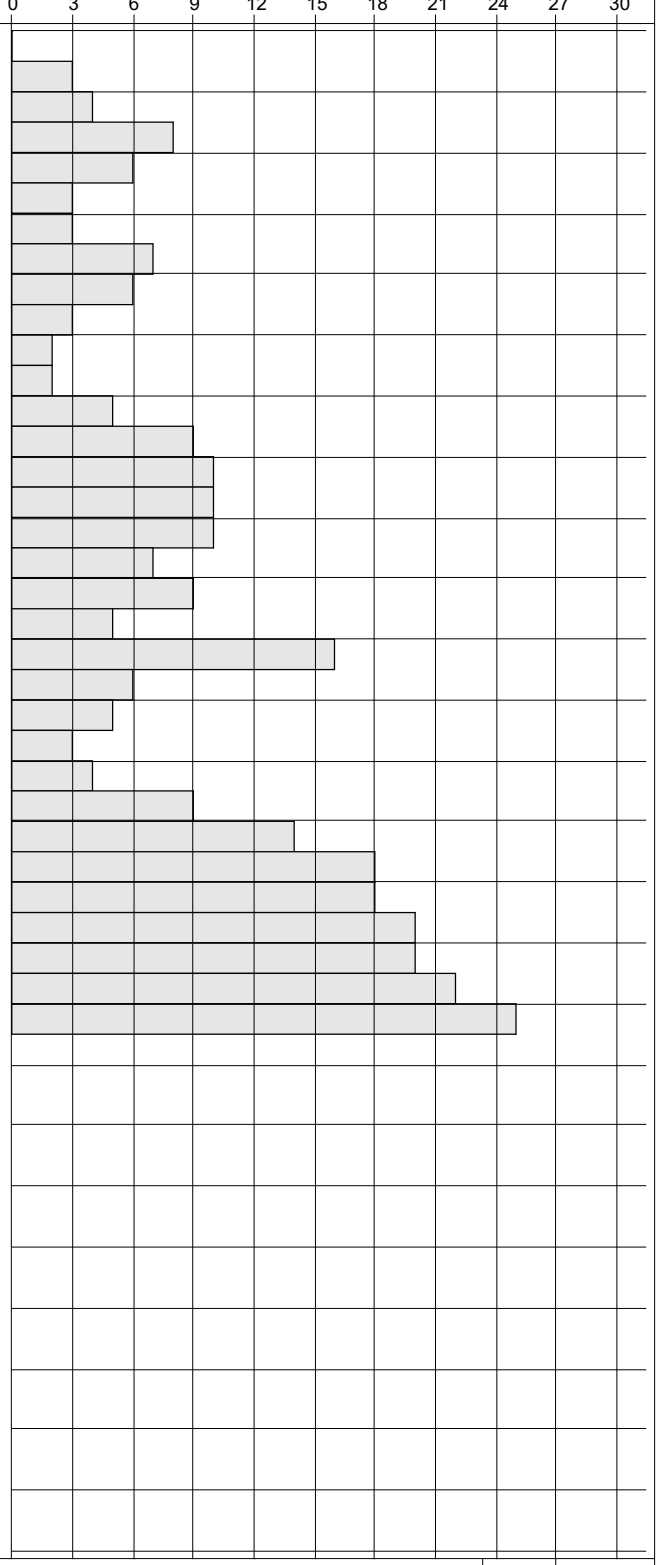
APPENDIX 3 – Dynamic Probe Records

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP01

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.67	Client Fingal County Council	Job Number 11087-09-21
	Location 724693 E 751446.9 N	Dates 01/02/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.67	0.00
0.10-0.20	3			
0.20-0.30	4			
0.30-0.40	8			
0.40-0.50	6			
0.50-0.60	3		2.17	0.50
0.60-0.70	3			
0.70-0.80	7			
0.80-0.90	6			
0.90-1.00	3			
1.00-1.10	2		1.67	1.00
1.10-1.20	2			
1.20-1.30	5			
1.30-1.40	9			
1.40-1.50	10			
1.50-1.60	10		1.17	1.50
1.60-1.70	10			
1.70-1.80	7			
1.80-1.90	9			
1.90-2.00	5			
2.00-2.10	16		0.67	2.00
2.10-2.20	6			
2.20-2.30	5			
2.30-2.40	3			
2.40-2.50	4			
2.50-2.60	9		0.17	2.50
2.60-2.70	14			
2.70-2.80	18			
2.80-2.90	18			
2.90-3.00	20			
3.00-3.10	20		-0.33	3.00
3.10-3.20	22			
3.20-3.30	25			
			-0.83	3.50
			-1.33	4.00
			-1.83	4.50
			-2.33	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

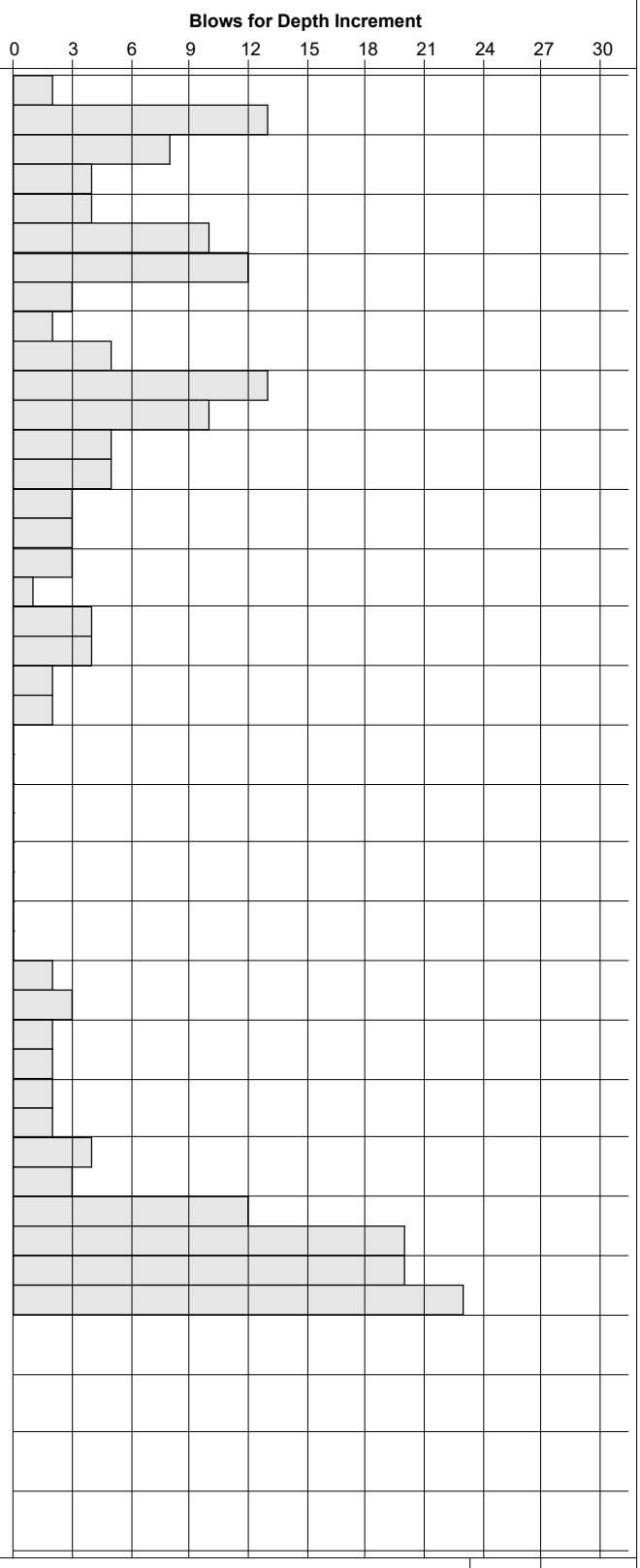
Figure No.
11087-09-21.DP01

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP03

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.49	Client Fingal County Council	Job Number 11087-09-21
	Location 724745.6 E 751532 N	Dates 01/02/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2		2.49	0.00
0.10-0.20	13			
0.20-0.30	8			
0.30-0.40	4			
0.40-0.50	4			
0.50-0.60	10		1.99	0.50
0.60-0.70	12			
0.70-0.80	3			
0.80-0.90	2			
0.90-1.00	5			
1.00-1.10	13		1.49	1.00
1.10-1.20	10			
1.20-1.30	5			
1.30-1.40	5			
1.40-1.50	3			
1.50-1.60	3		0.99	1.50
1.60-1.70	3			
1.70-1.80	1			
1.80-1.90	4			
1.90-2.00	4			
2.00-2.10	2		0.49	2.00
2.10-2.20	2			
2.20-2.30	0			
2.30-2.40	0			
2.40-2.50	0			
2.50-2.60	0		-0.01	2.50
2.60-2.70	0			
2.70-2.80	0			
2.80-2.90	0			
2.90-3.00	0			
3.00-3.10	2		-0.51	3.00
3.10-3.20	3			
3.20-3.30	2			
3.30-3.40	2			
3.40-3.50	2			
3.50-3.60	2		-1.01	3.50
3.60-3.70	4			
3.70-3.80	3			
3.80-3.90	12			
3.90-4.00	20			
4.00-4.10	20		-1.51	4.00
4.10-4.20	23			
			-2.01	4.50
			-2.51	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

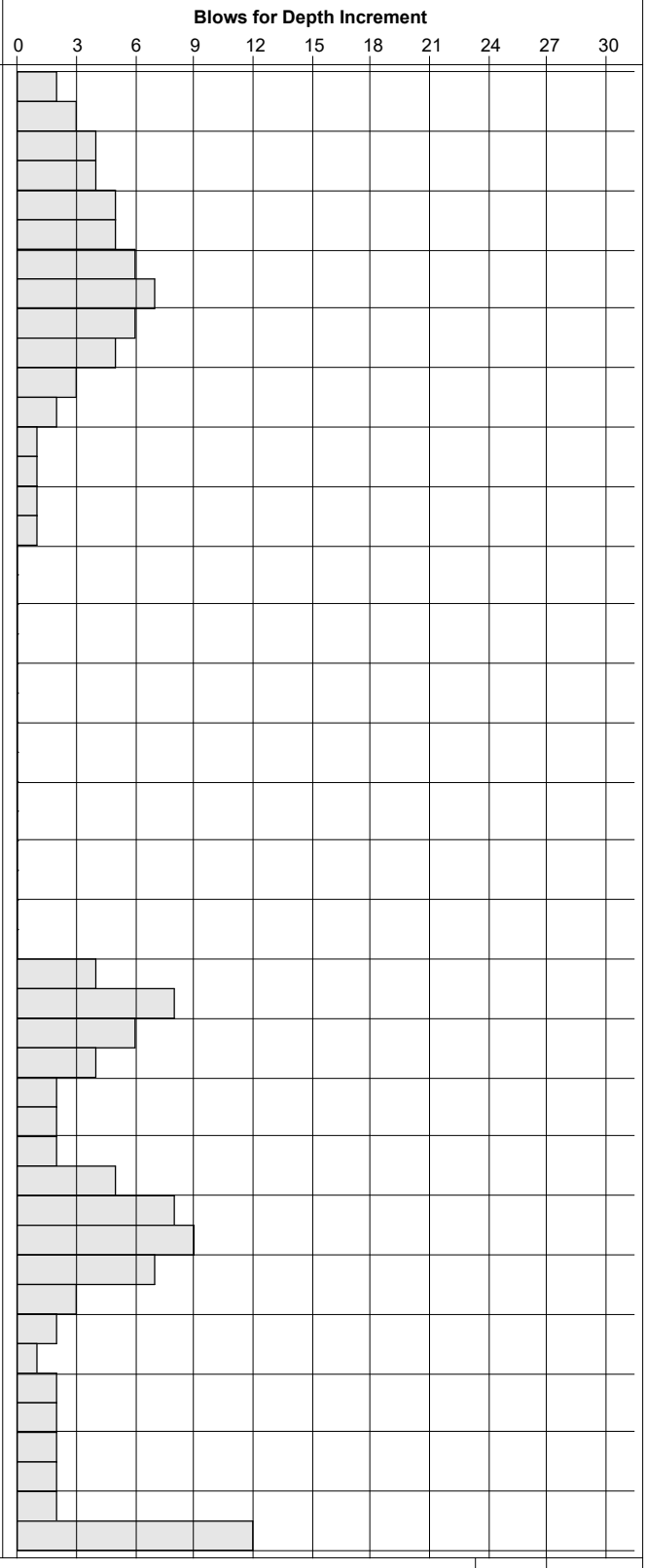
Figure No.
11087-09-21.DP03

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP04

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.48	Client Fingal County Council	Job Number 11087-09-21
	Location 724715.4 E 751565.1 N	Dates 01/02/2022	Engineer RPS	Sheet 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2		2.48	0.00
0.10-0.20	3			
0.20-0.30	4			
0.30-0.40	4			
0.40-0.50	5			
0.50-0.60	5		1.98	0.50
0.60-0.70	6			
0.70-0.80	7			
0.80-0.90	6			
0.90-1.00	5			
1.00-1.10	3		1.48	1.00
1.10-1.20	2			
1.20-1.30	1			
1.30-1.40	1			
1.40-1.50	1			
1.50-1.60	1		0.98	1.50
1.60-1.70	0			
1.70-1.80	0			
1.80-1.90	0			
1.90-2.00	0			
2.00-2.10	0		0.48	2.00
2.10-2.20	0			
2.20-2.30	0			
2.30-2.40	0			
2.40-2.50	0			
2.50-2.60	0		-0.02	2.50
2.60-2.70	0			
2.70-2.80	0			
2.80-2.90	0			
2.90-3.00	0			
3.00-3.10	4		-0.52	3.00
3.10-3.20	8			
3.20-3.30	6			
3.30-3.40	4			
3.40-3.50	2			
3.50-3.60	2		-1.02	3.50
3.60-3.70	2			
3.70-3.80	5			
3.80-3.90	8			
3.90-4.00	9			
4.00-4.10	7		-1.52	4.00
4.10-4.20	3			
4.20-4.30	2			
4.30-4.40	1			
4.40-4.50	2			
4.50-4.60	2		-2.02	4.50
4.60-4.70	2			
4.70-4.80	2			
4.80-4.90	2			
4.90-5.00	12		-2.52	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

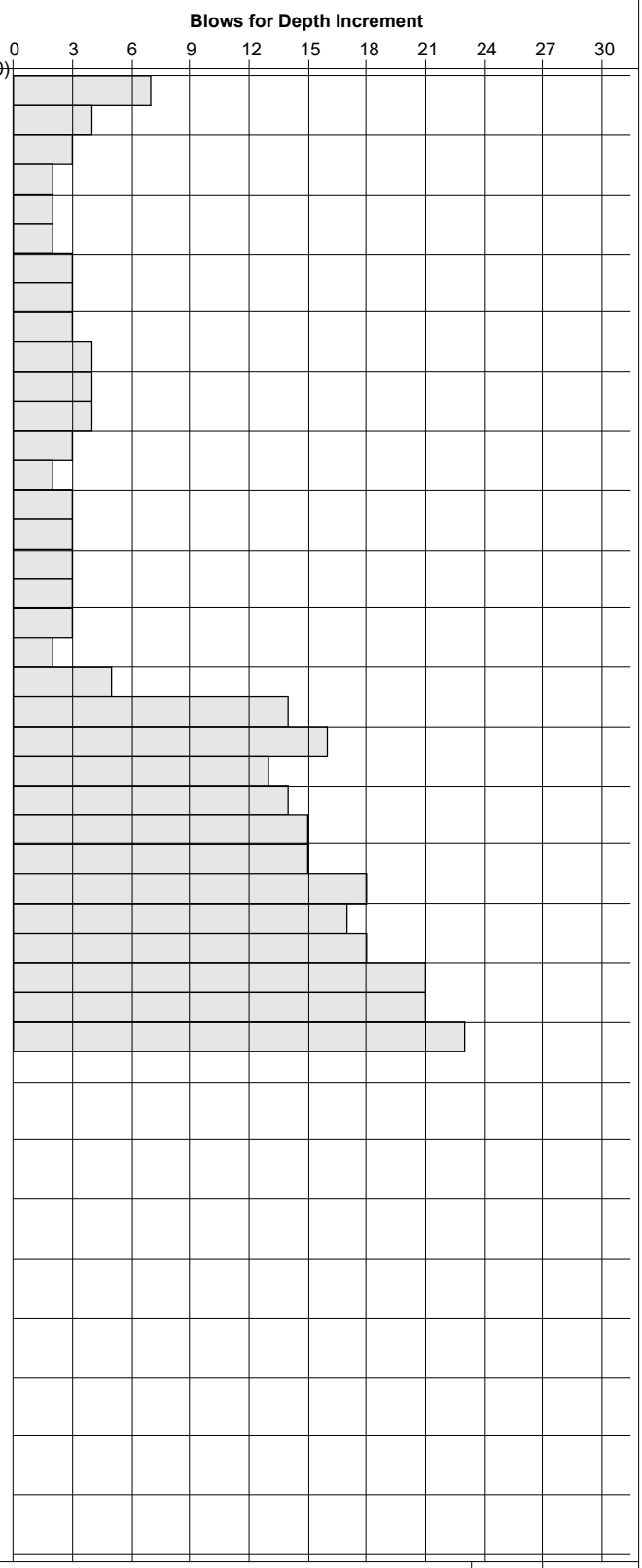
Figure No.
11087-09-21.DP04

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP04

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.48	Client Fingal County Council	Job Number 11087-09-21
	Location 724715.4 E 751565.1 N	Dates 01/02/2022	Engineer RPS	Sheet 2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
5.00-5.10	7		-2.52	5.00 (0.10)
5.10-5.20	4			
5.20-5.30	3			
5.30-5.40	2			
5.40-5.50	2			
5.50-5.60	2		-3.02	5.50
5.60-5.70	3			
5.70-5.80	3			
5.80-5.90	3			
5.90-6.00	4			
6.00-6.10	4		-3.52	6.00
6.10-6.20	4			
6.20-6.30	3			
6.30-6.40	2			
6.40-6.50	3			
6.50-6.60	3		-4.02	6.50
6.60-6.70	3			
6.70-6.80	3			
6.80-6.90	3			
6.90-7.00	2			
7.00-7.10	5		-4.52	7.00
7.10-7.20	14			
7.20-7.30	16			
7.30-7.40	13			
7.40-7.50	14			
7.50-7.60	15		-5.02	7.50
7.60-7.70	15			
7.70-7.80	18			
7.80-7.90	17			
7.90-8.00	18			
8.00-8.10	21		-5.52	8.00
8.10-8.20	21			
8.20-8.30	23			
			-6.02	8.50
			-6.52	9.00
			-7.02	9.50
			-7.52	10.00



Remarks

Scale (approx)	Logged By
1:25	RM

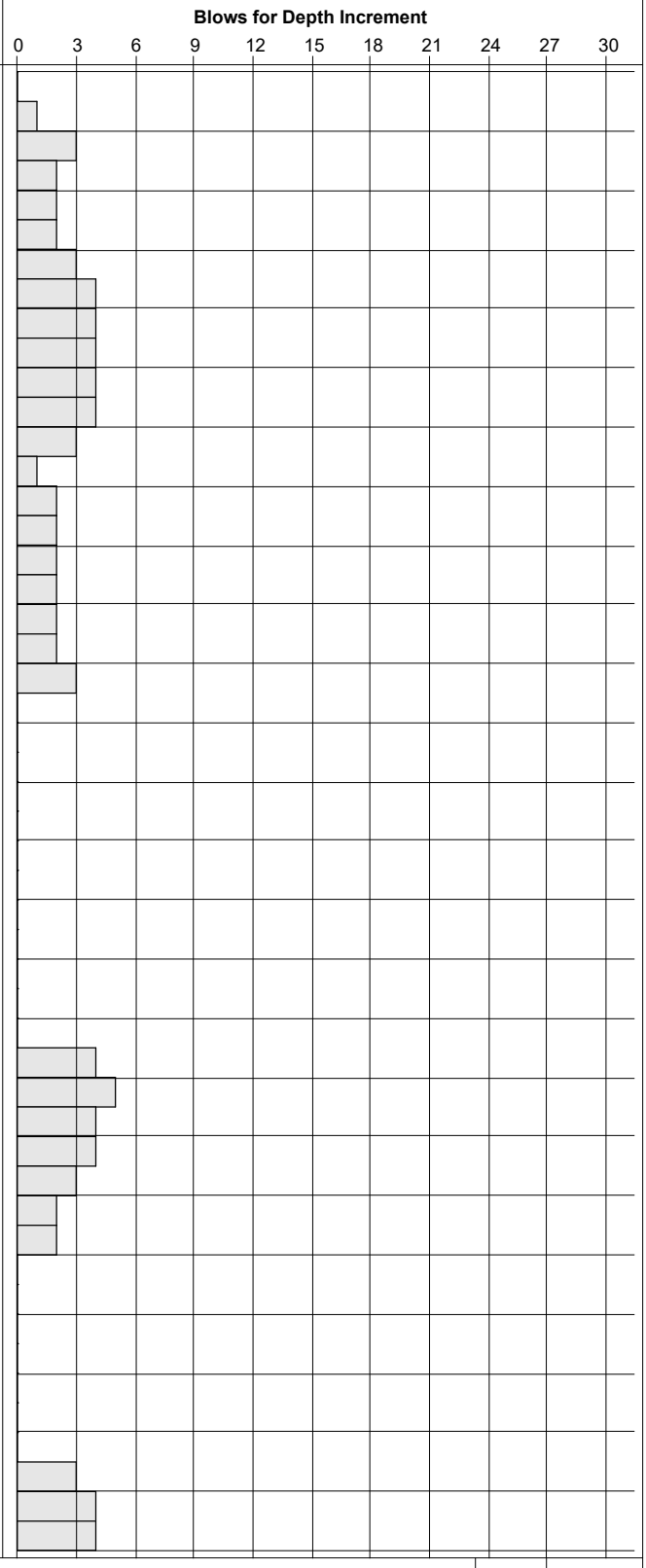
Figure No.
11087-09-21.DP04

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP06

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.04	Client Fingal County Council	Job Number 11087-09-21
	Location 724666.5 E 751652.9 N	Dates 01/02/2022	Engineer RPS	Sheet 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		3.04	0.00
0.10-0.20	1			
0.20-0.30	3			
0.30-0.40	2			
0.40-0.50	2			
0.50-0.60	2		2.54	0.50
0.60-0.70	3			
0.70-0.80	4			
0.80-0.90	4			
0.90-1.00	4			
1.00-1.10	4		2.04	1.00
1.10-1.20	4			
1.20-1.30	3			
1.30-1.40	1			
1.40-1.50	2			
1.50-1.60	2		1.54	1.50
1.60-1.70	2			
1.70-1.80	2			
1.80-1.90	2			
1.90-2.00	2			
2.00-2.10	3		1.04	2.00
2.10-2.20	0			
2.20-2.30	0			
2.30-2.40	0			
2.40-2.50	0			
2.50-2.60	0		0.54	2.50
2.60-2.70	0			
2.70-2.80	0			
2.80-2.90	0			
2.90-3.00	0			
3.00-3.10	0		0.04	3.00
3.10-3.20	0			
3.20-3.30	0			
3.30-3.40	4			
3.40-3.50	5			
3.50-3.60	4		-0.47	3.50
3.60-3.70	4			
3.70-3.80	3			
3.80-3.90	2			
3.90-4.00	2			
4.00-4.10	0		-0.97	4.00
4.10-4.20	0			
4.20-4.30	0			
4.30-4.40	0			
4.40-4.50	0			
4.50-4.60	0		-1.47	4.50
4.60-4.70	0			
4.70-4.80	3			
4.80-4.90	4			
4.90-5.00	4		-1.97	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

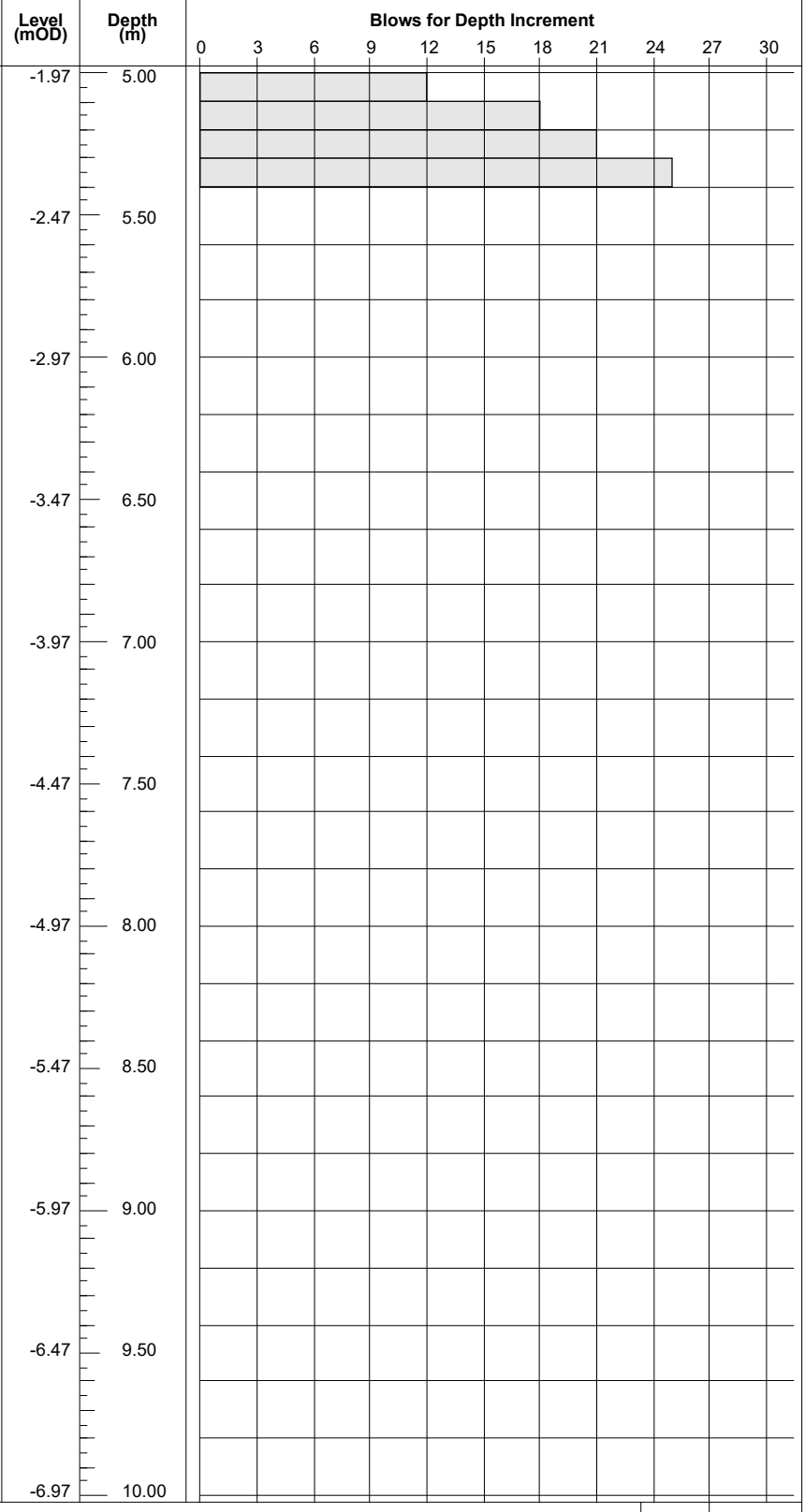
Figure No.
11087-09-21.DP06

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP06

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.04	Client Fingal County Council	Job Number 11087-09-21
	Location 724666.5 E 751652.9 N	Dates 01/02/2022	Engineer RPS	Sheet 2/2

Depth (m)	Blows for Depth Increment	Field Records
5.00-5.10	12	
5.10-5.20	18	
5.20-5.30	21	
5.30-5.40	25	



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP06

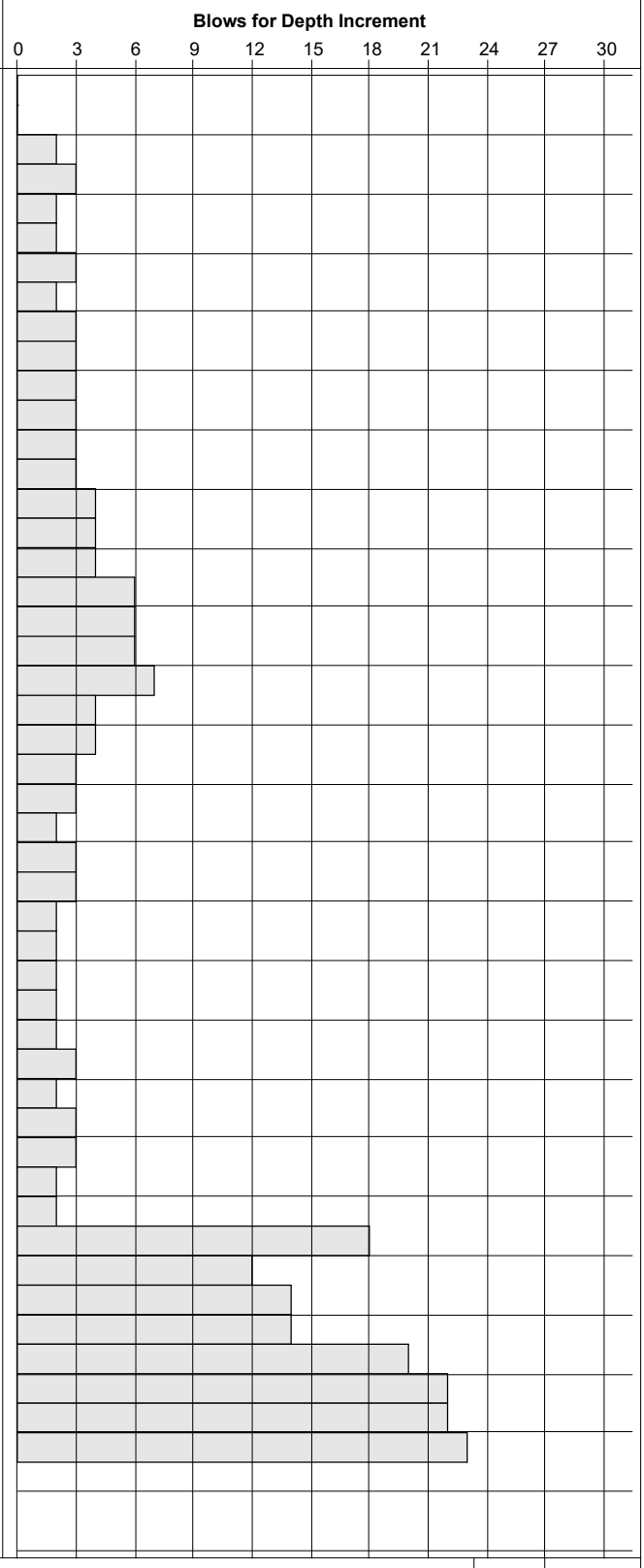
Ground Investigations Ireland Ltd
www.gii.ie

Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 3.61	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724236 E 752510.3 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Site: Rogerstown Coastal Flood and Erosion Relief Scheme

Probe Number: DP14

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		3.61	0.00
0.10-0.20	0			
0.20-0.30	2			
0.30-0.40	3			
0.40-0.50	2			
0.50-0.60	2		3.11	0.50
0.60-0.70	3			
0.70-0.80	2			
0.80-0.90	3			
0.90-1.00	3			
1.00-1.10	3		2.61	1.00
1.10-1.20	3			
1.20-1.30	3			
1.30-1.40	3			
1.40-1.50	4			
1.50-1.60	4		2.11	1.50
1.60-1.70	4			
1.70-1.80	6			
1.80-1.90	6			
1.90-2.00	6			
2.00-2.10	7		1.61	2.00
2.10-2.20	4			
2.20-2.30	4			
2.30-2.40	3			
2.40-2.50	3			
2.50-2.60	2		1.11	2.50
2.60-2.70	3			
2.70-2.80	3			
2.80-2.90	2			
2.90-3.00	2			
3.00-3.10	2		0.61	3.00
3.10-3.20	2			
3.20-3.30	2			
3.30-3.40	3			
3.40-3.50	2			
3.50-3.60	3		0.11	3.50
3.60-3.70	3			
3.70-3.80	2			
3.80-3.90	2			
3.90-4.00	18			
4.00-4.10	12		-0.39	4.00
4.10-4.20	14			
4.20-4.30	14			
4.30-4.40	20			
4.40-4.50	22			
4.50-4.60	22		-0.89	4.50
4.60-4.70	23			
			-1.39	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

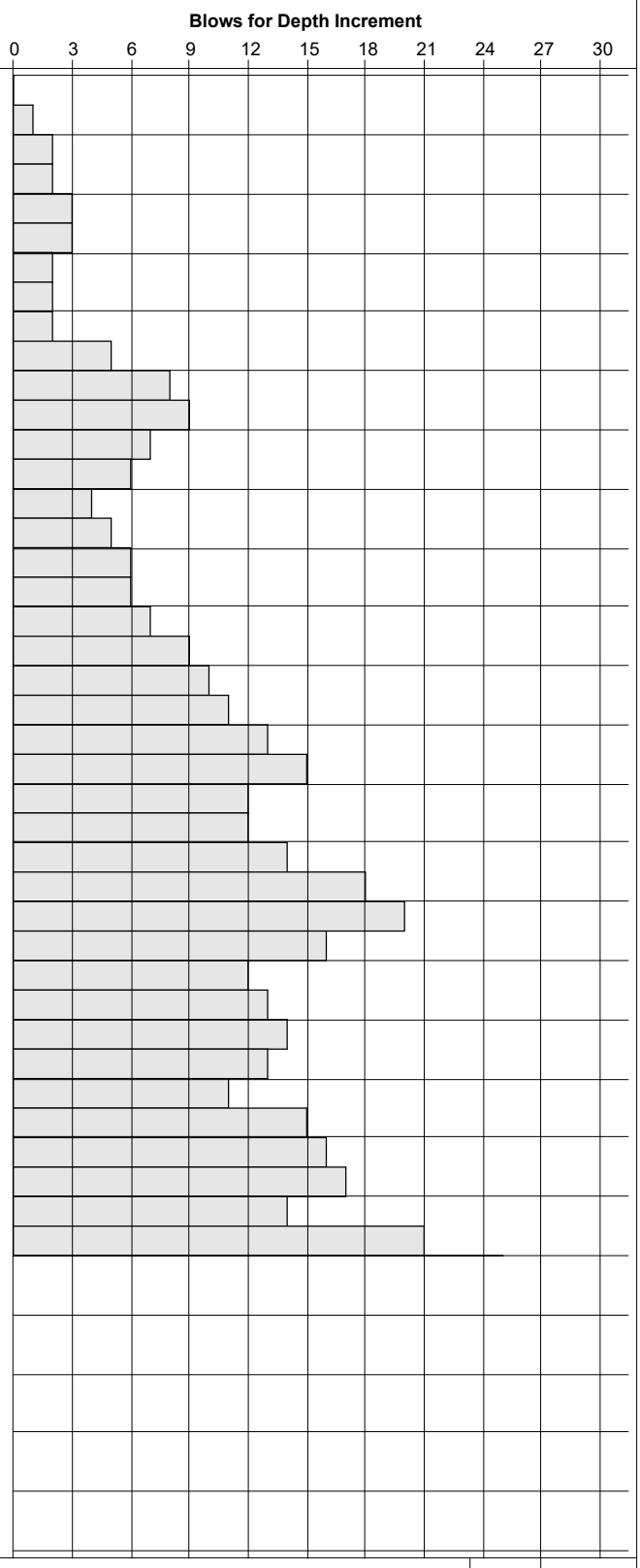
Figure No.
11087-09-21.DP14

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP16

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.23	Client Fingal County Council	Job Number 11087-09-21
	Location 724144.9 E 752487.4 N	Dates 17/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.23	0.00
0.10-0.20	1			
0.20-0.30	2			
0.30-0.40	2			
0.40-0.50	3			
0.50-0.60	3		1.73	0.50
0.60-0.70	2			
0.70-0.80	2			
0.80-0.90	2			
0.90-1.00	5			
1.00-1.10	8		1.23	1.00
1.10-1.20	9			
1.20-1.30	7			
1.30-1.40	6			
1.40-1.50	4			
1.50-1.60	5		0.73	1.50
1.60-1.70	6			
1.70-1.80	6			
1.80-1.90	7			
1.90-2.00	9			
2.00-2.10	10		0.23	2.00
2.10-2.20	11			
2.20-2.30	13			
2.30-2.40	15			
2.40-2.50	12			
2.50-2.60	12		-0.27	2.50
2.60-2.70	14			
2.70-2.80	18			
2.80-2.90	20			
2.90-3.00	16			
3.00-3.10	12		-0.77	3.00
3.10-3.20	13			
3.20-3.30	14			
3.30-3.40	13			
3.40-3.50	11			
3.50-3.60	15		-1.27	3.50
3.60-3.70	16			
3.70-3.80	17			
3.80-3.90	14			
3.90-4.00	21			
4.00-4.00	25		-1.77	4.00
			-2.27	4.50
			-2.77	5.00



Remarks

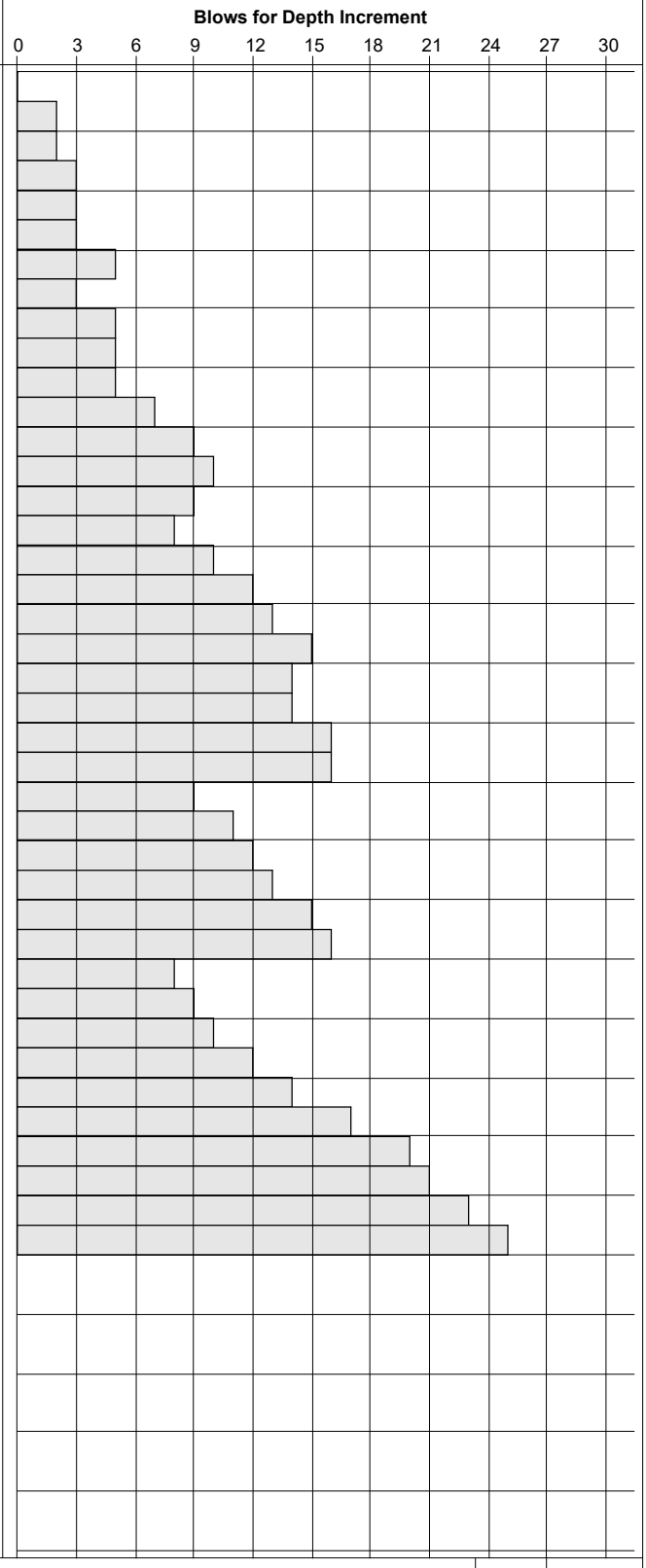
Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP16

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP17
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 4.11	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724131.6 E 752543.6 N	**Dates** 17/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		4.11	0.00
0.10-0.20	2			
0.20-0.30	2			
0.30-0.40	3			
0.40-0.50	3			
0.50-0.60	3		3.61	0.50
0.60-0.70	5			
0.70-0.80	3			
0.80-0.90	5			
0.90-1.00	5			
1.00-1.10	5		3.11	1.00
1.10-1.20	7			
1.20-1.30	9			
1.30-1.40	10			
1.40-1.50	9			
1.50-1.60	8		2.61	1.50
1.60-1.70	10			
1.70-1.80	12			
1.80-1.90	13			
1.90-2.00	15			
2.00-2.10	14		2.11	2.00
2.10-2.20	14			
2.20-2.30	16			
2.30-2.40	16			
2.40-2.50	9			
2.50-2.60	11		1.61	2.50
2.60-2.70	12			
2.70-2.80	13			
2.80-2.90	15			
2.90-3.00	16			
3.00-3.10	8		1.11	3.00
3.10-3.20	9			
3.20-3.30	10			
3.30-3.40	12			
3.40-3.50	14			
3.50-3.60	17		0.61	3.50
3.60-3.70	20			
3.70-3.80	21			
3.80-3.90	23			
3.90-4.00	25		0.11	4.00
			-0.39	4.50
			-0.89	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

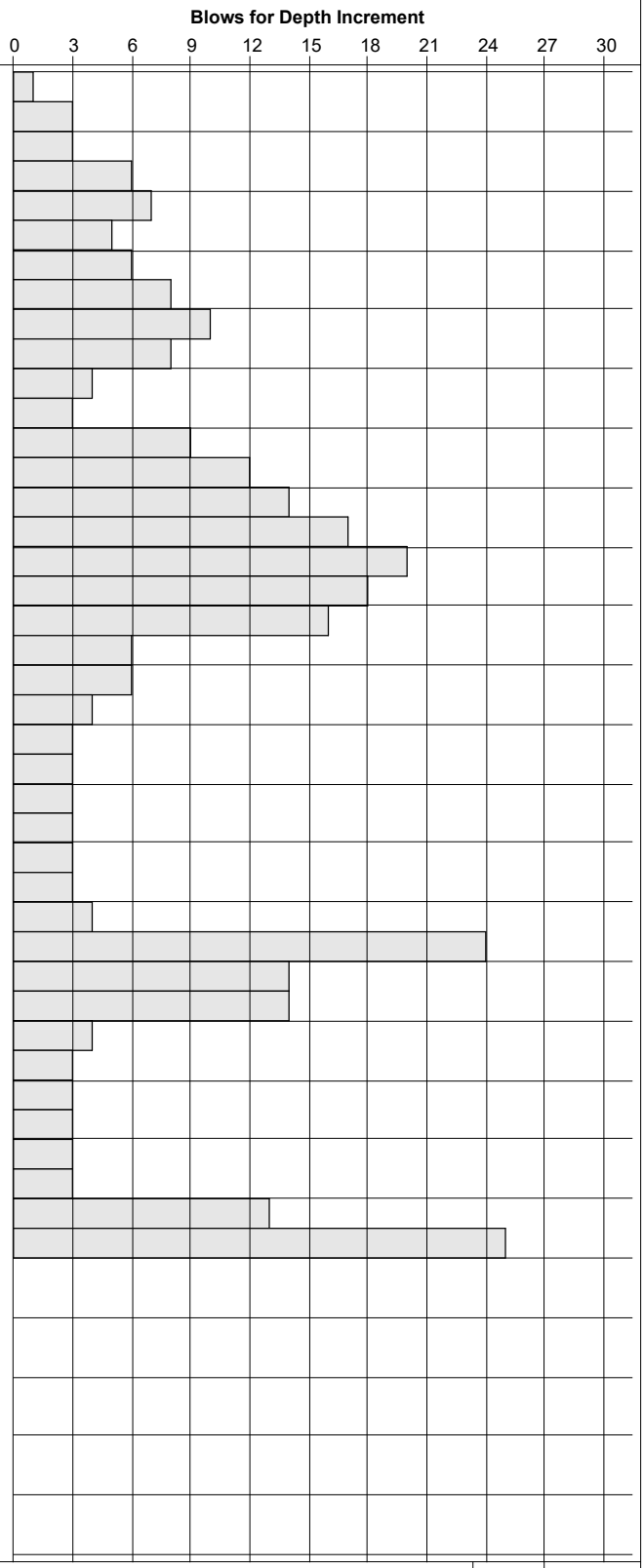
Figure No. 11087-09-21.DP17

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP21

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 1.34	Client Fingal County Council	Job Number 11087-09-21
	Location 725127.3 E 752050.1 N	Dates 18/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	1		1.34	0.00
0.10-0.20	3			
0.20-0.30	3			
0.30-0.40	6			
0.40-0.50	7			
0.50-0.60	5		0.84	0.50
0.60-0.70	6			
0.70-0.80	8			
0.80-0.90	10			
0.90-1.00	8			
1.00-1.10	4		0.34	1.00
1.10-1.20	3			
1.20-1.30	9			
1.30-1.40	12			
1.40-1.50	14			
1.50-1.60	17		-0.16	1.50
1.60-1.70	20			
1.70-1.80	18			
1.80-1.90	16			
1.90-2.00	6			
2.00-2.10	6		-0.66	2.00
2.10-2.20	4			
2.20-2.30	3			
2.30-2.40	3			
2.40-2.50	3			
2.50-2.60	3		-1.16	2.50
2.60-2.70	3			
2.70-2.80	3			
2.80-2.90	4			
2.90-3.00	24			
3.00-3.10	14		-1.66	3.00
3.10-3.20	14			
3.20-3.30	4			
3.30-3.40	3			
3.40-3.50	3			
3.50-3.60	3		-2.16	3.50
3.60-3.70	3			
3.70-3.80	3			
3.80-3.90	13			
3.90-4.00	25		-2.66	4.00
			-3.16	4.50
			-3.66	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

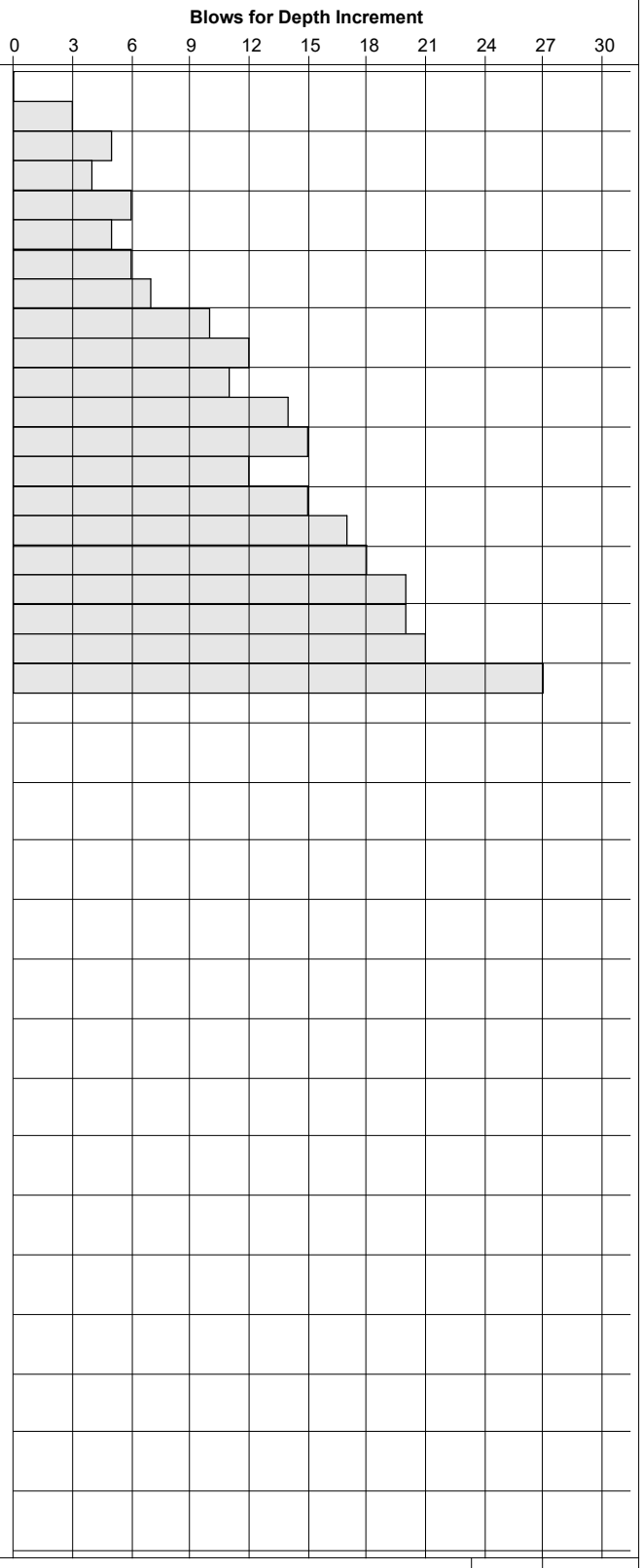
Figure No.
11087-09-21.DP21

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP22

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 1.36	Client Fingal County Council	Job Number 11087-09-21
	Location 725162.1 E 751928 N	Dates 18/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		1.36	0.00
0.10-0.20	3			
0.20-0.30	5			
0.30-0.40	4			
0.40-0.50	6			
0.50-0.60	5		0.86	0.50
0.60-0.70	6			
0.70-0.80	7			
0.80-0.90	10			
0.90-1.00	12			
1.00-1.10	11		0.36	1.00
1.10-1.20	14			
1.20-1.30	15			
1.30-1.40	12			
1.40-1.50	15			
1.50-1.60	17		-0.14	1.50
1.60-1.70	18			
1.70-1.80	20			
1.80-1.90	20			
1.90-2.00	21			
2.00-2.10	27		-0.64	2.00
			-1.14	2.50
			-1.64	3.00
			-2.14	3.50
			-2.64	4.00
			-3.14	4.50
			-3.64	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

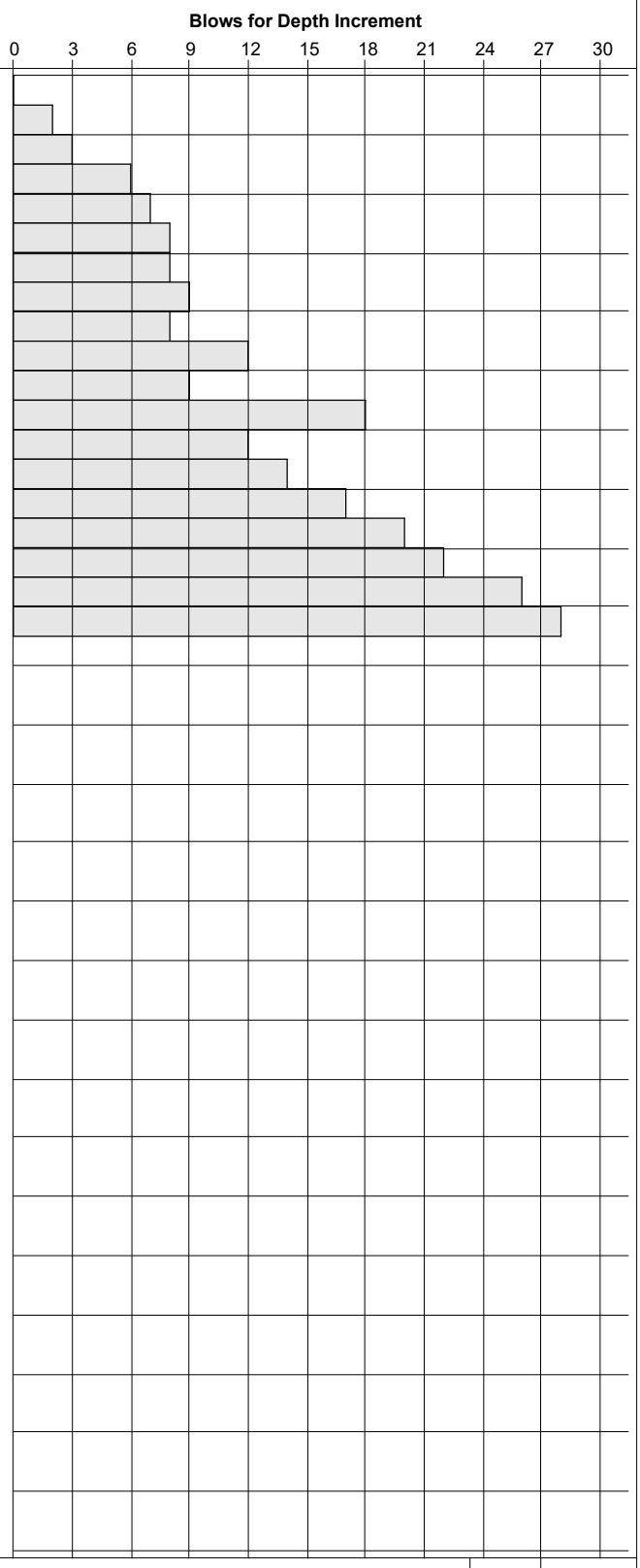
Figure No.
11087-09-21.DP22

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP23

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 1.13	Client Fingal County Council	Job Number 11087-09-21
	Location 725206.6 E 751793.4 N	Dates 18/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		1.13	0.00
0.10-0.20	2			
0.20-0.30	3			
0.30-0.40	6			
0.40-0.50	7			
0.50-0.60	8		0.63	0.50
0.60-0.70	8			
0.70-0.80	9			
0.80-0.90	8			
0.90-1.00	12			
1.00-1.10	9		0.13	1.00
1.10-1.20	18			
1.20-1.30	12			
1.30-1.40	14			
1.40-1.50	17			
1.50-1.60	20		-0.37	1.50
1.60-1.70	22			
1.70-1.80	26			
1.80-1.90	28			
			-0.87	2.00
			-1.37	2.50
			-1.87	3.00
			-2.37	3.50
			-2.87	4.00
			-3.37	4.50
			-3.87	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP23

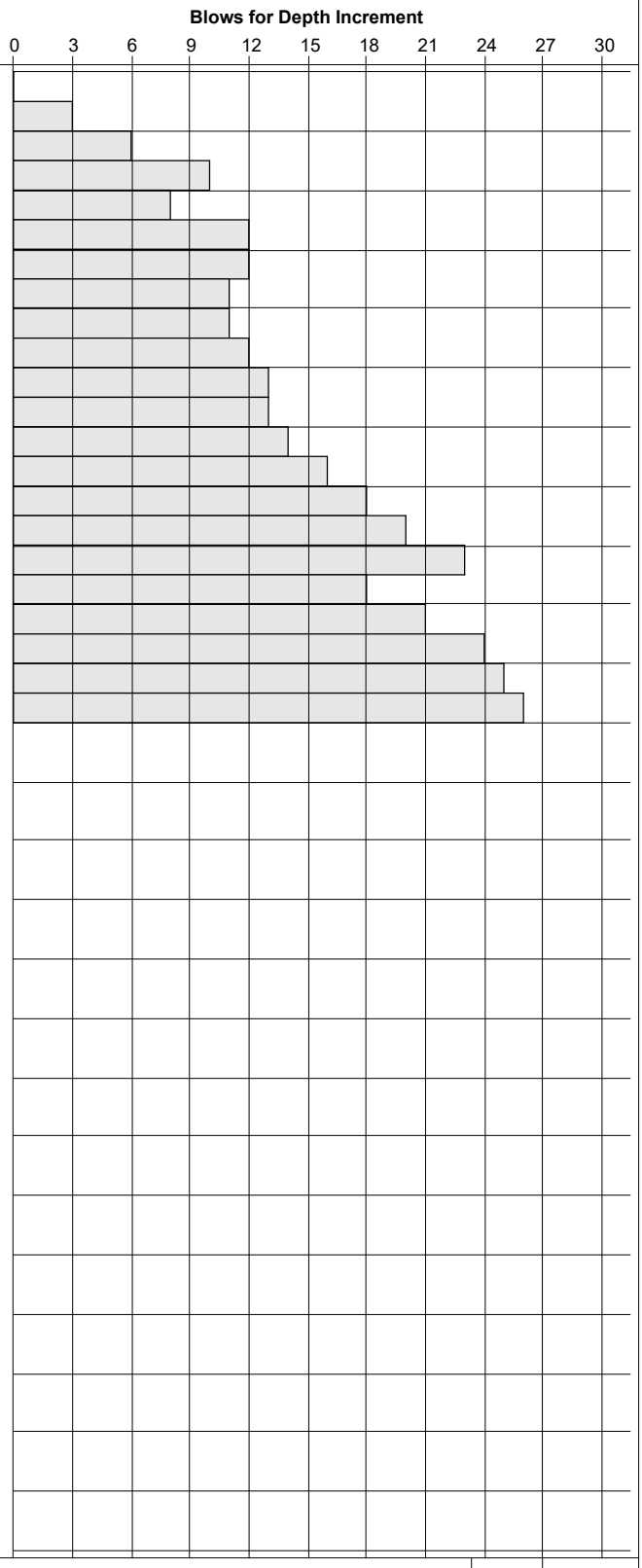
Ground Investigations Ireland Ltd
www.gii.ie

Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 1.31	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725246.9 E 751624.8 N	**Dates** 28/01/2022	**Engineer** RPS	**Sheet** 1/1

Site: Rogerstown Coastal Flood and Erosion Relief Scheme

Probe Number: DP24

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		1.31	0.00
0.10-0.20	3			
0.20-0.30	6			
0.30-0.40	10			
0.40-0.50	8			
0.50-0.60	12		0.81	0.50
0.60-0.70	12			
0.70-0.80	11			
0.80-0.90	11			
0.90-1.00	12			
1.00-1.10	13		0.31	1.00
1.10-1.20	13			
1.20-1.30	14			
1.30-1.40	16			
1.40-1.50	18			
1.50-1.60	20		-0.19	1.50
1.60-1.70	23			
1.70-1.80	18			
1.80-1.90	21			
1.90-2.00	24			
2.00-2.10	25		-0.69	2.00
2.10-2.20	26			
			-1.19	2.50
			-1.69	3.00
			-2.19	3.50
			-2.69	4.00
			-3.19	4.50
			-3.69	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

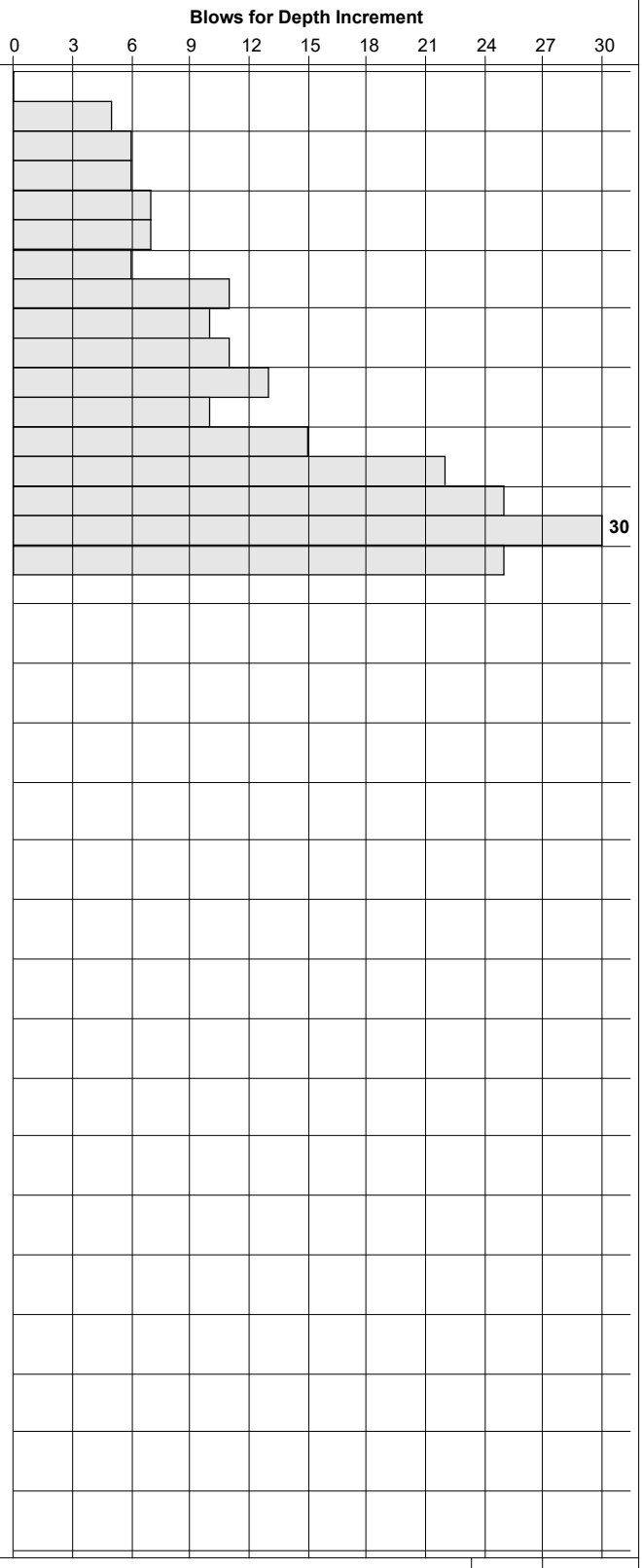
Figure No.
11087-09-21.DP24

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP25

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 0.68	Client Fingal County Council	Job Number 11087-09-21
	Location 725283 E 751457 N	Dates 28/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		0.68	0.00
0.10-0.20	5			
0.20-0.30	6			
0.30-0.40	6			
0.40-0.50	7			
0.50-0.60	7		0.18	0.50
0.60-0.70	6			
0.70-0.80	11			
0.80-0.90	10			
0.90-1.00	11			
1.00-1.10	13		-0.32	1.00
1.10-1.20	10			
1.20-1.30	15			
1.30-1.40	22			
1.40-1.50	25			
1.50-1.60	30		-0.82	1.50
1.60-1.70	25			
			-1.32	2.00
			-1.82	2.50
			-2.32	3.00
			-2.82	3.50
			-3.32	4.00
			-3.82	4.50
			-4.32	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP25

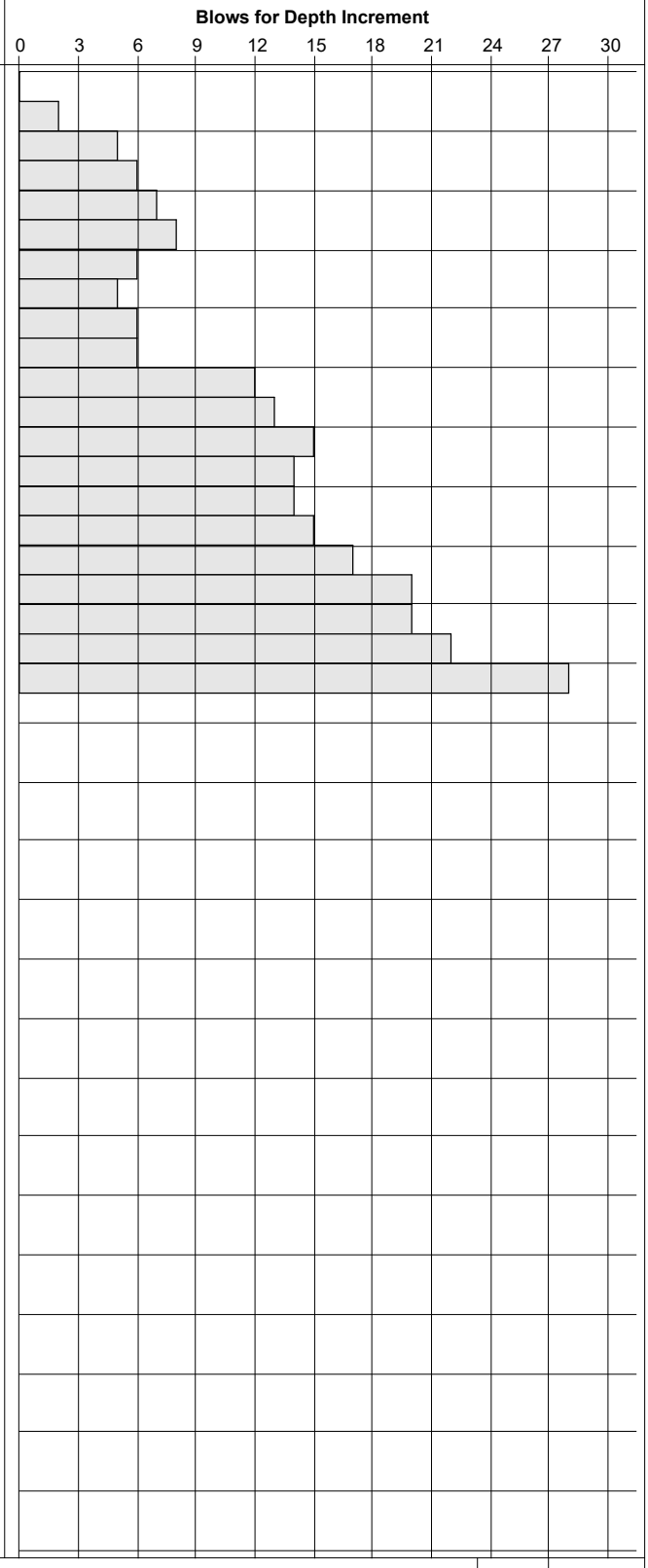
Ground Investigations Ireland Ltd
www.gii.ie

Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.10	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725333.7 E 751285 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Site: Rogerstown Coastal Flood and Erosion Relief Scheme

Probe Number: DP26

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.10	0.00
0.10-0.20	2			
0.20-0.30	5			
0.30-0.40	6			
0.40-0.50	7			
0.50-0.60	8		1.60	0.50
0.60-0.70	6			
0.70-0.80	5			
0.80-0.90	6			
0.90-1.00	6			
1.00-1.10	12		1.10	1.00
1.10-1.20	13			
1.20-1.30	15			
1.30-1.40	14			
1.40-1.50	14			
1.50-1.60	15		0.60	1.50
1.60-1.70	17			
1.70-1.80	20			
1.80-1.90	20			
1.90-2.00	22			
2.00-2.10	28		0.10	2.00
			-0.40	2.50
			-0.90	3.00
			-1.40	3.50
			-1.90	4.00
			-2.40	4.50
			-2.90	5.00



Remarks

Scale (approx): 1:25

Logged By: RM

Figure No.: 11087-09-21.DP26

Ground Investigations Ireland Ltd
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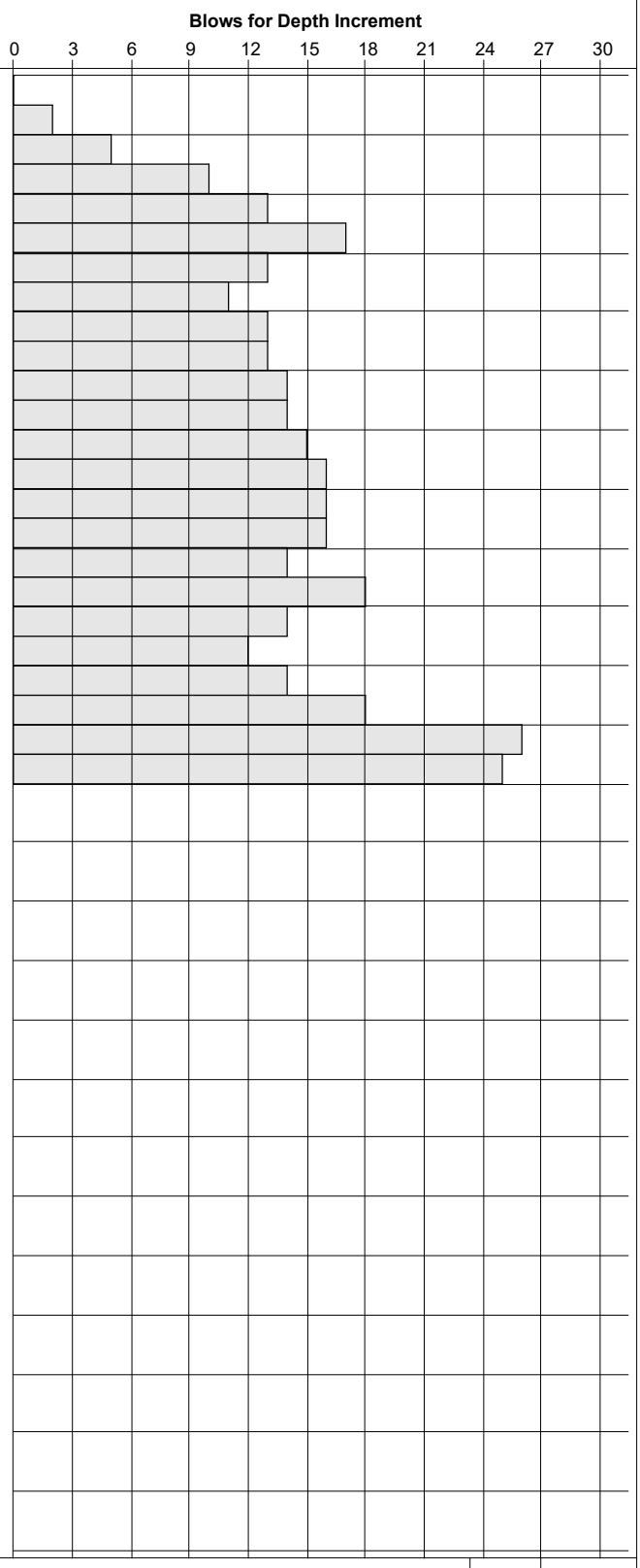
Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP27
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 1.91	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725400.1 E 751124.1 N	**Dates** 18/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		1.91	0.00
0.10-0.20	2			
0.20-0.30	5			
0.30-0.40	10			
0.40-0.50	13			
0.50-0.60	17		1.41	0.50
0.60-0.70	13			
0.70-0.80	11			
0.80-0.90	13			
0.90-1.00	13			
1.00-1.10	14		0.91	1.00
1.10-1.20	14			
1.20-1.30	15			
1.30-1.40	16			
1.40-1.50	16			
1.50-1.60	16		0.41	1.50
1.60-1.70	14			
1.70-1.80	18			
1.80-1.90	14			
1.90-2.00	12			
2.00-2.10	14		-0.09	2.00
2.10-2.20	18			
2.20-2.30	26			
2.30-2.40	25			
			-0.59	2.50
			-1.09	3.00
			-1.59	3.50
			-2.09	4.00
			-2.59	4.50
			-3.09	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

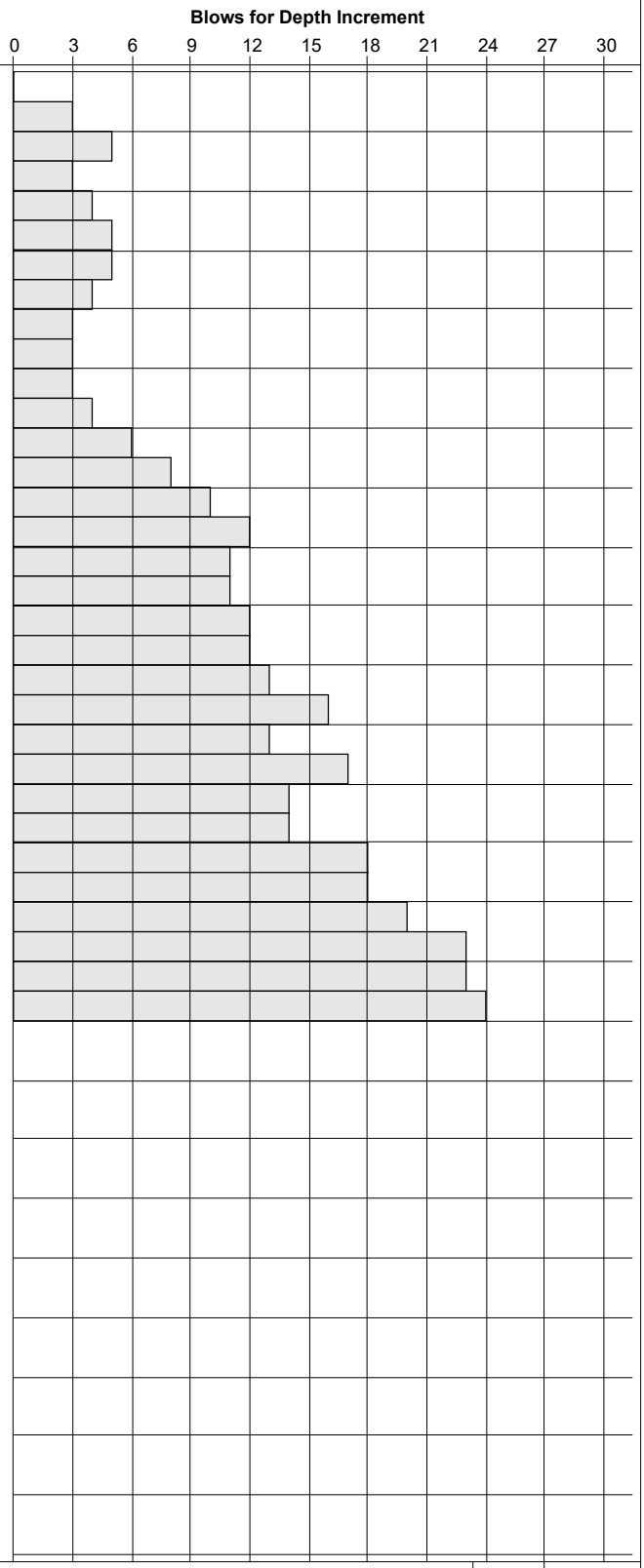
Figure No. 11087-09-21.DP27

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP28

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.85	Client Fingal County Council	Job Number 11087-09-21
	Location 725458.1 E 750982 N	Dates 18/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		3.85	0.00
0.10-0.20	3			
0.20-0.30	5			
0.30-0.40	3			
0.40-0.50	4			
0.50-0.60	5		3.35	0.50
0.60-0.70	5			
0.70-0.80	4			
0.80-0.90	3			
0.90-1.00	3			
1.00-1.10	3		2.85	1.00
1.10-1.20	4			
1.20-1.30	6			
1.30-1.40	8			
1.40-1.50	10			
1.50-1.60	12		2.35	1.50
1.60-1.70	11			
1.70-1.80	11			
1.80-1.90	12			
1.90-2.00	12			
2.00-2.10	13		1.85	2.00
2.10-2.20	16			
2.20-2.30	13			
2.30-2.40	17			
2.40-2.50	14			
2.50-2.60	14		1.35	2.50
2.60-2.70	18			
2.70-2.80	18			
2.80-2.90	20			
2.90-3.00	23			
3.00-3.10	23		0.85	3.00
3.10-3.20	24			
			0.35	3.50
			-0.15	4.00
			-0.65	4.50
			-1.15	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP28

Ground Investigations Ireland Ltd
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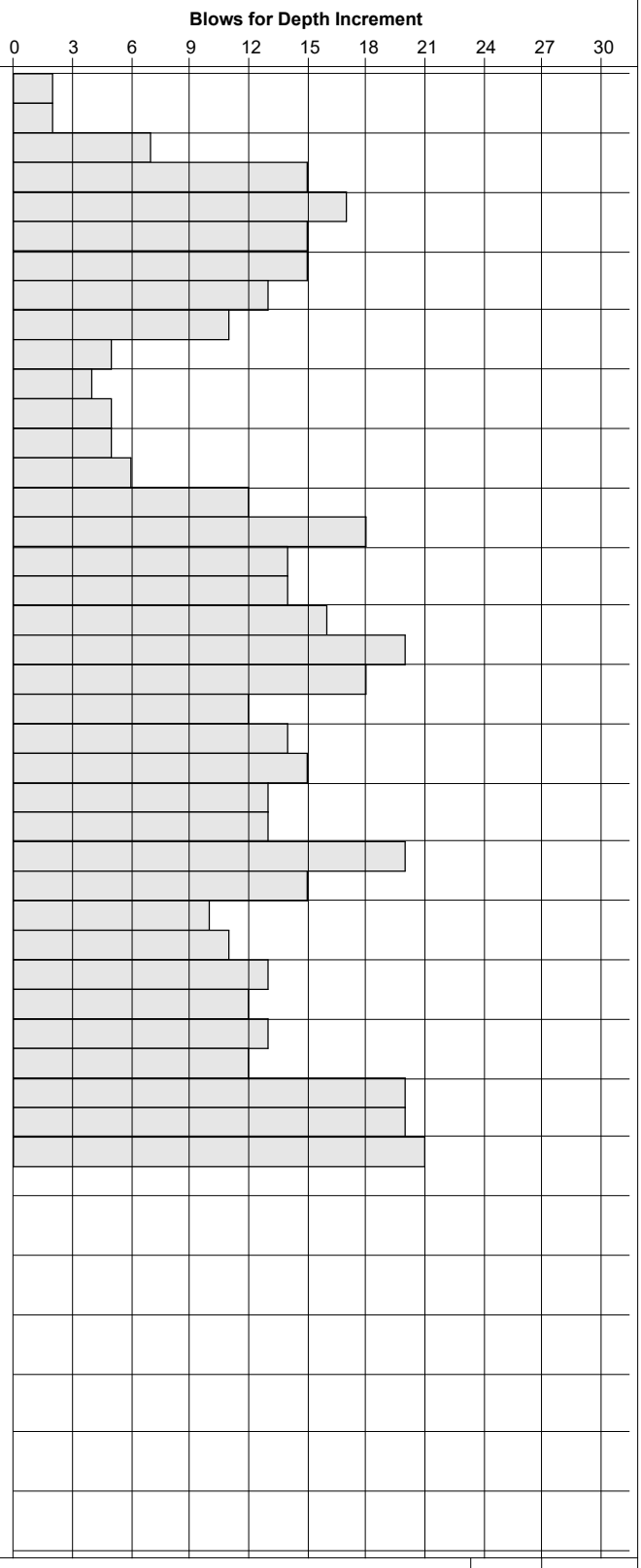
Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP29

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.71	Client Fingal County Council	Job Number 11087-09-21
	Location 725471.8 E 750944.8 N	Dates 28/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2		3.71	0.00
0.10-0.20	2			
0.20-0.30	7			
0.30-0.40	15			
0.40-0.50	17			
0.50-0.60	15		3.21	0.50
0.60-0.70	15			
0.70-0.80	13			
0.80-0.90	11			
0.90-1.00	5			
1.00-1.10	4		2.71	1.00
1.10-1.20	5			
1.20-1.30	5			
1.30-1.40	6			
1.40-1.50	12			
1.50-1.60	18		2.21	1.50
1.60-1.70	14			
1.70-1.80	14			
1.80-1.90	16			
1.90-2.00	20			
2.00-2.10	18		1.71	2.00
2.10-2.20	12			
2.20-2.30	14			
2.30-2.40	15			
2.40-2.50	13			
2.50-2.60	13		1.21	2.50
2.60-2.70	20			
2.70-2.80	15			
2.80-2.90	10			
2.90-3.00	11			
3.00-3.10	13		0.71	3.00
3.10-3.20	12			
3.20-3.30	13			
3.30-3.40	12			
3.40-3.50	20			
3.50-3.60	20		0.21	3.50
3.60-3.70	21			
			-0.29	4.00
			-0.79	4.50
			-1.29	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP29

Ground Investigations Ireland Ltd
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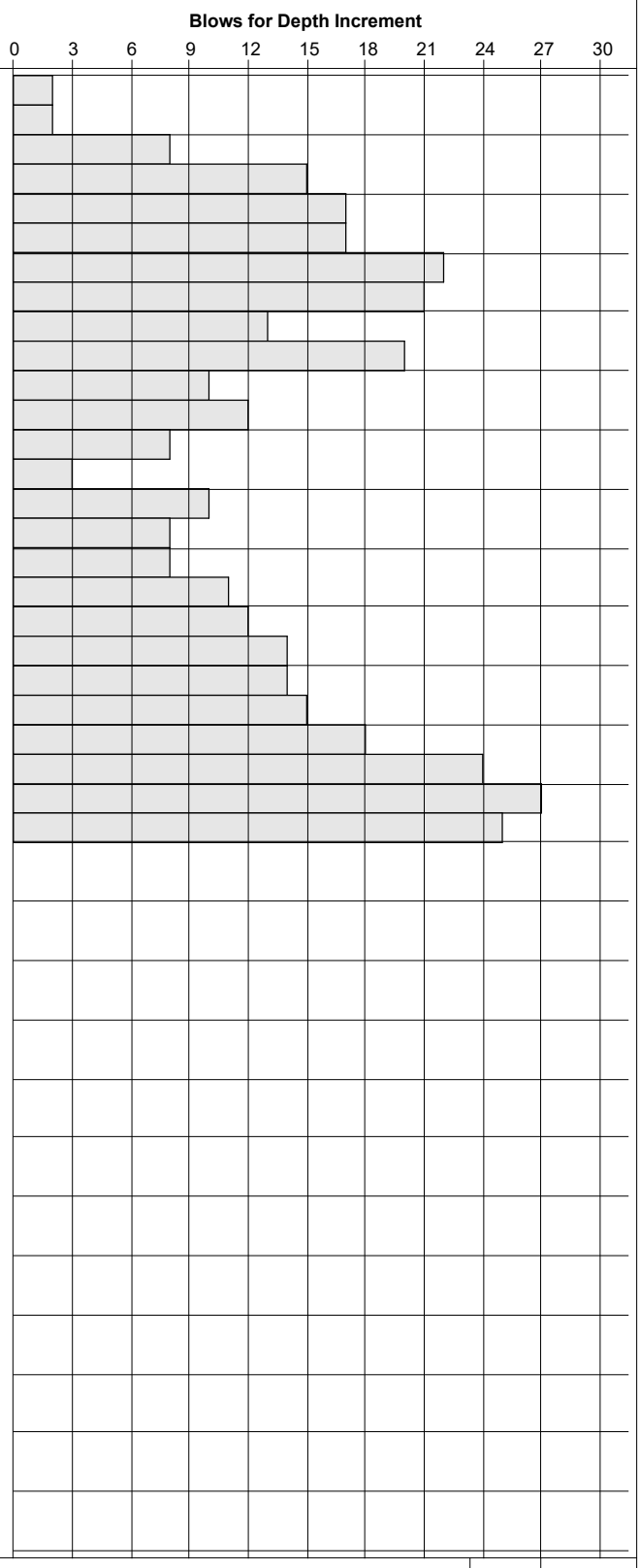
Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP30

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.83	Client Fingal County Council	Job Number 11087-09-21
	Location 725520.3 E 750927.8 N	Dates 18/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2		3.83	0.00
0.10-0.20	2			
0.20-0.30	8			
0.30-0.40	15			
0.40-0.50	17			
0.50-0.60	17		3.33	0.50
0.60-0.70	22			
0.70-0.80	21			
0.80-0.90	13			
0.90-1.00	20			
1.00-1.10	10		2.83	1.00
1.10-1.20	12			
1.20-1.30	8			
1.30-1.40	3			
1.40-1.50	10			
1.50-1.60	8		2.33	1.50
1.60-1.70	8			
1.70-1.80	11			
1.80-1.90	12			
1.90-2.00	14			
2.00-2.10	14		1.83	2.00
2.10-2.20	15			
2.20-2.30	18			
2.30-2.40	24			
2.40-2.50	27			
2.50-2.60	25		1.33	2.50
			0.83	3.00
			0.33	3.50
			-0.17	4.00
			-0.67	4.50
			-1.17	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP30

Ground Investigations Ireland Ltd
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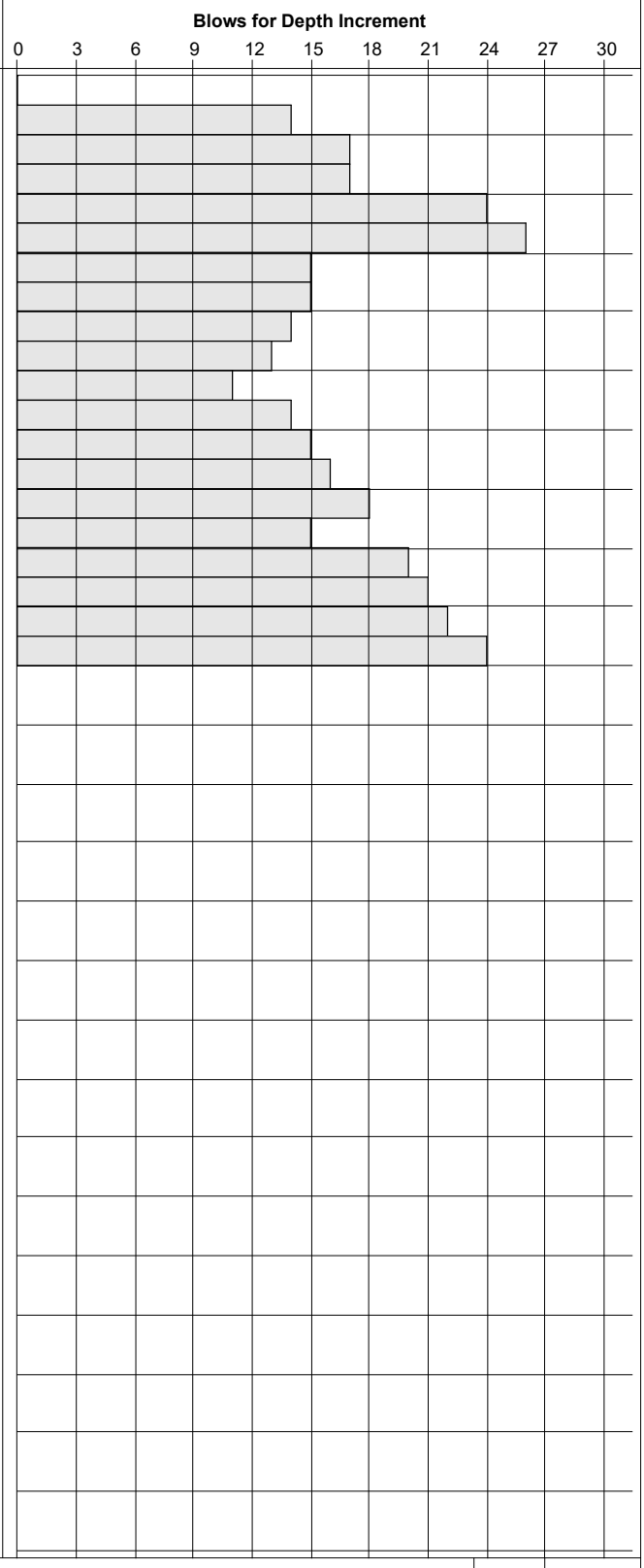
Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP30A

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD)	Client Fingal County Council	Job Number 11087-09-21
	Location	Dates 14/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)
0.00-0.10	0		
0.10-0.20	14		
0.20-0.30	17		
0.30-0.40	17		
0.40-0.50	24		
0.50-0.60	26		
0.60-0.70	15		
0.70-0.80	15		
0.80-0.90	14		
0.90-1.00	13		
1.00-1.10	11		
1.10-1.20	14		
1.20-1.30	15		
1.30-1.40	16		
1.40-1.50	18		
1.50-1.60	15		
1.60-1.70	20		
1.70-1.80	21		
1.80-1.90	22		
1.90-2.00	24		



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP30A

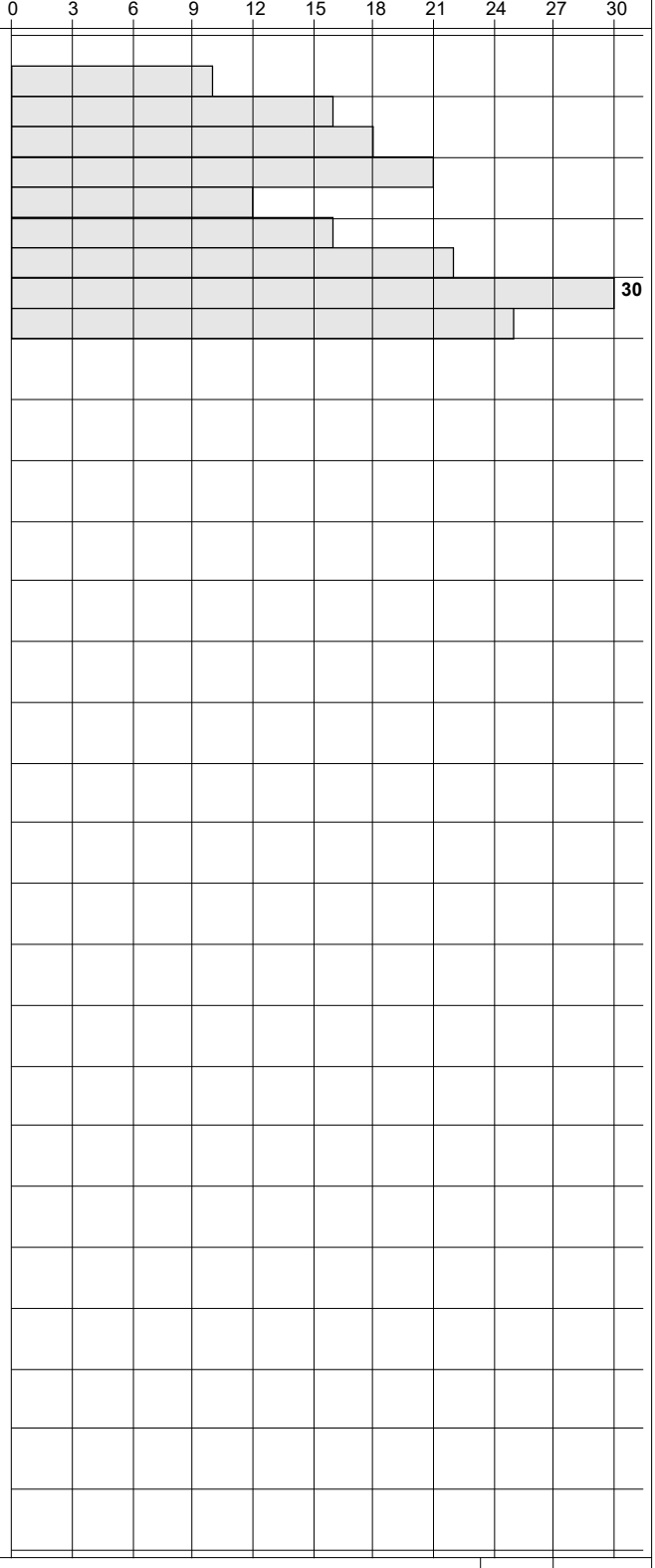
Ground Investigations Ireland Ltd
www.gii.ie

Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.52	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724131.6 E 753100.8 N	**Dates** 04/02/2022	**Engineer** RPS	**Sheet** 1/1

Site
Rogerstown Coastal Flood and Erosion Relief Scheme

Probe Number
DP32

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
			2.52	0.00
0.10-0.20	10			
0.20-0.30	16			
0.30-0.40	18			
0.40-0.50	21			
0.50-0.60	12		2.02	0.50
0.60-0.70	16			
0.70-0.80	22			
0.80-0.90	30			
0.90-1.00	25		1.52	1.00
			1.02	1.50
			0.52	2.00
			0.02	2.50
			-0.48	3.00
			-0.98	3.50
			-1.48	4.00
			-1.98	4.50
			-2.48	5.00



Remarks
Core from GL to 0.10m though Tarmacadam

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP32

Ground Investigations Ireland Ltd
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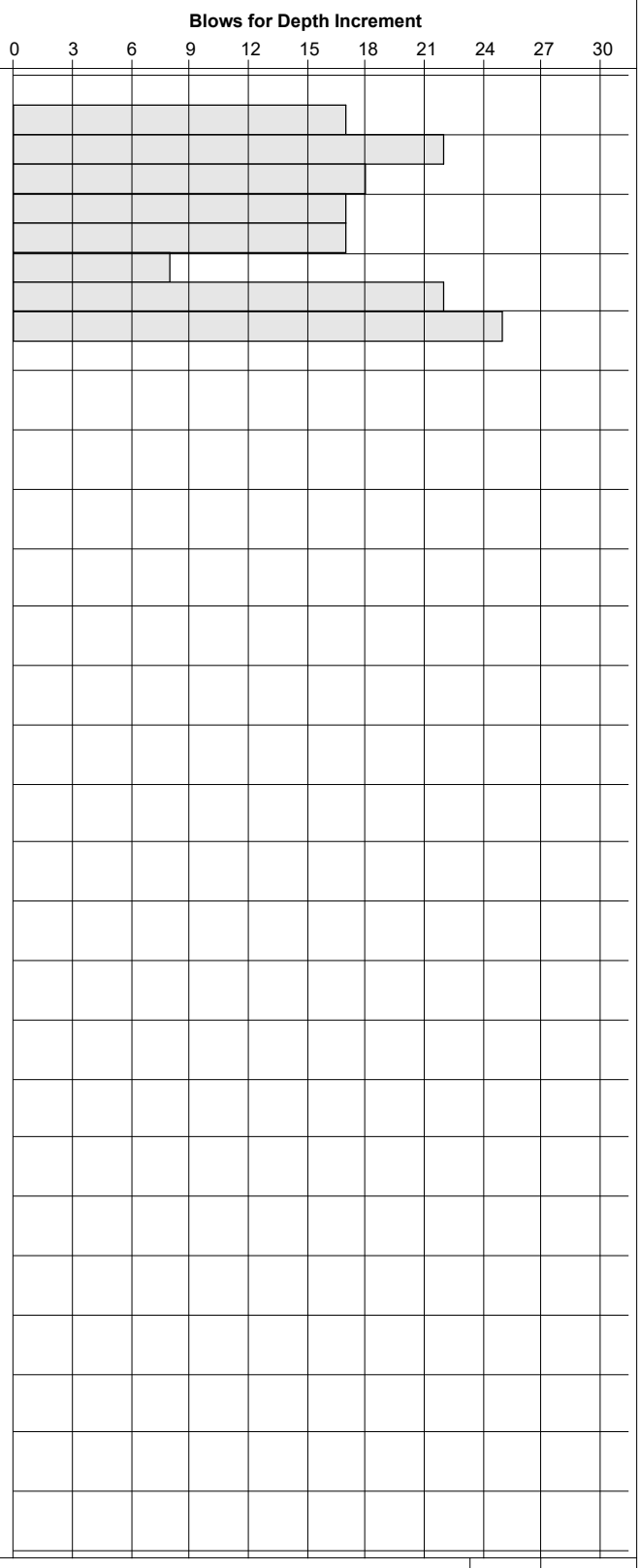
Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP32A
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.52	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724131.3 E 753101.9 N	**Dates** 04/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records
0.10-0.20	17	
0.20-0.30	22	
0.30-0.40	18	
0.40-0.50	17	
0.50-0.60	17	
0.60-0.70	8	
0.70-0.80	22	
0.80-0.90	25	

Level (mOD)	Depth (m)
2.52	0.00
2.02	0.50
1.52	1.00
1.02	1.50
0.52	2.00
0.02	2.50
-0.48	3.00
-0.98	3.50
-1.48	4.00
-1.98	4.50
-2.48	5.00



Remarks
Core from GL to 0.20m though Tarmacadam and concrete

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP32A

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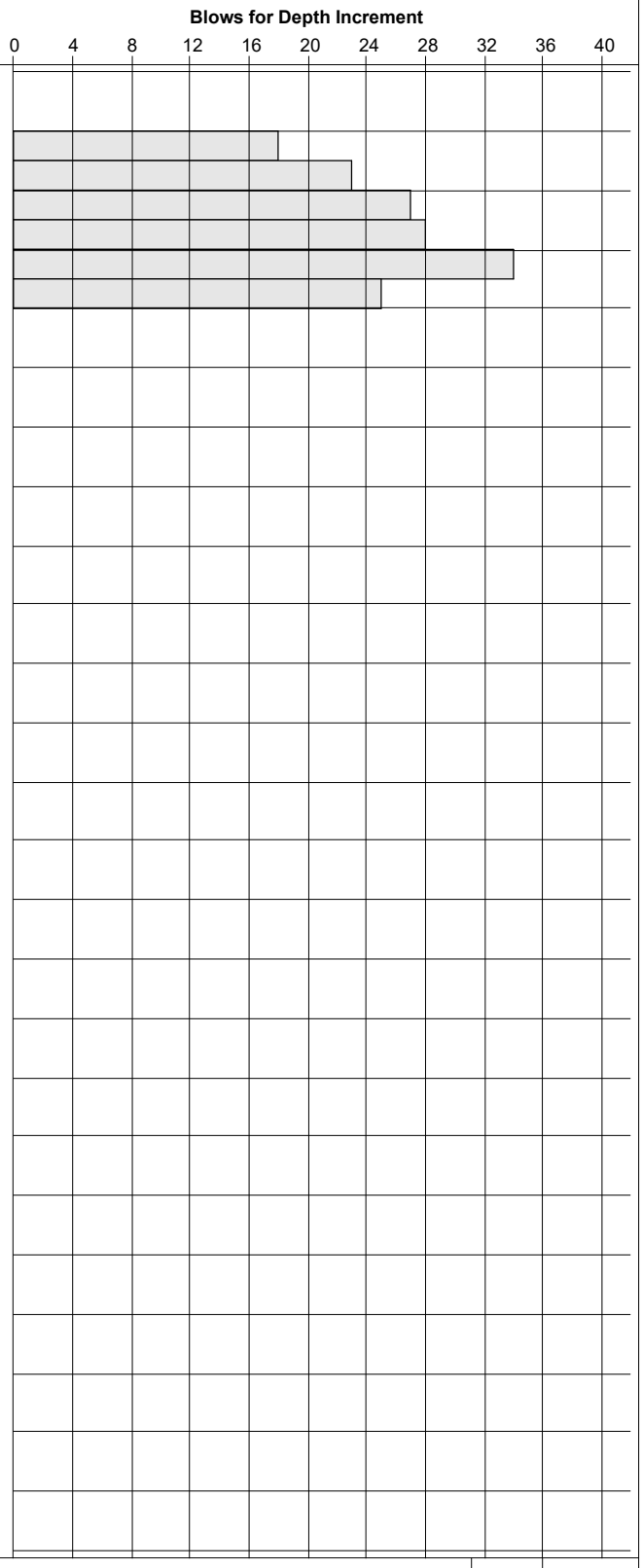
Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP34
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.39	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724206.8 E 753130.8 N	**Dates** 04/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
			2.39	0.00
0.20-0.30	18			
0.30-0.40	23			
0.40-0.50	27			
0.50-0.60	28		1.89	0.50
0.60-0.70	34			
0.70-0.80	25			
			1.39	1.00
			0.89	1.50
			0.39	2.00
			-0.11	2.50
			-0.61	3.00
			-1.11	3.50
			-1.61	4.00
			-2.11	4.50
			-2.61	5.00



Remarks
Core from GL to 0.20m though Tarmacadam and concrete

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP32A

Ground Investigations Ireland Ltd
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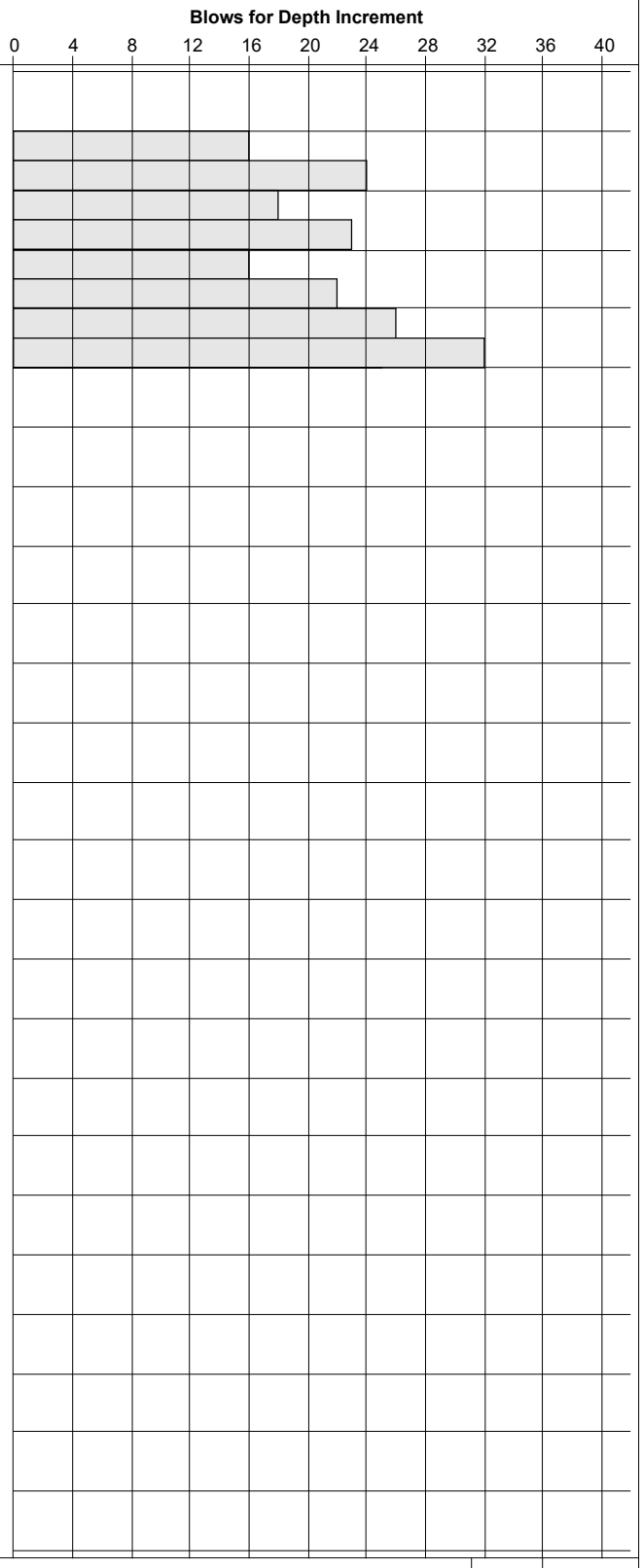
Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP35
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.60	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724271.6 E 753145.1 N	**Dates** 03/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
			2.60	0.00
0.20-0.30	16			
0.30-0.40	24			
0.40-0.50	18			
0.50-0.60	23		2.10	0.50
0.60-0.70	16			
0.70-0.80	22			
0.80-0.90	26			
0.90-1.00	32			
1.00-1.00	25		1.60	1.00
			1.10	1.50
			0.60	2.00
			0.10	2.50
			-0.40	3.00
			-0.90	3.50
			-1.40	4.00
			-1.90	4.50
			-2.40	5.00



Remarks
Core from GL to 0.20m though Tarmacadam and concrete

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP35

Ground Investigations Ireland Ltd
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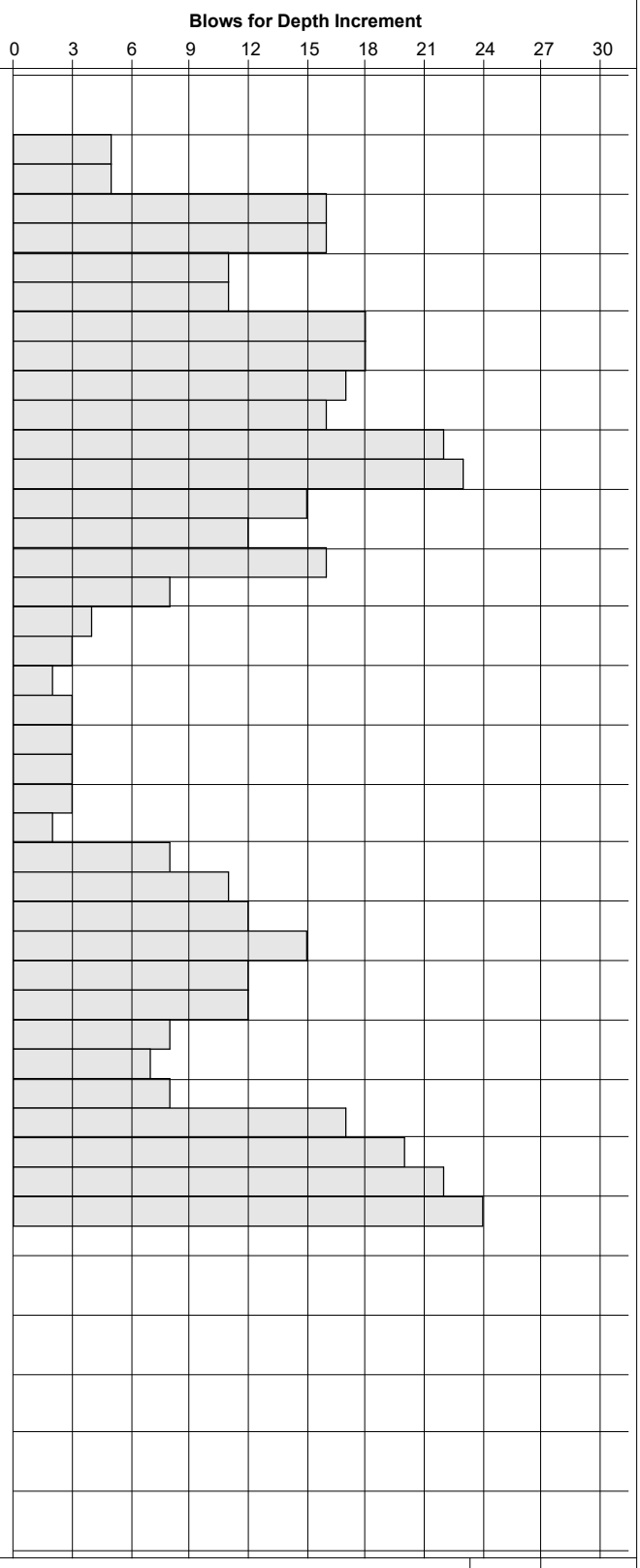
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 3.12	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724348.9 E 753180.8 N	**Dates** 03/02/2022	**Engineer** RPS	**Sheet** 1/1

Site
Rogerstown Coastal Flood and Erosion Relief Scheme

Probe Number
DP37

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
			3.12	0.00
0.20-0.30	5			
0.30-0.40	5			
0.40-0.50	16			
0.50-0.60	16		2.62	0.50
0.60-0.70	11			
0.70-0.80	11			
0.80-0.90	18			
0.90-1.00	18			
1.00-1.10	17		2.12	1.00
1.10-1.20	16			
1.20-1.30	22			
1.30-1.40	23			
1.40-1.50	15			
1.50-1.60	12		1.62	1.50
1.60-1.70	16			
1.70-1.80	8			
1.80-1.90	4			
1.90-2.00	3			
2.00-2.10	2		1.12	2.00
2.10-2.20	3			
2.20-2.30	3			
2.30-2.40	3			
2.40-2.50	3			
2.50-2.60	2		0.62	2.50
2.60-2.70	8			
2.70-2.80	11			
2.80-2.90	12			
2.90-3.00	15			
3.00-3.10	12		0.12	3.00
3.10-3.20	12			
3.20-3.30	8			
3.30-3.40	7			
3.40-3.50	8			
3.50-3.60	17		-0.38	3.50
3.60-3.70	20			
3.70-3.80	22			
3.80-3.90	24			
			-0.88	4.00
			-1.38	4.50
			-1.88	5.00



Remarks
Core from GL to 0.20m though Tarmacadam and concrete

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP37

Ground Investigations Ireland Ltd
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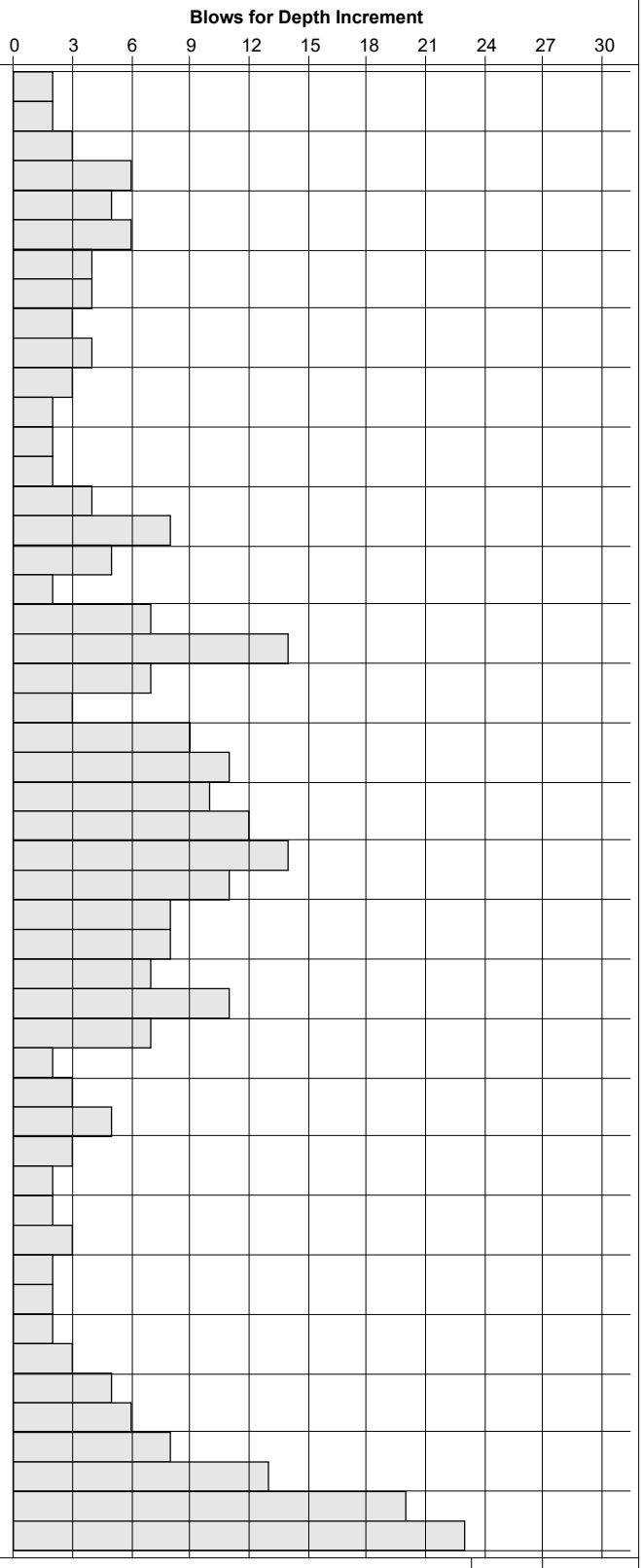
Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP38
Machine : Tech 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.91	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724406.8 E 753206.3 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	2		2.91	0.00
0.10-0.20	2			
0.20-0.30	3			
0.30-0.40	6			
0.40-0.50	5			
0.50-0.60	6		2.41	0.50
0.60-0.70	4			
0.70-0.80	4			
0.80-0.90	3			
0.90-1.00	4			
1.00-1.10	3		1.91	1.00
1.10-1.20	2			
1.20-1.30	2			
1.30-1.40	2			
1.40-1.50	4			
1.50-1.60	8		1.41	1.50
1.60-1.70	5			
1.70-1.80	2			
1.80-1.90	7			
1.90-2.00	14			
2.00-2.10	7		0.91	2.00
2.10-2.20	3			
2.20-2.30	9			
2.30-2.40	11			
2.40-2.50	10			
2.50-2.60	12		0.41	2.50
2.60-2.70	14			
2.70-2.80	11			
2.80-2.90	8			
2.90-3.00	8			
3.00-3.10	7		-0.09	3.00
3.10-3.20	11			
3.20-3.30	7			
3.30-3.40	2			
3.40-3.50	3			
3.50-3.60	5		-0.59	3.50
3.60-3.70	3			
3.70-3.80	2			
3.80-3.90	2			
3.90-4.00	3			
4.00-4.10	2		-1.09	4.00
4.10-4.20	2			
4.20-4.30	2			
4.30-4.40	3			
4.40-4.50	5			
4.50-4.60	6		-1.59	4.50
4.60-4.70	8			
4.70-4.80	13			
4.80-4.90	20			
4.90-5.00	23		-2.09	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

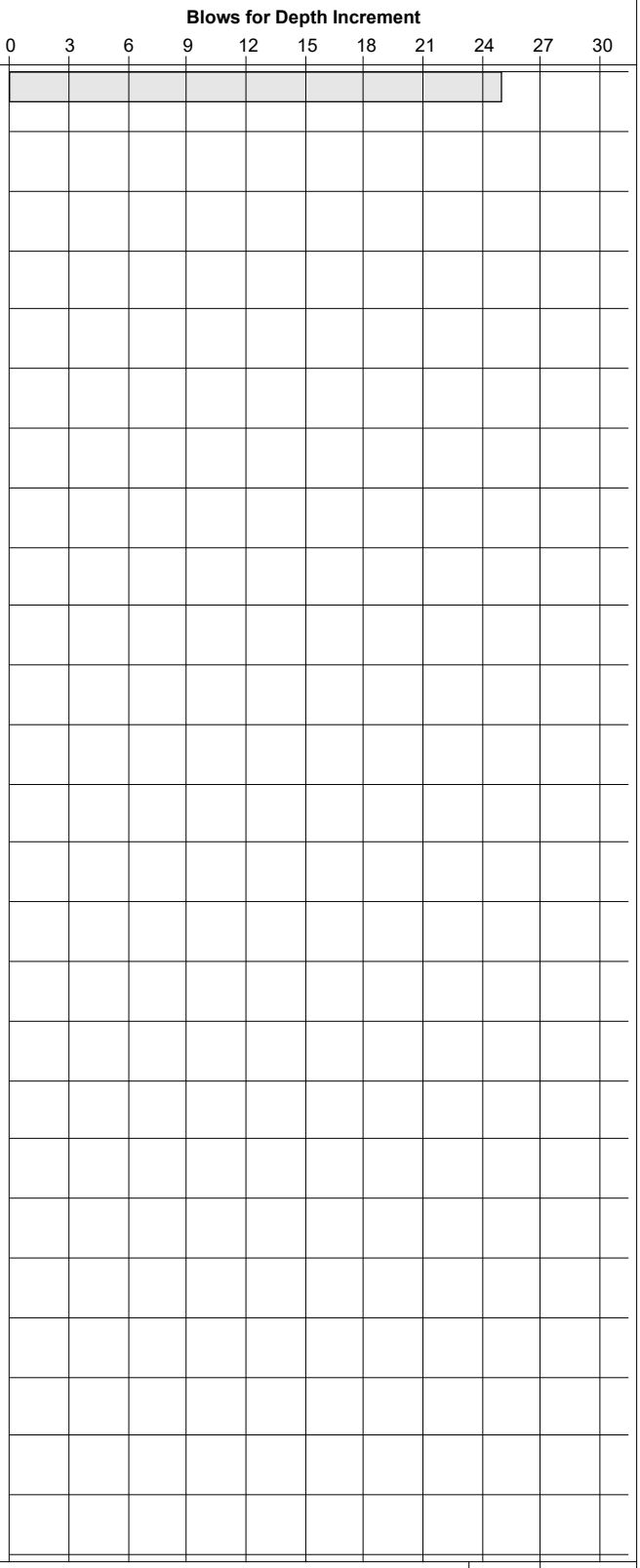
Figure No. 11087-09-21.DP38

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP38

Machine : Tech 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.91	Client Fingal County Council	Job Number 11087-09-21
	Location 724406.8 E 753206.3 N	Dates 02/02/2022	Engineer RPS	Sheet 2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
5.00-5.10	25		-2.09	5.00
			-2.59	5.50
			-3.09	6.00
			-3.59	6.50
			-4.09	7.00
			-4.59	7.50
			-5.09	8.00
			-5.59	8.50
			-6.09	9.00
			-6.59	9.50
			-7.09	10.00



Remarks

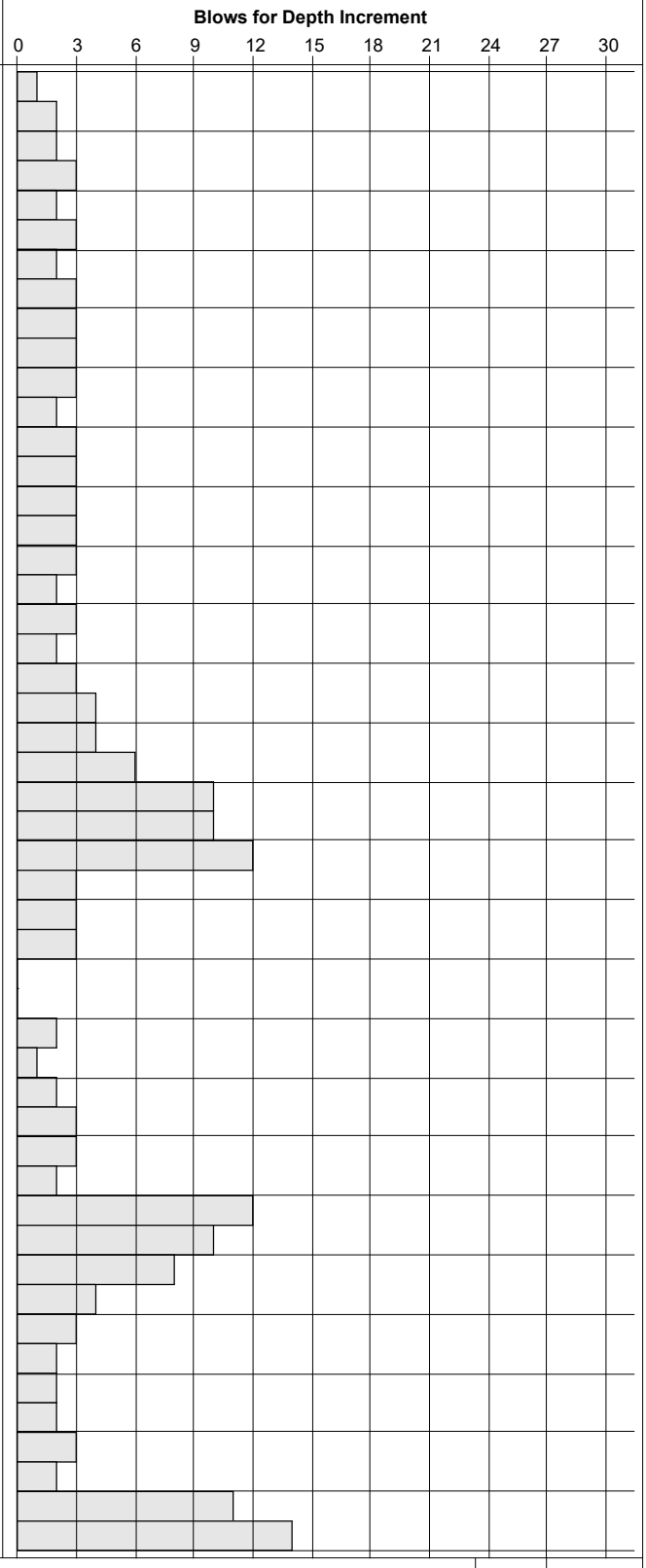
Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP38

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP39
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.75	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724458.4 E 753217.5 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	1		2.75	0.00
0.10-0.20	2			
0.20-0.30	2			
0.30-0.40	3			
0.40-0.50	2			
0.50-0.60	3		2.25	0.50
0.60-0.70	2			
0.70-0.80	3			
0.80-0.90	3			
0.90-1.00	3			
1.00-1.10	3		1.75	1.00
1.10-1.20	2			
1.20-1.30	3			
1.30-1.40	3			
1.40-1.50	3			
1.50-1.60	3		1.25	1.50
1.60-1.70	3			
1.70-1.80	2			
1.80-1.90	3			
1.90-2.00	2			
2.00-2.10	3		0.75	2.00
2.10-2.20	4			
2.20-2.30	4			
2.30-2.40	6			
2.40-2.50	10			
2.50-2.60	10		0.25	2.50
2.60-2.70	12			
2.70-2.80	3			
2.80-2.90	3			
2.90-3.00	3			
3.00-3.10	0		-0.25	3.00
3.10-3.20	0			
3.20-3.30	2			
3.30-3.40	1			
3.40-3.50	2			
3.50-3.60	3		-0.75	3.50
3.60-3.70	3			
3.70-3.80	2			
3.80-3.90	12			
3.90-4.00	10			
4.00-4.10	8		-1.25	4.00
4.10-4.20	4			
4.20-4.30	3			
4.30-4.40	2			
4.40-4.50	2			
4.50-4.60	2		-1.75	4.50
4.60-4.70	3			
4.70-4.80	2			
4.80-4.90	11			
4.90-5.00	14		-2.25	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

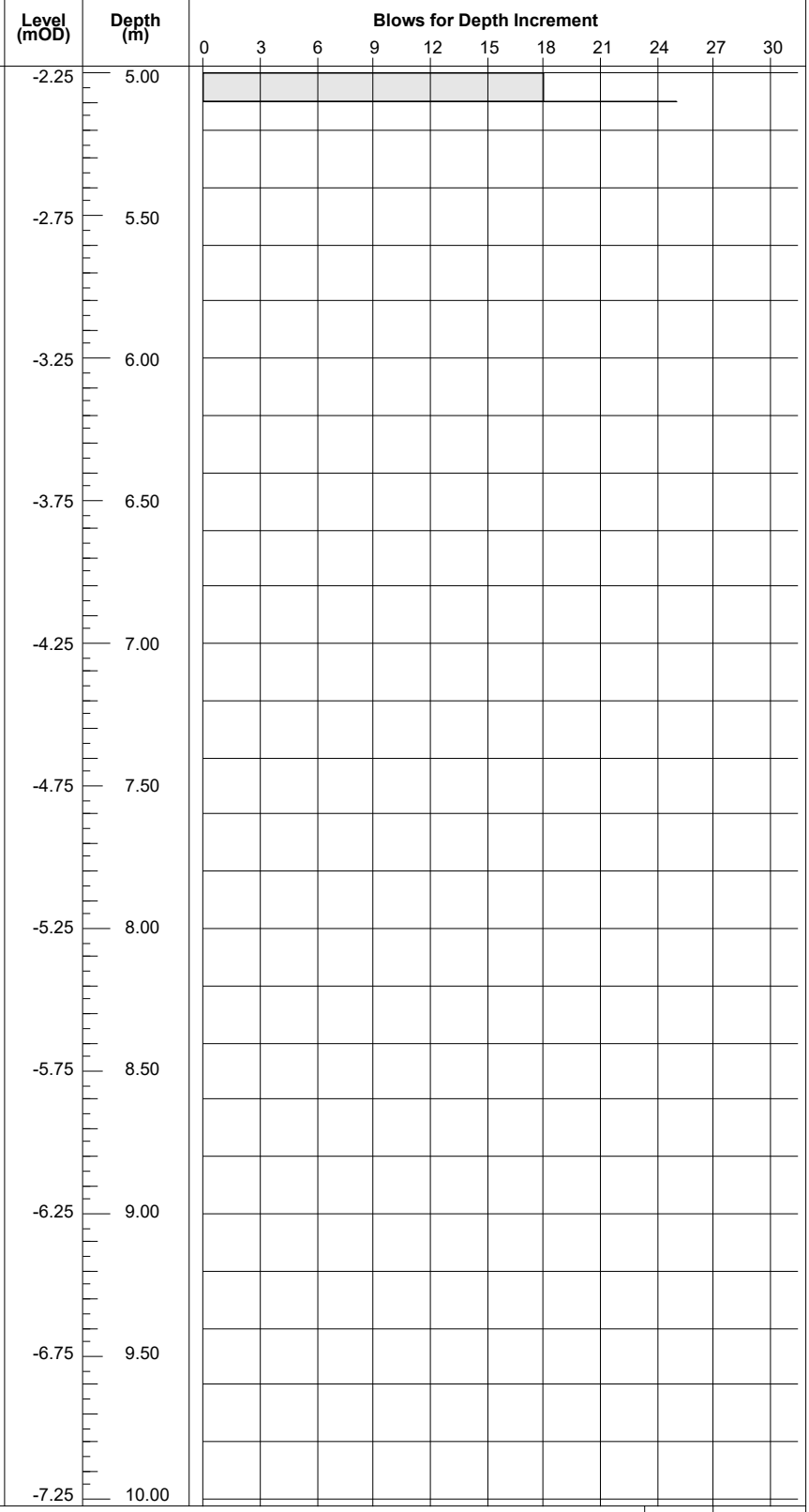
Figure No. 11087-09-21.DP39

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP39

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.75	Client Fingal County Council	Job Number 11087-09-21
	Location 724458.4 E 753217.5 N	Dates 02/02/2022	Engineer RPS	Sheet 2/2

Depth (m)	Blows for Depth Increment	Field Records
5.00-5.10	18	
5.10-5.10	25	



Remarks

Scale (approx)	Logged By
1:25	RM

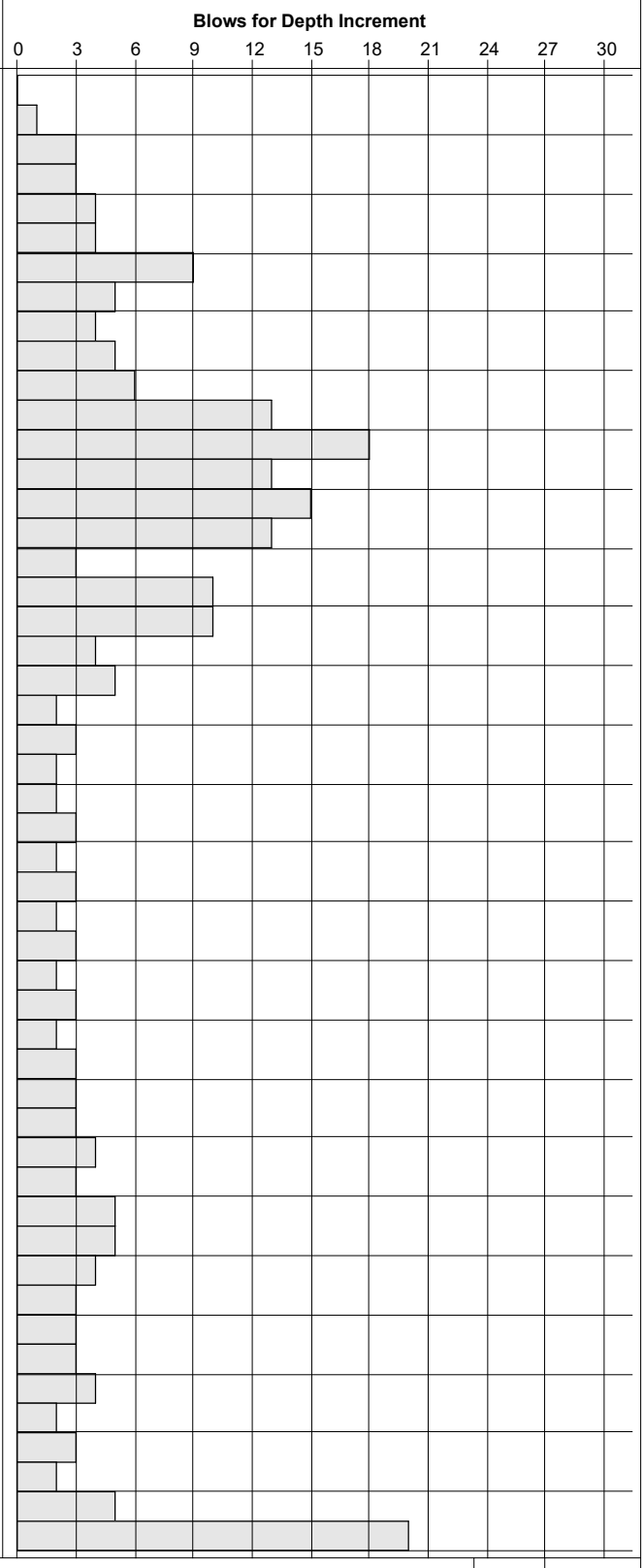
Figure No.
11087-09-21.DP39

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP40

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.00	Client Fingal County Council	Job Number 11087-09-21
	Location 724559.7 E 753203.7 N	Dates 17/01/2022	Engineer RPS	Sheet 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		3.00	0.00
0.10-0.20	1			
0.20-0.30	3			
0.30-0.40	3			
0.40-0.50	4			
0.50-0.60	4		2.50	0.50
0.60-0.70	9			
0.70-0.80	5			
0.80-0.90	4			
0.90-1.00	5			
1.00-1.10	6		2.00	1.00
1.10-1.20	13			
1.20-1.30	18			
1.30-1.40	13			
1.40-1.50	15			
1.50-1.60	13		1.50	1.50
1.60-1.70	3			
1.70-1.80	10			
1.80-1.90	10			
1.90-2.00	4			
2.00-2.10	5		1.00	2.00
2.10-2.20	2			
2.20-2.30	3			
2.30-2.40	2			
2.40-2.50	2			
2.50-2.60	3		0.50	2.50
2.60-2.70	2			
2.70-2.80	3			
2.80-2.90	2			
2.90-3.00	3			
3.00-3.10	2		0.00	3.00
3.10-3.20	3			
3.20-3.30	2			
3.30-3.40	3			
3.40-3.50	3			
3.50-3.60	3		-0.50	3.50
3.60-3.70	4			
3.70-3.80	3			
3.80-3.90	5			
3.90-4.00	5			
4.00-4.10	4		-1.00	4.00
4.10-4.20	3			
4.20-4.30	3			
4.30-4.40	3			
4.40-4.50	4			
4.50-4.60	2		-1.50	4.50
4.60-4.70	3			
4.70-4.80	2			
4.80-4.90	5			
4.90-5.00	20		-2.00	5.00



Remarks

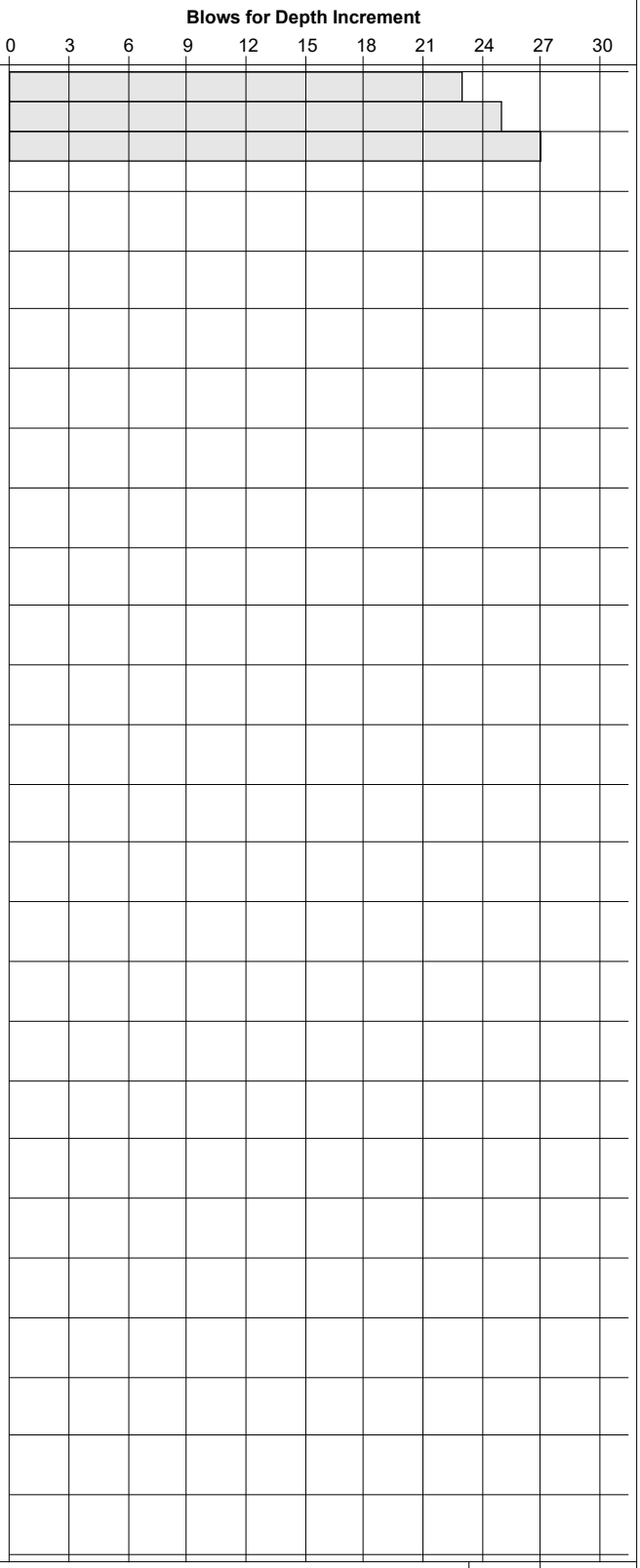
Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP40

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP40
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 3.00	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724559.7 E 753203.7 N	**Dates** 17/01/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
5.00-5.10	23		-2.00	5.00
5.10-5.20	25		-2.50	5.50
5.20-5.30	27		-3.00	6.00
			-3.50	6.50
			-4.00	7.00
			-4.50	7.50
			-5.00	8.00
			-5.50	8.50
			-6.00	9.00
			-6.50	9.50
			-7.00	10.00



Remarks

Scale (approx)	Logged By
1:25	RM

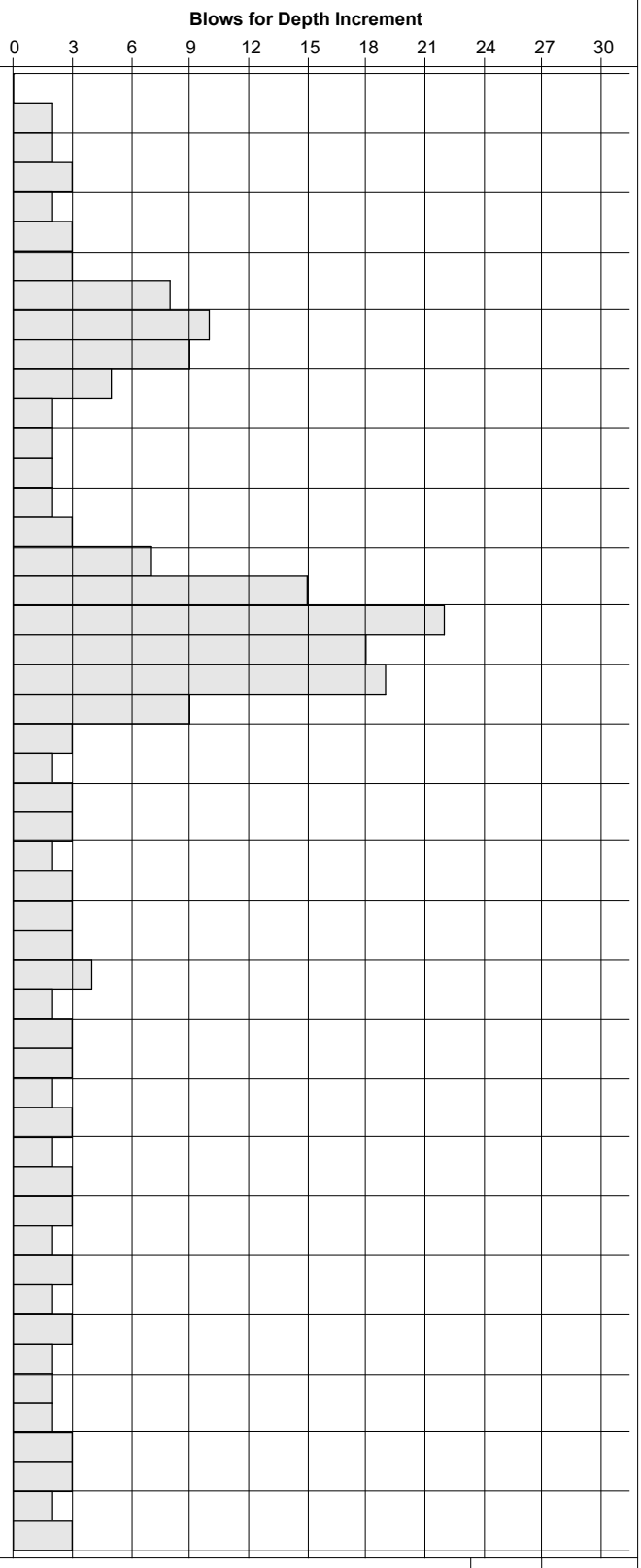
Figure No. 11087-09-21.DP40

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP41

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.13	Client Fingal County Council	Job Number 11087-09-21
	Location 724575.1 E 753178.4 N	Dates 19/01/2022	Engineer RPS	Sheet 1/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		3.13	0.00
0.10-0.20	2			
0.20-0.30	2			
0.30-0.40	3			
0.40-0.50	2			
0.50-0.60	3		2.63	0.50
0.60-0.70	3			
0.70-0.80	8			
0.80-0.90	10			
0.90-1.00	9			
1.00-1.10	5		2.13	1.00
1.10-1.20	2			
1.20-1.30	2			
1.30-1.40	2			
1.40-1.50	2			
1.50-1.60	3		1.63	1.50
1.60-1.70	7			
1.70-1.80	15			
1.80-1.90	22			
1.90-2.00	18			
2.00-2.10	19		1.13	2.00
2.10-2.20	9			
2.20-2.30	3			
2.30-2.40	2			
2.40-2.50	3			
2.50-2.60	3		0.63	2.50
2.60-2.70	2			
2.70-2.80	3			
2.80-2.90	3			
2.90-3.00	3			
3.00-3.10	4		0.13	3.00
3.10-3.20	2			
3.20-3.30	3			
3.30-3.40	3			
3.40-3.50	2			
3.50-3.60	3		-0.38	3.50
3.60-3.70	2			
3.70-3.80	3			
3.80-3.90	3			
3.90-4.00	2			
4.00-4.10	3		-0.88	4.00
4.10-4.20	2			
4.20-4.30	3			
4.30-4.40	2			
4.40-4.50	2			
4.50-4.60	2		-1.38	4.50
4.60-4.70	3			
4.70-4.80	3			
4.80-4.90	2			
4.90-5.00	3		-1.88	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

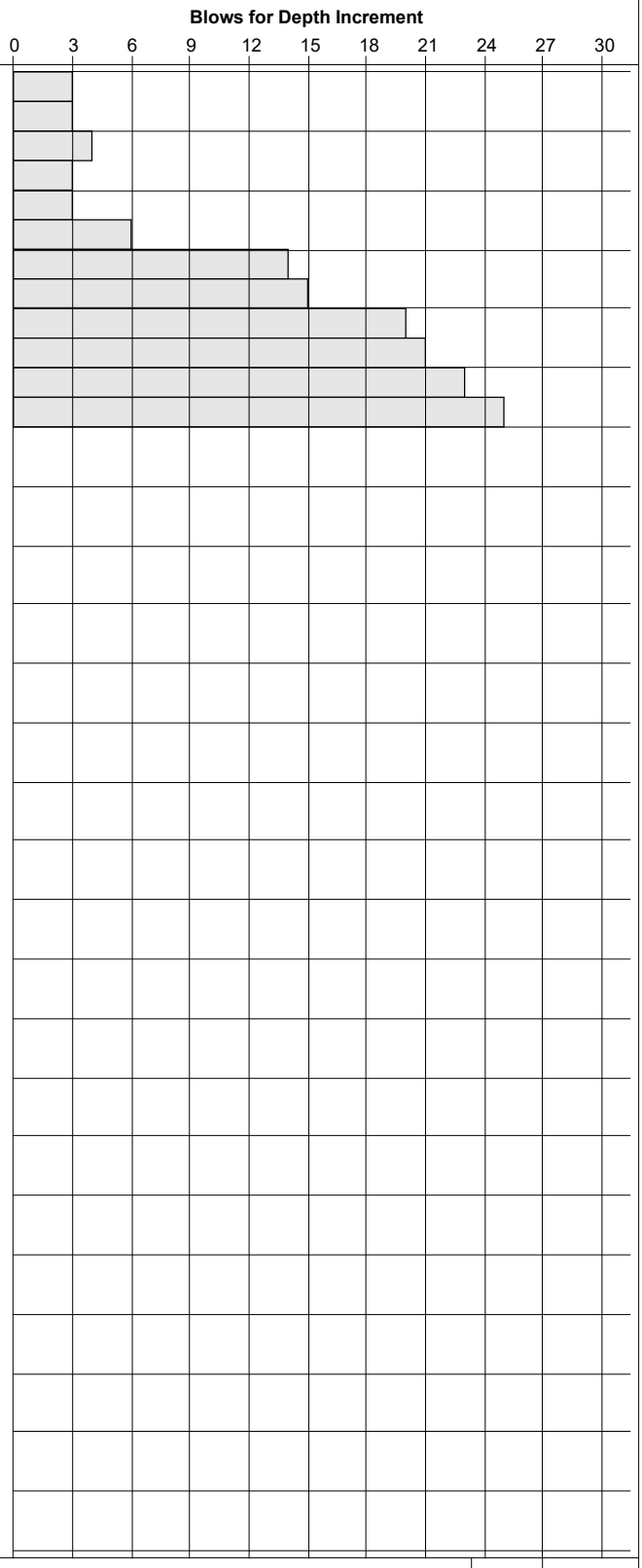
Figure No.
11087-09-21.DP41

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP41

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 3.13	Client Fingal County Council	Job Number 11087-09-21
	Location 724575.1 E 753178.4 N	Dates 19/01/2022	Engineer RPS	Sheet 2/2

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
5.00-5.10	3		-1.88	5.00
5.10-5.20	3			
5.20-5.30	4			
5.30-5.40	3			
5.40-5.50	3			
5.50-5.60	6		-2.38	5.50
5.60-5.70	14			
5.70-5.80	15			
5.80-5.90	20			
5.90-6.00	21			
6.00-6.10	23		-2.88	6.00
6.10-6.20	25			
			-3.38	6.50
			-3.88	7.00
			-4.38	7.50
			-4.88	8.00
			-5.38	8.50
			-5.88	9.00
			-6.38	9.50
			-6.88	10.00



Remarks

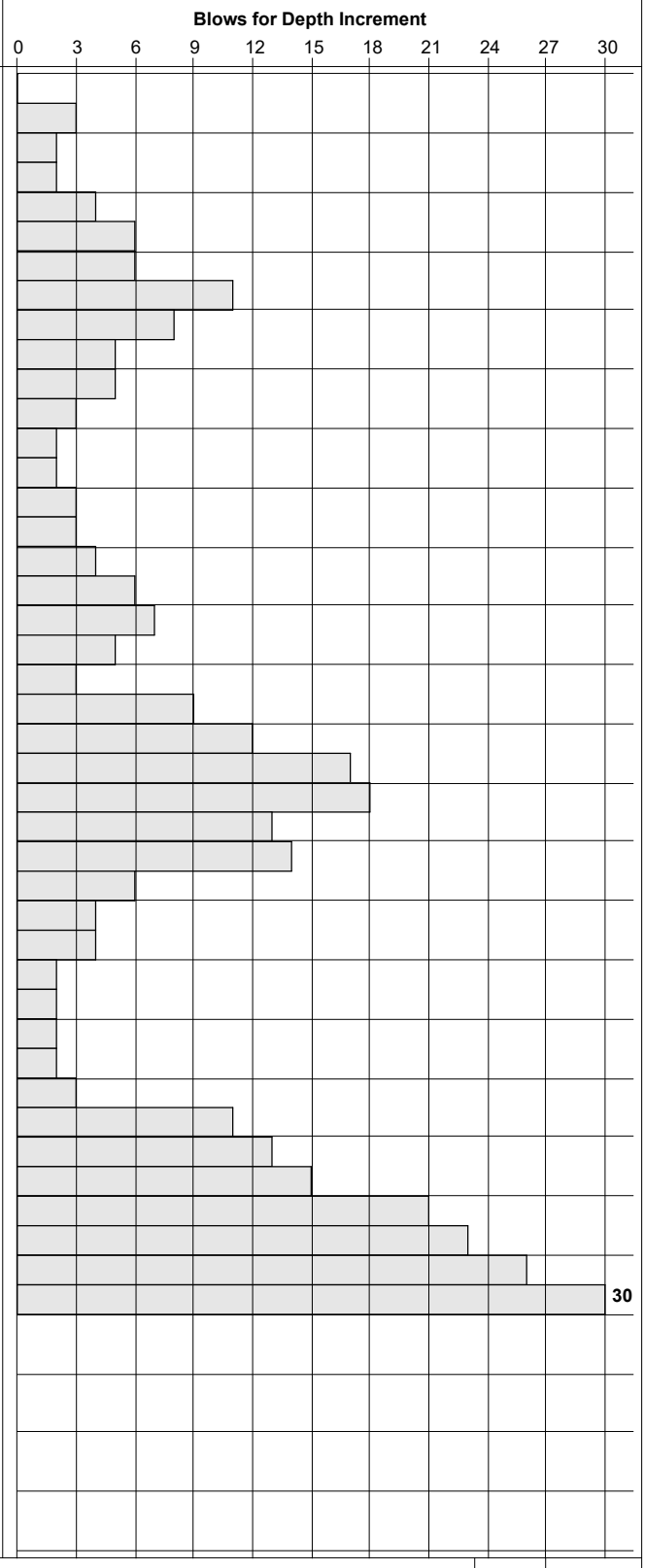
Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP41

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme				**Probe Number** DP42
Machine : Tec 10 **Method :** Dynamic Probe	**Cone Dimensions** Diameter 43.7mm	**Ground Level (mOD)** 2.81	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724605.4 E 753135.9 N	**Dates** 14/01/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.81	0.00
0.10-0.20	3			
0.20-0.30	2			
0.30-0.40	2			
0.40-0.50	4			
0.50-0.60	6		2.31	0.50
0.60-0.70	6			
0.70-0.80	11			
0.80-0.90	8			
0.90-1.00	5			
1.00-1.10	5		1.81	1.00
1.10-1.20	3			
1.20-1.30	2			
1.30-1.40	2			
1.40-1.50	3			
1.50-1.60	3		1.31	1.50
1.60-1.70	4			
1.70-1.80	6			
1.80-1.90	7			
1.90-2.00	5			
2.00-2.10	3		0.81	2.00
2.10-2.20	9			
2.20-2.30	12			
2.30-2.40	17			
2.40-2.50	18			
2.50-2.60	13		0.31	2.50
2.60-2.70	14			
2.70-2.80	6			
2.80-2.90	4			
2.90-3.00	4			
3.00-3.10	2		-0.19	3.00
3.10-3.20	2			
3.20-3.30	2			
3.30-3.40	2			
3.40-3.50	3			
3.50-3.60	11		-0.69	3.50
3.60-3.70	13			
3.70-3.80	15			
3.80-3.90	21			
3.90-4.00	23			
4.00-4.10	26		-1.19	4.00
4.10-4.20	30			
			-1.69	4.50
			-2.19	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

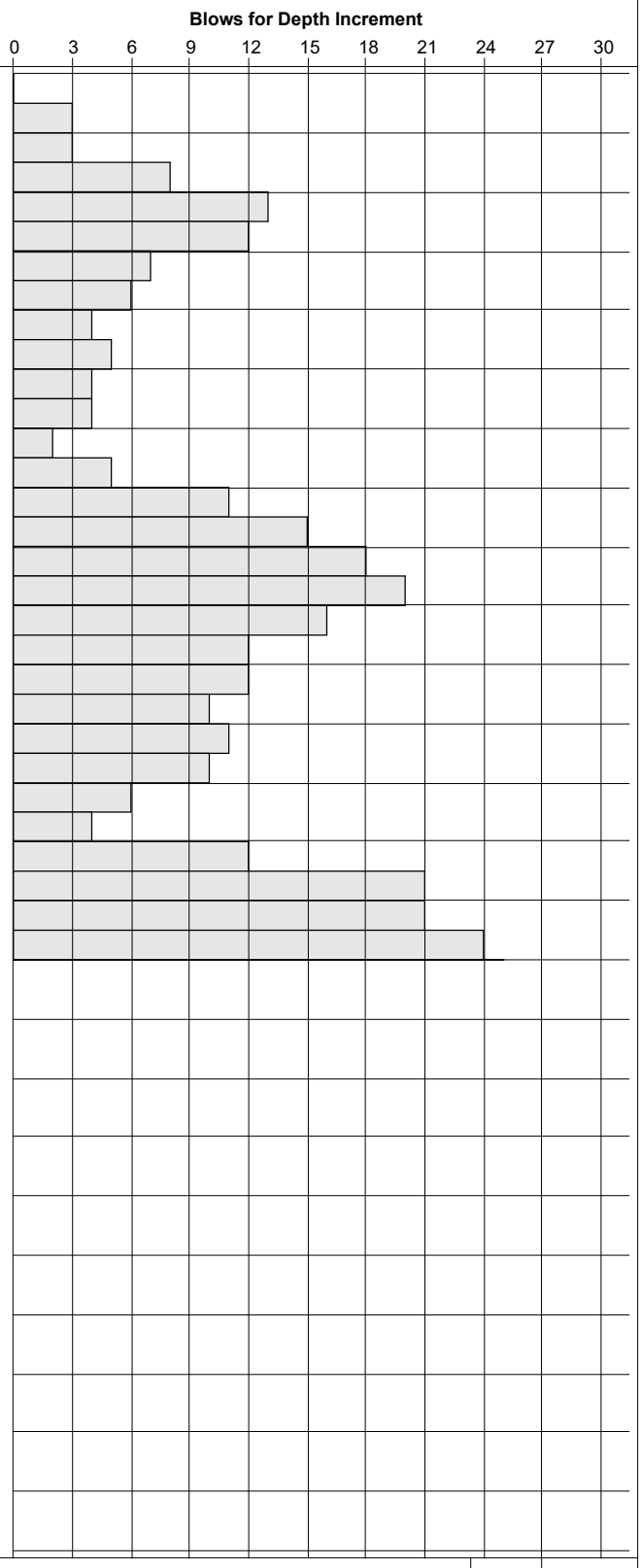
Figure No. 11087-09-21.DP42

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP43

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.77	Client Fingal County Council	Job Number 11087-09-21
	Location 724631.8 E 753107.6 N	Dates 14/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.77	0.00
0.10-0.20	3			
0.20-0.30	3			
0.30-0.40	8			
0.40-0.50	13			
0.50-0.60	12		2.27	0.50
0.60-0.70	7			
0.70-0.80	6			
0.80-0.90	4			
0.90-1.00	5			
1.00-1.10	4		1.77	1.00
1.10-1.20	4			
1.20-1.30	2			
1.30-1.40	5			
1.40-1.50	11			
1.50-1.60	15		1.27	1.50
1.60-1.70	18			
1.70-1.80	20			
1.80-1.90	16			
1.90-2.00	12			
2.00-2.10	12		0.77	2.00
2.10-2.20	10			
2.20-2.30	11			
2.30-2.40	10			
2.40-2.50	6			
2.50-2.60	4		0.27	2.50
2.60-2.70	12			
2.70-2.80	21			
2.80-2.90	21			
2.90-3.00	24			
3.00-3.00	25		-0.23	3.00
			-0.73	3.50
			-1.23	4.00
			-1.73	4.50
			-2.23	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

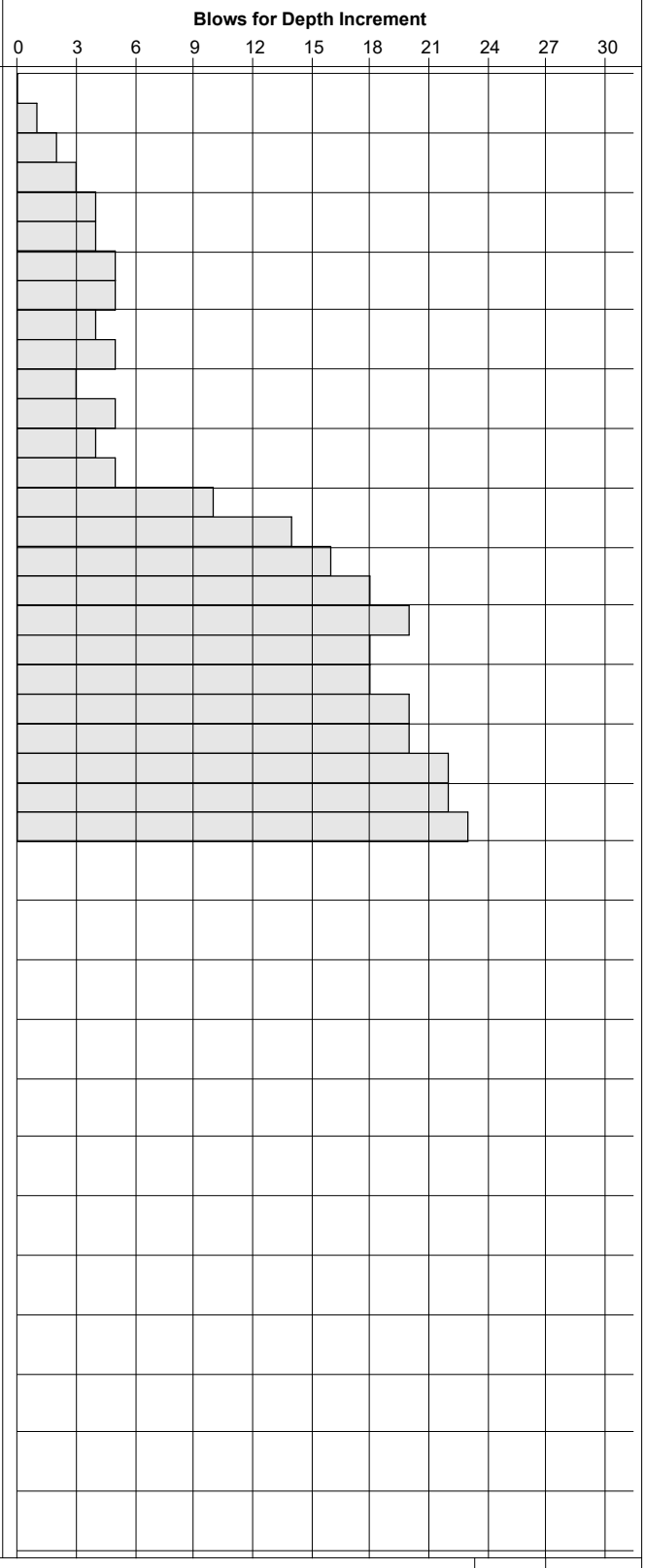
Figure No.
11087-09-21.DP43

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP44

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.78	Client Fingal County Council	Job Number 11087-09-21
	Location 724679.3 E 753074.4 N	Dates 14/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.78	0.00
0.10-0.20	1			
0.20-0.30	2			
0.30-0.40	3			
0.40-0.50	4			
0.50-0.60	4		2.28	0.50
0.60-0.70	5			
0.70-0.80	5			
0.80-0.90	4			
0.90-1.00	5			
1.00-1.10	3		1.78	1.00
1.10-1.20	5			
1.20-1.30	4			
1.30-1.40	5			
1.40-1.50	10			
1.50-1.60	14		1.28	1.50
1.60-1.70	16			
1.70-1.80	18			
1.80-1.90	20			
1.90-2.00	18			
2.00-2.10	18		0.78	2.00
2.10-2.20	20			
2.20-2.30	20			
2.30-2.40	22			
2.40-2.50	22			
2.50-2.60	23		0.28	2.50
			-0.22	3.00
			-0.72	3.50
			-1.22	4.00
			-1.72	4.50
			-2.22	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

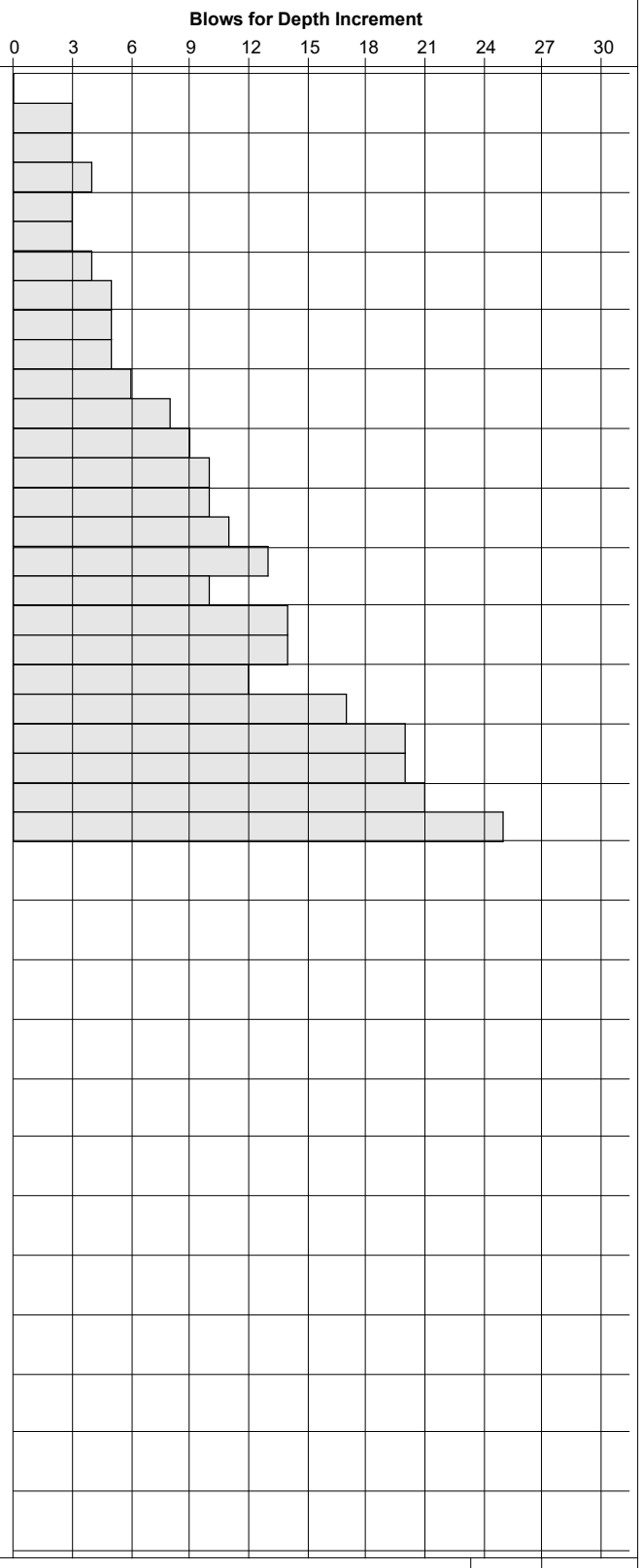
Figure No.
11087-09-21.DP44

Ground Investigations Ireland Ltd
www.gii.ie

Site	Probe Number
Rogerstown Coastal Flood and Erosion Relief Scheme	DP46

Machine : Tec 10 Method : Dynamic Probe	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 2.14	Client Fingal County Council	Job Number 11087-09-21
	Location 724753.5 E 752968.2 N	Dates 14/01/2022	Engineer RPS	Sheet 1/1

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)
0.00-0.10	0		2.14	0.00
0.10-0.20	3			
0.20-0.30	3			
0.30-0.40	4			
0.40-0.50	3			
0.50-0.60	3		1.64	0.50
0.60-0.70	4			
0.70-0.80	5			
0.80-0.90	5			
0.90-1.00	5			
1.00-1.10	6		1.14	1.00
1.10-1.20	8			
1.20-1.30	9			
1.30-1.40	10			
1.40-1.50	10			
1.50-1.60	11		0.64	1.50
1.60-1.70	13			
1.70-1.80	10			
1.80-1.90	14			
1.90-2.00	14			
2.00-2.10	12		0.14	2.00
2.10-2.20	17			
2.20-2.30	20			
2.30-2.40	20			
2.40-2.50	21			
2.50-2.60	25		-0.36	2.50
			-0.86	3.00
			-1.36	3.50
			-1.86	4.00
			-2.36	4.50
			-2.86	5.00



Remarks

Scale (approx)	Logged By
1:25	RM

Figure No.
11087-09-21.DP46

APPENDIX 4 - Borehole Records

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH02
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 8.00m	**Ground Level (mOD)** 2.61	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724721.1 E 751484.6 N	**Dates** 10/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					2.51	0.10	TARMACADAM		
						(0.50)	MADE GROUND.Greyangular to sub angular fine to coarse Gravel (804 gravel fill).		
0.50	B				2.01	0.60	Firm brown slightly sandy gravelly CLAY.		
1.00-1.45 1.00	SPT N=14 B			7,7/5,5,2,2		(0.70)			
					1.31	1.30	Brown sandy gravelly silty CLAY.(Driller's notes)		
						(0.50)			
					0.81	1.80	Soft grey silty CLAY with shells and shell fragments.		
2.00 2.00	B UT								▼1
				Water strike(1) at 2.40m, rose to 2.20m in 20 mins, sealed at 3.00m.					▽1
3.00-3.45 3.00	SPT N=1 B			1,0/0,1,0,0		(2.80)			▼2
4.00-4.45 4.00	SPT N=3 B			1,0/0,0,1,2					
				Water strike(2) at 4.60m, rose to 3.20m in 20 mins.	-1.99	4.60	Medium dense grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL with occassional angular to subangular cobbles.		▽2
5.00-5.45 5.00	SPT N=30 B			22,4/7,8,7,8		(1.10)			
					-3.09	5.70	Firm brown slightly sandy slightly gravelly silty CLAY.		
6.00-6.45 6.00	SPT N=12 B			3,1/3,2,3,4		(0.60)			
					-3.69	6.30	Firm to stiff grey slightly sandy silty CLAY.		
7.00-7.45 7.00	SPT N=15 B			2,3/3,4,4,4		(1.70)			
							At 7.5m UT Atempted - no recovery		
8.00-8.00	SPT 25*/0 50/0			25/50	-5.39	8.00	Complete at 8.00m		

Remarks
Groundwater encountered at 2.4 and 4.6m BGL.
Cable percussion drilling complete at 8.0m BGL.
Borehole backfilled on completeion

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH02

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH05
Machine : Dando 2000 + Beretta T44 **Method :** Cable Percussion with Rotary follow on	**Casing Diameter** 200mm cased to 9.00m 96mm cased to 18.80m	**Ground Level (mOD)** 2.42	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724696.7 E 751586.5 N	**Dates** 14/02/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.40)	MADE GROUND: Loose brown clayey gravelly coarse SAND. Sand is coarse.		
					2.02	0.40			
0.50	B						Loose to medium dense brown clayey gravelly SAND. Sand is coarse.		
1.00-1.45 1.00	SPT N=7 B			1,1/2,2,1,2		(1.40)			
					0.62	1.80	Soft grey slightly sandy slightly gravelly silty CLAY.		
2.00	B					(0.50)	2.0m UT Sample Attempted - no recovery		
					0.12	2.30	Medium dense clayey sandy GRAVEL. Gravel is subangular to subrounded fine to coarse.		
3.00-3.45 3.00	SPT N=7 B			2,2/1,2,2,2					
4.00-4.45 4.00	SPT N=11 B			2,2/2,2,3,4		(3.60)			
5.00-5.45 5.00	SPT N=11 B			2,3/2,3,3,3					
					-3.48	5.90	Very soft grey slightly sandy slightly gravelly clayey SILT.		
6.00	B						6.0m UT Sample Attempted - no recovery		
7.00-7.45 7.00	SPT N=1 B			1,0/0,0,1,0		(2.55)			
8.00-8.45 8.00	SPT N=3 B			1,0/1,0,1,1					
					-6.03	8.45	Soft grey slightly sandy slightly gravelly silty CLAY.		
9.00	TCR / SCR	RQD	FI	2,2/3,3,4,4 B		(0.55)			
9.00-9.45 9.00	81			SPT N=14	-6.58	9.00	Firm grey slightly sandy SILT.		
						(0.80)			
9.80-10.10 9.80				7,7/14,20,16 SPT 50/150	-7.38	9.80	Poor recovery. Recovery consists of: Slightly silty, slightly		

Remarks
No groundwater encountered during drilling.
Cable percussion drilling compete at 9.00m BGL with Rotary core follow on complete at 18.80m BGL.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH05

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH05
Machine : Dando 2000 + Beretta T44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Cable Percussion with Rotary follow on	**Casing Diameter** 200mm cased to 9.00m 96mm cased to 18.80m	**Ground Level (mOD)** 2.42	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724696.7 E 751586.5 N	**Dates** 14/02/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
								clayey subangular fine to medium GRAVEL. 'Dense'		
	17				8,10/11,12,12,15 SPT N=50		(1.50)			
11.30-11.75 11.30						-8.88	11.30	Poor recovery. Recovery consists of brown slightly silty fine SAND. 'Dense'		
	40				7,15/20,30 SPT 50/75		(1.50)			
12.80-13.03 12.80						-10.38	12.80	Dense brown silty fine SAND.		
	50				9,13/26,24 SPT 50/75		(1.50)			
14.30-14.53 14.30						-11.88	14.30	Stiff brown slightly sandy slightly gravelly silty CLAY with occasional cobbles.		
	87				25/50 SPT 25*/0 50/0		(1.50)			
15.80-15.80 15.80						-13.38	15.80	Stiff brown slightly sandy gravelly CLAY with occassional cobbles.		
	80						(2.20)			
17.30										
18.00	97	53	13			-15.58	18.00	Medium strong grey fossiliferous LIMESTONE. Partially weathered. (Possible Boulder) (18.0m - 18.80m BGL) 1 fracture set. F1: 5 - 45 degrees. Closely to medium spaced, undulating, rough, open with some clay staining.		
				10			(0.80)			
18.80						-16.38	18.80	Complete at 18.80m		

Remarks

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH05

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH15
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 10.00m	**Ground Level (mOD)** 2.94	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724179.5 E 752500.2 N	**Dates** 08/02/2022-09/02/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					2.64	(0.30) 0.30	Brown sandy slightly gravelly TOPSOIL with rootlets.		
0.50	B						Medium dense clayey fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL.		
1.00-1.45 1.00	SPT N=12 B			2,2/3,3,3,3		(2.10)			▼1
				Water strike(1) at 1.60m, no rise after 20 mins.					
2.00-2.45 2.00	SPT N=10 B			1,2/2,2,3,3	0.54	2.40			
						(0.90)	Loose to medium dense brown slightly clayey gravelly fine SAND.		
3.00-3.45 3.00	SPT N=10 B			2,2/3,3,2,2	-0.36	3.30			
4.00-4.45 4.00	SPT N=10 B			2,2/3,2,3,2			Loose to medium dense brown slightly silty fine SAND.		
5.00-5.45 5.00	SPT N=8 B			1,2/1,2,2,3					
						(4.70)			
6.00-6.45 6.00	SPT N=11 B			1,2/2,2,3,4					
7.00-7.45 7.00	SPT N=9 B			1,2/1,2,3,3					
8.00-8.45 8.00	SPT N=18 B			1,2/3,4,5,6	-5.06	8.00	Medium dense brown slightly silty fine SAND.		
						(0.90)			
9.00-9.45 9.00	SPT N=36 B			2,4/7,9,10,10	-5.96 -6.26	8.90 (0.30) 9.20	Medium dense gravelly fine to coarse SAND with occassional shells.		
						(0.80)	Very stiff grey slightly sandy CLAY.		
10.00-10.45	SPT N=41			7,9/10,10,11,10	-7.06	10.00			

Remarks
Groundwater encountered at 1.6m BGL.
Cable percussion drilling complete at 10.00m BGL.
Borehole backfilled on completion.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH15

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH15
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 10.00m	**Ground Level (mOD)** 2.94	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724179.5 E 752500.2 N	**Dates** 08/02/2022-09/02/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B								

Remarks

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH15

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH29
Machine : Beretta T44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 13.90m	**Ground Level (mOD)** 3.71	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725471.8 E 750944.8 N	**Dates** 11/03/2022-14/03/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00								See window sample log WS29 for Strata description.			
	24						(3.00)				
2.30											
	40					0.71	3.00	Poor recovery. Recovery consists of: brown slightly gravelly fine to coarse SAND.			
							(0.80)				
3.80						-0.09	3.80	Poor recovery. Recovery consists of: slightly clayey rounded to subrounded medium to coarse GRAVEL.			
	17						(1.50)				
5.30						-1.59	5.30	Poor recovery. Recovery consists of: subrounded to subangular fine to medium GRAVEL. 'Dense'			
	20						(2.45)				
6.80					8,9/9,10,12,12						
6.80-7.25					SPT N=43						
	40										
						-4.04	7.75				
							(0.35)	Poor recovery. Recovery consists of: Stiff brown slightly sandy slightly gravelly CLAY with occasional cobbles.			
						-4.39	8.10				
8.30					8,12/50			Stiff red sandy slightly gravelly CLAY.			
8.30-8.45					SPT 50/0						
	77										
							(2.70)				
9.80					12,20/27,23						
9.80-10.03					SPT 50/75						

Remarks
No groundwater encountered during drilling.
Rotary core drilling complete at 11.80m BGL.
Slotted standpipe installed from 13.90m BGL to 2.0m BGL with plain pipe from 2.0m BGL to GL. Gravel filter zone from 13.90m BGL to 2.0m BGL with bentonite sealed from 2.0m BGL to GL. Finished with a flush cover.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.RC29

Ground Investigations Ireland Ltd
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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH29
Machine : Beretta T44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 13.90m	**Ground Level (mOD)** 3.71	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 725471.8 E 750944.8 N	**Dates** 11/03/2022-14/03/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
	47					-7.09	10.80	Extreamly weak to weak red fine to coarse grained SANDSTONE. Destructured.			
11.30	95	95	40			-8.09	(1.00) 11.80	Extremely weak to weak red fine to coarse grained SANDSTONE. Distincly to highly weathered.			
12.80	87	87	77				(2.10)				
13.90						-10.19	13.90	Complete at 13.90m			

Remarks

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.RC29

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH31
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.60m	**Ground Level (mOD)** 2.54	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724058.1 E 753074.9 N	**Dates** 03/02/2022-04/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					2.34	(0.20) 0.20	TARMACADAM			
						(0.40)	MADE GROUND: Dense grey slightly gravelly clayey fine to coarse SAND with occassional subangular cobbles.		▼1	
0.50	B			Water strike(1) at 0.60m, rose to 0.40m in 20 mins.	1.94	0.60			▽1	
1.00-1.45 1.00	SPT N=31 B			2,6/6,8,8,9		(1.60)	Medium dense brown sandy subangular to subrounded GRAVEL (Possible made ground)			
2.00-2.45 2.00	SPT N=17 B			2,8/8,3,3,3	0.34	2.20	Stiff brown slightly sandy slightly gravelly CLAY.			
3.00-3.45 3.00	SPT N=21 B			2,3/4,5,5,7		(1.80)				
4.00-4.45 4.00	SPT N=31 B			3,6/7,7,8,9	-1.46	4.00	Stiff grey slightly sandy slightly gravelly silty CLAY.			
						(1.50)				
5.00-5.44 5.00	SPT 50/285 B			7,10/14,17,19	-2.96	5.50				
5.60	B				-3.06	5.60	Grey slightly clayey subangular COBBLES. (probable rock). Obstruction.			
							Complete at 5.60m			

Remarks
Groundwater encountered at 0.6m BGL.
Cable percussion drilling complete at 5.60m BBL.
Slotted standpipe installed from 5.60m BGL to 2.00m BGL with plain pipe from 2.00m BGL to GL. Gravel filter zone from 5.60m to 2.00m BGL with bentonite seal from 2.00m BGL to GL. Finished with concrete and a flush cover.
Chiselling from 5.60m to 5.60m for 1 hour.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH31

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH31A
Machine : Beretta T44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 8.30m	**Ground Level (mOD)** 2.54	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724060.7 E 753074.8 N	**Dates** 10/03/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00						2.34	(0.20) 0.20	TARMACADAM		
						2.14	(0.20) 0.40	CONCRETE		
	22							Poor recoverey: Recovery of slightly sandy slightly clayey fine to coarse subangular Gravel. (See ajacent log for borehole CP31 for stata description)		
							(2.00)			
2.30						0.14	2.40			
	23							Poor recoverey: Recovery of brown slightly sandy slightly gravelly CLAY. (See ajacent log for borehole CP31 for stata description)		
							(1.40)			
3.80						-1.26	3.80			
								Brown slightly sandy slightly gravelly CLAY. (See ajacent log for borehole CP31 for stata description)		
							(0.70)			
4.50	87	15	13	NI		-1.96	4.50	Weak grey thinly to thickly laminated MUDSTONE. Highly weathered.Mostly Non Intact.		
							(0.60)			
5.10				2		-2.56	5.10			
5.30								Medium strong thinly laminated grey fine grained fossiliferous LIMESTONE interbedded with weak thinly laminated MUDSTONE. Unweathered to Partially weathered. (5.1 - 8.3m) 2 fracture sets. F1: 10-45 degrees. Extremely closely to medium spaced, undulating to planar, rough, open to incipient with some clay and oxidation staining. F2: 75-90 degrees. Medium spaced, undulating, rough, open with clay staining.		
	100	73	50	17						
							(3.20)			
6.80										
	97	79	76	14						
8.30						-5.76	8.30	Complete at 8.30m		

Remarks
No groundwater encountered during drilling.
Rotary core drilling complete at 8.30m BGL.

Scale (approx)	**Logged By**
1:50	RM

Figure No. 11087-09-21.BH31A

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH33
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 6.60m	**Ground Level (mOD)** 2.58	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724175.2 E 753119.9 N	**Dates** 14/02/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					2.38	(0.20) 0.20	TARMACADAM			
0.50	B						MADE GROUND. Brown sandy clayey subangular to subrounded fine to coarse GRAVEL with angular cobbles, glass fragments and concrete pieces.			
1.00-1.45 1.00	SPT N=42 B			6,17/15,10,10,7		(1.10)			▼1	
				Water strike(1) at 1.50m, rose to 1.20m in 20 mins, sealed at 2.00m.	1.28	1.30	Medium dense to dense slightly sandy subangular to subrounded fine to coarse GRAVEL.		▽1	
2.00-2.45 2.00	SPT N=30 B			3,4/7,7,9,7		(1.50)				
					-0.22	2.80	Stiff brown slightly sandy slightly gravelly CLAY.		▼2	
3.00-3.45 3.00	SPT N=14 B			3,4/2,4,4,4						
						(1.70)				
4.00-4.44 4.00	SPT 50/290 B			10,22/19,14,17						
				Water strike(2) at 4.50m, rose to 3.00m in 20 mins.	-1.92	4.50			▽2	
4.60	B				-2.02	4.60	Sandy subangular COBBLE. (Driller's notes: Brown fine SAND with cobbles) Probable rock.			
							Complete at 6.60m			

Remarks
Groundwater encountered at 1.5m BGL.
Cable percussion drilling complete at 4.60m BGL.
Slotted standpipe installed from 4.60m BGL to 2.00m BGL with plain pipe from 2.00m BGL to GL. Gravel filter zone from 4.60m BGL to 2.00m BGL with bentonite sealed from 2.00m BGL to GL. Finished with a flush cover.
Chiselling from 4.60m to 4.60m for 1 hour.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH33

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Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH33A
Machine : Beretta T44 **Flush :** water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 8.30m	**Ground Level (mOD)** 2.58	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724176.7 E 753120.2 N	**Dates** 10/03/2022	**Engineer** RPS	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00						2.48	0.10	TARMACADAM.		
						2.38	0.20	MADE GROUND. Slightly clayey subangular to angular fine to coarse Gravel.		
							(0.30)			
						2.08	0.50	CONCRETE.		
	26							Poor Recovery: Recovery consists of: Slightly clayey subangular to angular fine to coarse Gravel. (See ajacent log for borehole CP33 for stata description)		
							(1.80)			
2.30						0.28	2.30			
	13							Poor recovery. Recovery consists of: angular to subangular fine to coarse GRAVEL. (See ajacent log for borehole CP33 for stata description)		
							(1.70)			
3.80										
4.00	81	10	10	27		-1.42	4.00	Medium strong to strong fine grained grey LIMESTONE interbedded with weak dark grey MUDSTONE. Distinctly weathered. Mostly Non Intact		
							(1.00)			
5.10						-2.42	5.00	Medium strong to strong fine grained grey LIMESTONE interbedded with weak dark grey MUDSTONE. Partially weathered to unweathered. (5.00m - 8.30m BGL) 2 fracture sets. F1: 0-45 degrees. Closely to medium spaced, undulating, rough, open, occasionally incipient with clay staining. F2: 75-90 degrees. Closely to medium spaced, undulating, rough, open, occasionally incipient with oxidation and clay staining.		
	85	66	66	8						
							(3.30)			
6.80										
	100	67	67	17						
8.30						-5.72	8.30	Complete at 8.30m		

Remarks
Rotary core drilling complete at 8.30m BGL.
Borehole backfilled on completion

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.RC33

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www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH36
Machine : Dando 2000 + Beretta T44 **Method :** Cable Percussion with Rotary follow-on	**Casing Diameter** 200mm cased to 4.00m 96mm cased to 10.40m	**Ground Level (mOD)** 2.61	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724319.3 E 753165.6 N	**Dates** 14/02/2022-11/03/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Sample / Tests	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
									2.51	0.10 (0.20)	TARMACADAM		
									2.31	0.30 (0.40)	Lean mix concrete		
0.50	B								1.91	0.70 (1.00)	MADE GROUND: Brown clayey gravelly fine to coarse SAND.		
1.00-1.24 1.00	SPT 50/85 B							7,18/21,29			Dense brown sandy clayey subangular to subrounded fine to coarse GRAVEL with subangular cobbles.		
									0.91	1.70 (0.30)	Medium dense brown clayey gravelly fine to coarse SAND.		
2.00-2.45 2.00	SPT N=14 B							2,3/3,3,4,4	0.61	2.00 (2.00)	Firm to stiff brown gravelly sandy CLAY.		
3.00-3.45 3.00	SPT N=12 B							2,2/4,2,2,4					
4.00-4.06	SPT 25*/60							25/50					
3.80 4.00	B							50/0	-1.39	4.00 (2.30)	Very stiff brown/grey slightly sandy gravelly CLAY.		
		43											
5.30-5.73 5.30								10,12/12,14,14,10 SPT 50/275					
		40	15	15									
6.30					12				-3.69	6.30 (4.10)	Weak to medium strong thinly laminated grey fine grained MUDSTONE. Unweathered to distinctly weathered. (6.3 - 10.4m BGL) 2 fracture sets. F1: 45-80 degrees. Extremely closely to very closely, undulating to planar, rough, open to incipient with clay infill and staining. F2: 0-15 degrees. Medium to closely spaced, undulating, rough, open with brown clay infill and staining.		
6.80													
		100	50	40	20								
8.30													
		90	20	20	23								
9.60													

Remarks
No groundwater encountered during drilling.
Cable percussion drilling refused at 4.00m BGL with rotary follow on at 10.40m BGL.
Borehole backfilled on completion.
Chiselling from 4.00m to 4.00m for 1 hour.

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.CP36

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH36
Machine : Dando 2000 + Beretta T44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Cable Percussion with Rotary follow-on	**Casing Diameter** 200mm cased to 4.00m 96mm cased to 10.40m	**Ground Level (mOD)** 2.61	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724319.3 E 753165.6 N	**Dates** 14/02/2022-11/03/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
	40	23	23	11						
10.40						-7.79	10.40	Complete at 10.40m		

Remarks

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.CP36

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH45
Machine : Dando 200 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 10.00m	**Ground Level (mOD)** 2.98	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724713.4 E 753043.1 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					2.88	0.10	TOPSOIL		
						(0.50)	MADE GROUND. Brown slightly gravelly slightly sandy clay with grass, plastic and glass.		
0.50	B				2.38	0.60	Driller's notes: Reworked ground brown sand.		
						(0.30)			
					2.08	0.90	MADE GROUND. Grey slightly clayey fine to coarse SAND with plastic and glass.Drillers notes.		
1.00-1.45 1.00	SPT N=12 B			4,4/3,3,3,3		(0.70)			
					1.38	1.60	Loose brown gravelly fine to coarse fine to coarse SAND with shells and shell fragments.		
2.00-2.45 2.00	SPT N=4 B			1,1/1,1,1,1 Water strike(1) at 2.10m, rose to 2.00m in 20 mins.		(1.60)			▼1 ▽1
3.00-3.45 3.00	SPT N=7 B			2,1/1,2,2,2	-0.22	3.20	Loose greyish brown gravelly SAND with shell fragments and occassional subrounded cobbles.		
4.00-4.45 4.00	SPT N=6 B			1,2/2,1,1,2					
5.00-5.45 5.00	SPT N=5 B			1,2/1,2,1,1					
						(4.40)			
6.00-6.45 6.00	SPT N=14 B			2,1/2,3,4,5					
7.00-7.45 7.00	SPT N=6 B			1,1/2,1,2,1					
					-4.62	7.60	Soft grey slightly sandy silty CLAY with rare gravels		
8.00-8.45 8.00	SPT N=2 B			1,1/0,1,0,1					
						(1.70)	8.5m Attempted UT sample - No recovery		
9.00-9.45 9.00	SPT N=26 B			1,2/4,6,7,9					
					-6.32	9.30	Very stiff grey slightly sandy silty CLAY.		
						(0.70)			
10.00-10.21	SPT 50/60			12,20/50	-7.02	10.00			

Remarks

Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH45

Ground Investigations Ireland Ltd
www.gii.ie

Site Rogerstown Coastal Flood and Erosion Relief Scheme			**Borehole Number** BH45
Machine : Dando 200 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 10.00m	**Ground Level (mOD)** 2.98	**Client** Fingal County Council	**Job Number** 11087-09-21
	Location 724713.4 E 753043.1 N	**Dates** 02/02/2022	**Engineer** RPS	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B								

Remarks

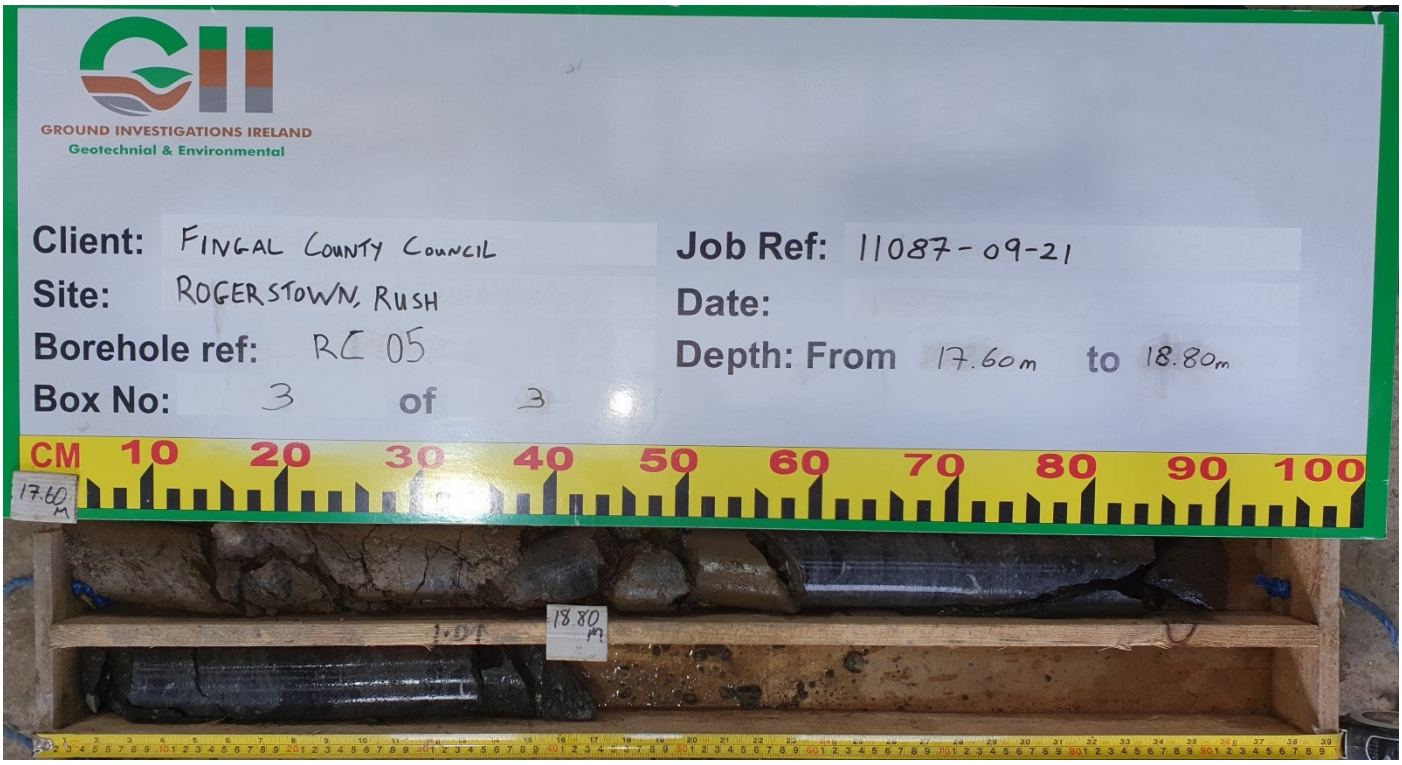
Scale (approx)	Logged By
1:50	RM

Figure No. 11087-09-21.BH45

Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs

BH05

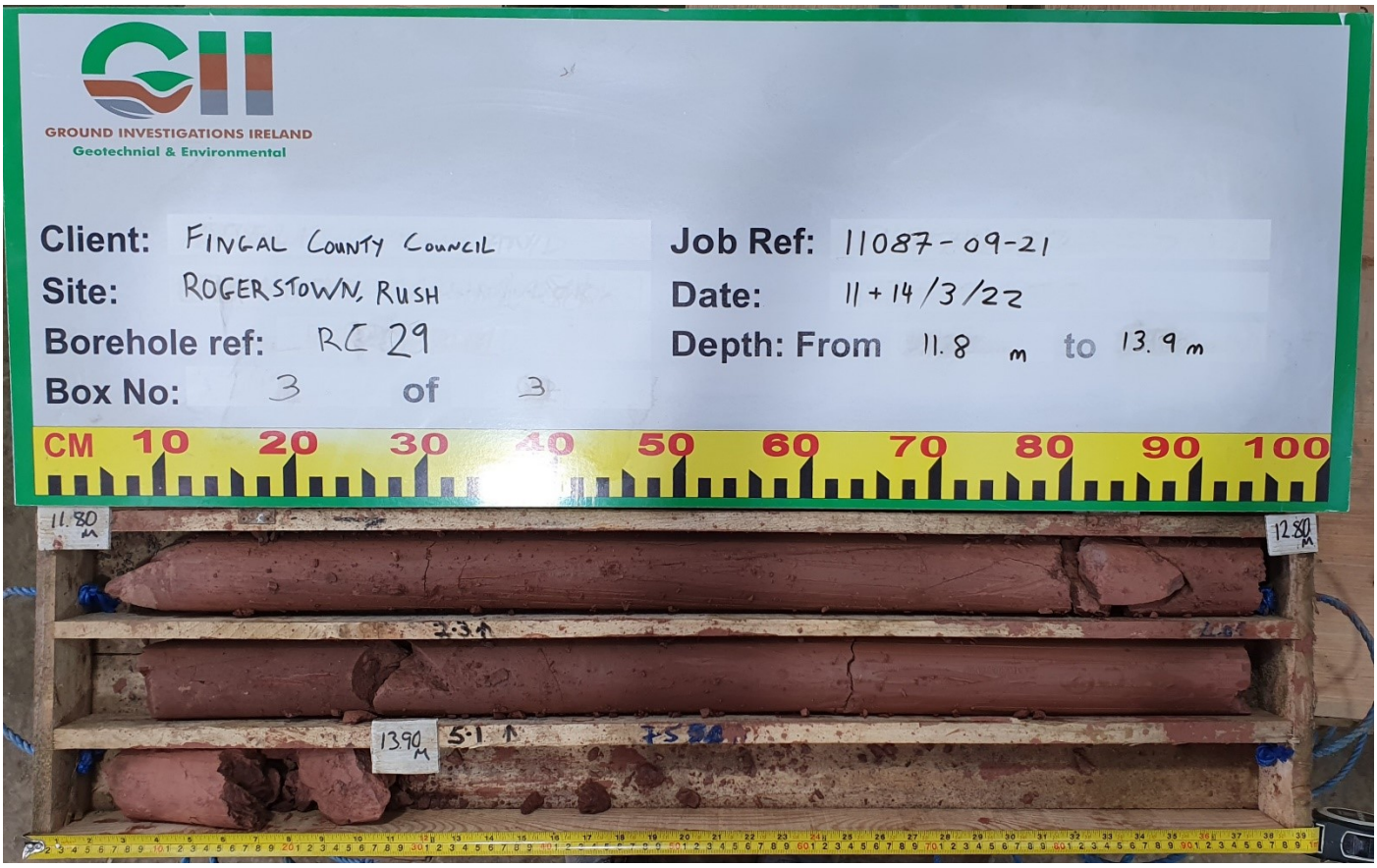
Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs



Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs

BH29

Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs



Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs

BH31A

Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs

BH33

Rogerstown Coastal Flood and Erosion Relief Scheme
Rotary Core Photographs

BH36

APPENDIX 5 – Laboratory Testing

LABORATORY REPORT

4043

Contract Number: PSL22/1528

Report Date: 30 March 2022

Client's Reference: 11087-19-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Michael Sutton

Contract Title: Rogerstown Coastal Flood and Erosion Relief Scheme

Date Received: 1/3/2022
Date Commenced: 1/3/2022
Date Completed: 30/3/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH02		-	2.00		Firm brown sandy CLAY.
BH02		-	3.50		Dark brown slightly gravelly slightly sandy CLAY.

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

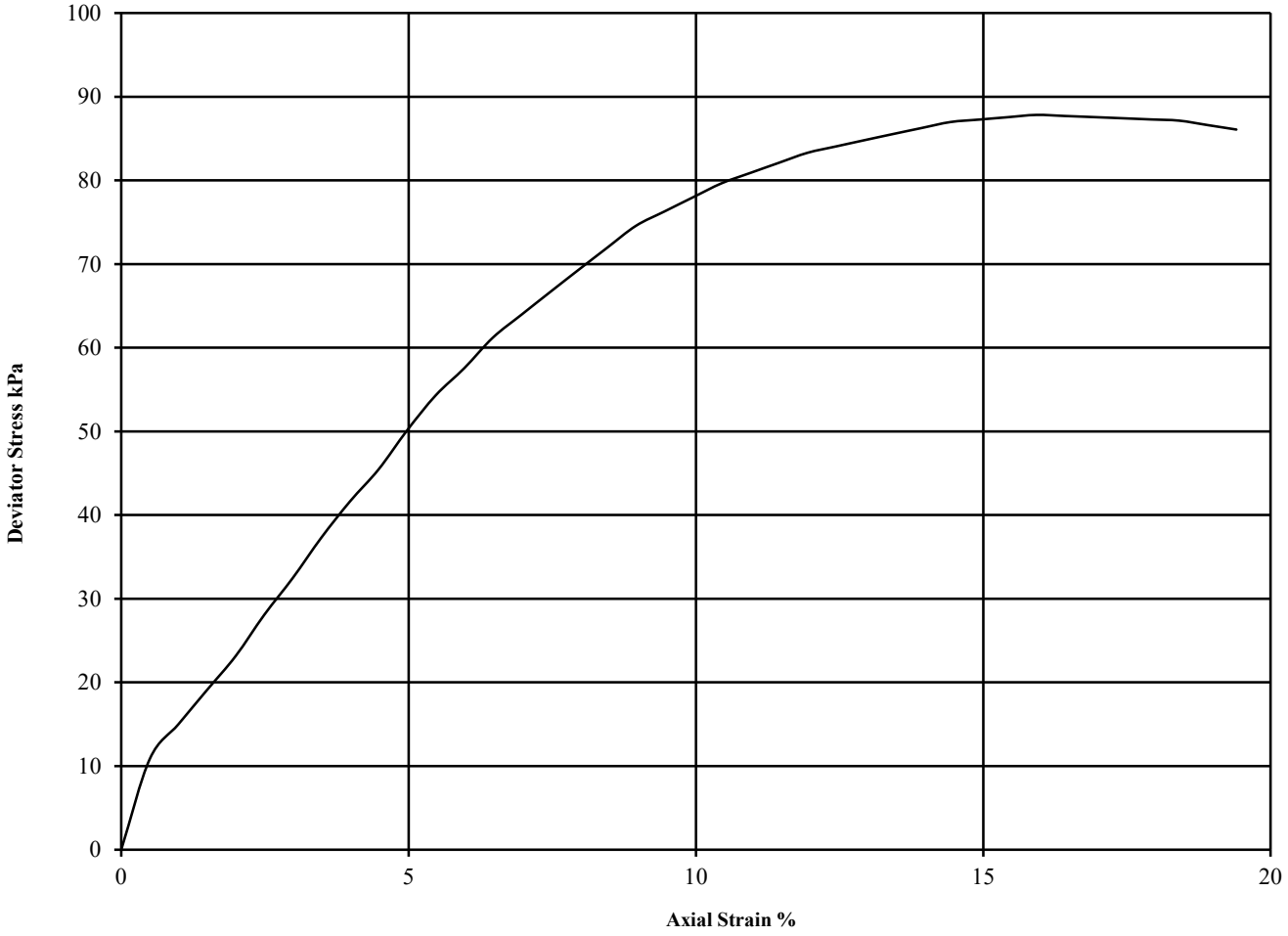
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: BH02 **Top Depth (m):** 2.00

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

Sample Type -



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34
1	26	2.01	1.59	100	88	44	15.9	Plastic	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion

Contract No: PSL22/1528

Client Ref: 11087-19-21

ONE DIMENSIONAL CONSOLIDATION TEST

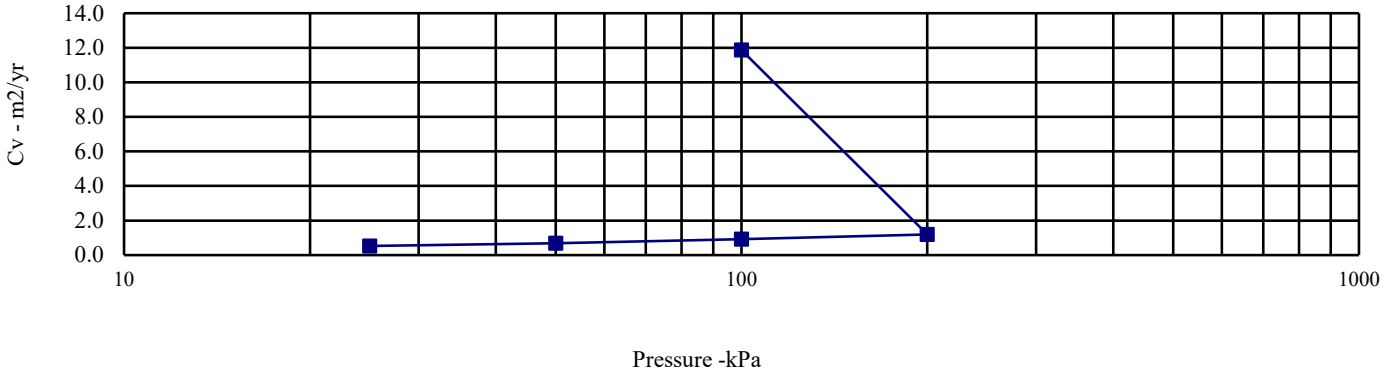
BS 1377: Part 5: 1990: Clause 3

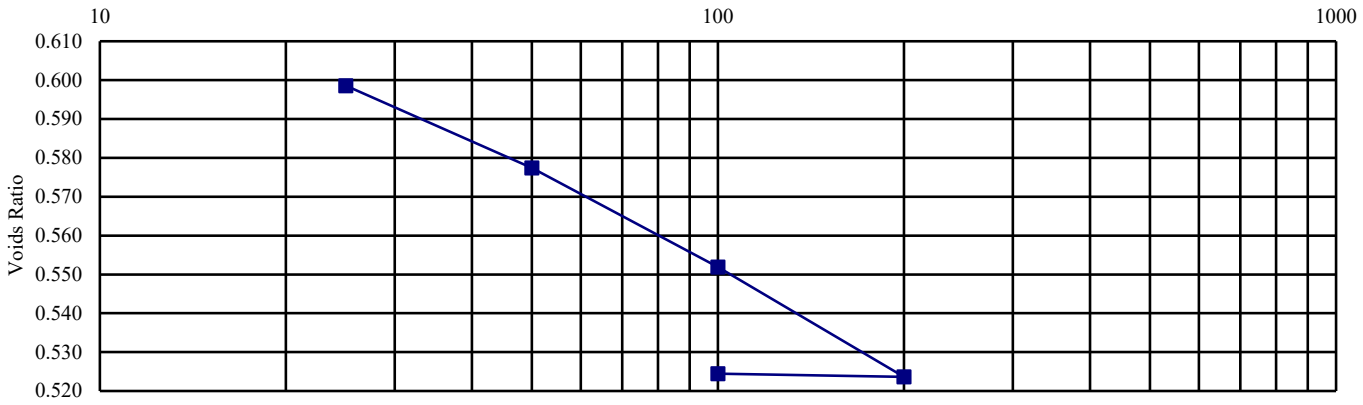
Hole Number: **BH02** **Top Depth (m):** **2.00**

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

Sample Type: **-**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	27						
Bulk Density (Mg/m3):	2.01	0	25	1.867	0.529	Method used to	
Dry Density (Mg/m3):	1.58	25	50	0.529	0.691	determine CV:	T90
Voids Ratio:	0.677	50	100	0.323	0.924	Nominal temperature	
Degree of saturation:	105.9	100	200	0.182	1.203	during test ' C:	20
Height (mm):	20.05	200	100	0.005	11.868	Remarks:	
Diameter (mm)	75.09					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043	PSL Professional Soils Laboratory	**Rogerstown Coastal Flood and Erosion**	**Contract No:** PSL22/1528 **Client Ref:** 11087-19-21

ONE DIMENSIONAL CONSOLIDATION TEST

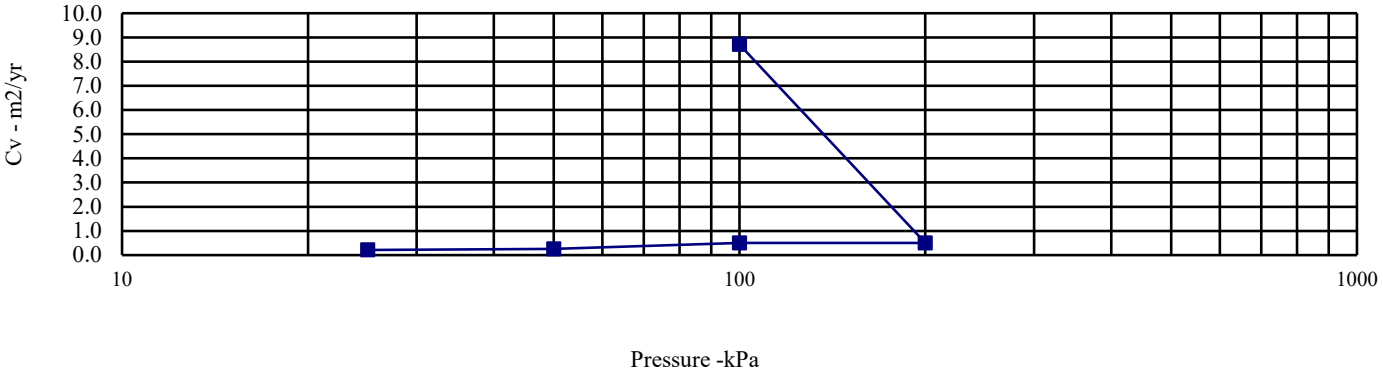
BS 1377: Part 5: 1990: Clause 3

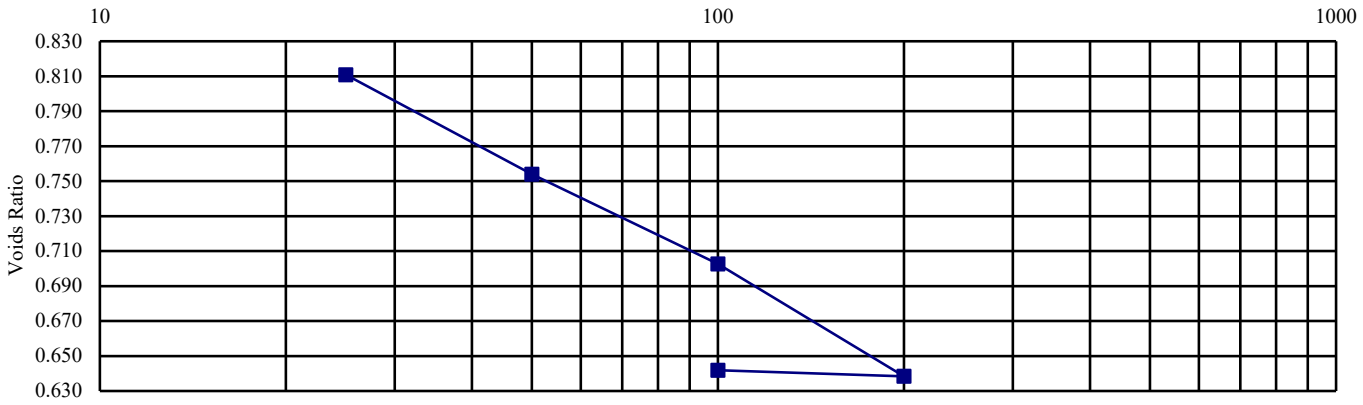
Hole Number: **BH02** **Top Depth (m):** **3.50**

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

Sample Type: **-**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	39						
Bulk Density (Mg/m3):	1.77	0	25	5.264	0.212	Method used to	
Dry Density (Mg/m3):	1.27	25	50	1.258	0.254	determine CV:	T90
Voids Ratio:	1.085	50	100	0.584	0.506	Nominal temperature	
Degree of saturation:	95.1	100	200	0.378	0.498	during test ' C:	20
Height (mm):	20.07	200	100	0.021	8.706	Remarks:	
Diameter (mm)	75.04					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043	PSL Professional Soils Laboratory	**Rogerstown Coastal Flood and Erosion**	**Contract No:** PSL22/1528 **Client Ref:** 11087-19-21

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH02		-	3.50		39	8		

* This test is out of our UKAS scope

PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion	Contract No: PSL22/1528 Client Ref: 11087-19-21

LABORATORY REPORT

4043

Contract Number: PSL22/2588

Report Date: 12 May 2022

Client's Reference: 11087-19-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Michael Sutton

Contract Title: Rogerstown Coastal Flood and Erosion Relief Scheme

Date Received: 8/4/2022
Date Commenced: 8/4/2022
Date Completed: 12/5/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH02		B	0.50		Brown sandy clayey GRAVEL.
BH02		B	1.00		Brown slightly sandy gravelly CLAY.
BH02		B	2.00		Brown slightly sandy slightly gravelly CLAY.
BH02		B	3.00		Brown slightly sandy slightly gravelly CLAY.
BH02		B	4.00		Brown slightly sandy slightly gravelly CLAY.
BH02		B	5.00		Brown clayey sandy GRAVEL with cobbles.
BH02		B	6.00		Brown mottled grey slightly sandy slightly gravelly CLAY.
BH05		-	0.50		Brown clayey very sandy GRAVEL.
BH05		-	1.00		Brown clayey very sandy GRAVEL.
BH05		-	2.00		Brown slightly sandy slightly gravelly CLAY.
BH05		-	3.00		Brown silty sandy GRAVEL.
BH05		-	4.00		Brown clayey very sandy GRAVEL.
BH05		-	5.00		Brown slightly clayey very sandy GRAVEL.
BH05		-	6.00		Grey slightly sandy slightly gravelly CLAY.
BH05		-	7.00		Grey slightly sandy slightly gravelly CLAY.
BH05		-	8.00		Grey slightly sandy slightly gravelly CLAY.
BH05		-	9.00		Grey slightly sandy slightly gravelly CLAY.
BH15		B	0.50		Brown slightly clayey SAND.
BH15		B	1.00		Brown clayey SAND & GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH15		B	2.00		Brown very sandy very gravelly CLAY.
BH15		B	3.00		Brown silty SAND & GRAVEL.
BH15		B	4.00		Brown slightly clayey SAND.
BH15		B	5.00		Brown slightly clayey slightly gravelly SAND.
BH15		B	6.00		Brown slightly clayey slightly gravelly SAND.
BH15		B	10.00		Brown slightly sandy slightly gravelly CLAY.
BH31		B	0.50		Brown clayey very sandy GRAVEL.
BH31		B	1.00		Brown slightly clayey very sandy GRAVEL.
BH31		B	3.00		Brown slightly sandy slightly gravelly CLAY.
BH31		B	4.00		Brown slightly sandy slightly gravelly CLAY.
BH31		B	5.00		Brown slightly sandy slightly gravelly CLAY.
BH33		B	0.50		Brown silty sandy GRAVEL.
BH33		B	1.00		Brown slightly clayey very sandy GRAVEL.
BH33		B	2.00		Brown slightly sandy GRAVEL.
BH33		B	3.00		Brown sandy slightly gravelly CLAY.
BH33		B	4.00		Brown sandy gravelly CLAY.
BH36		B	0.50		Brown clayey very sandy GRAVEL.
BH36		B	1.00		Brown clayey sandy GRAVEL with cobbles.
BH36		B	2.00		Brown clayey sandy GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH36		B	3.00		Brown clayey SAND & GRAVEL.
BH36		B	4.00		Brown slightly clayey very gravelly SAND.
BH45		B	0.50		Brown sandy gravelly CLAY.
BH45		B	2.00		Brown slightly silty SAND & GRAVEL.
BH45		B	3.00		Brown silty gravelly SAND.
BH45		B	4.00		Brown slightly silty very sandy GRAVEL.
BH45		B	5.00		Brown silty very gravelly SAND.
BH45		B	6.00		Brown silty slightly gravelly SAND.
BH45		B	8.00		Brown mottled grey slightly sandy slightly gravelly CLAY.
BH45		B	9.00		Grey slightly sandy slightly gravelly CLAY.
BH45		B	10.00		Grey slightly sandy slightly gravelly CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH02		B	0.50		11							
BH02		B	2.00		27							
BH02		B	3.00		33			45	22	23	99	Intermediate Plasticity CI
BH02		B	4.00		31							
BH02		B	5.00		6.4				NP			
BH02		B	6.00		23			37	20	17	78	Intermediate Plasticity CI
BH05		-	0.50		9.7				NP			
BH05		-	1.00		10							
BH05		-	2.00		24			39	19	20	82	Intermediate Plasticity CI
BH05		-	3.00		7.5							
BH05		-	5.00		8.2							
BH05		-	7.00		32							
BH05		-	9.00		33			40	21	19	90	Intermediate Plasticity CI
BH15		B	0.50		16							
BH15		B	2.00		8.9							
BH15		B	4.00		20							
BH15		B	6.00		21							
BH15		B	10.00		23			51	24	27	96	High Plasticity CH
BH31		B	0.50		6.5							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

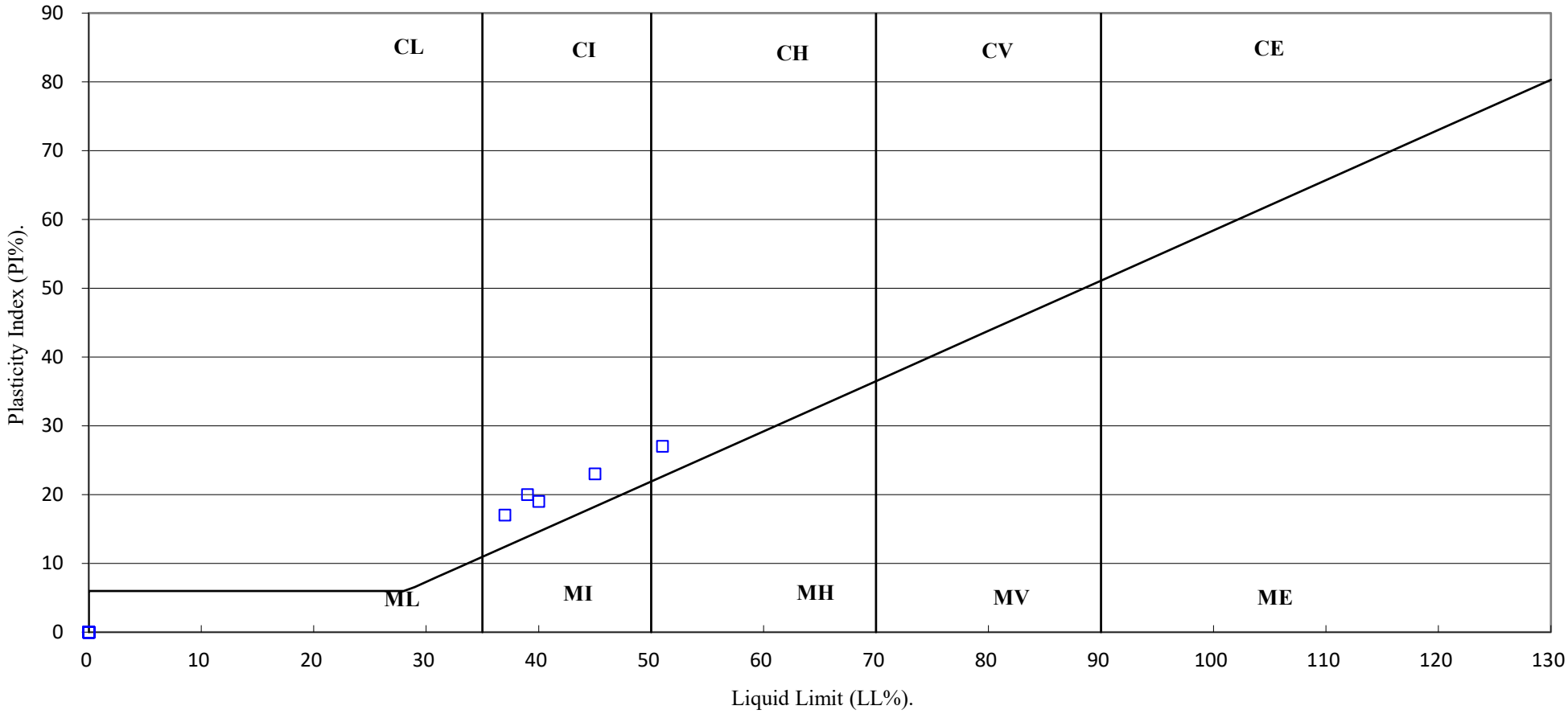
Contract No:

PSL22/2588

Client Ref:

11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	**Contract No:** PSL22/2588 **Client Ref:** 11087-19-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH31		B	3.00		14							
BH31		B	4.00		16			29	15	14	65	Low Plasticity CL
BH31		B	5.00		14							
BH33		B	0.50		9.9							
BH33		B	2.00		1.8							
BH33		B	3.00		12			26	13	13	56	Low Plasticity CL
BH33		B	4.00		12			27	14	13	51	Low Plasticity CL
BH36		B	0.50		4.7							
BH36		B	1.00		11				NP			
BH36		B	2.00		9.6							
BH36		B	3.00		7.2				NP			
BH36		B	4.00		9.4							
BH45		B	0.50		23							
BH45		B	3.00		17							
BH45		B	5.00		11							
BH45		B	8.00		32							
BH45		B	9.00		27			40	18	22	91	Intermediate Plasticity CI
BH45		B	10.00		16			39	24	15	95	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

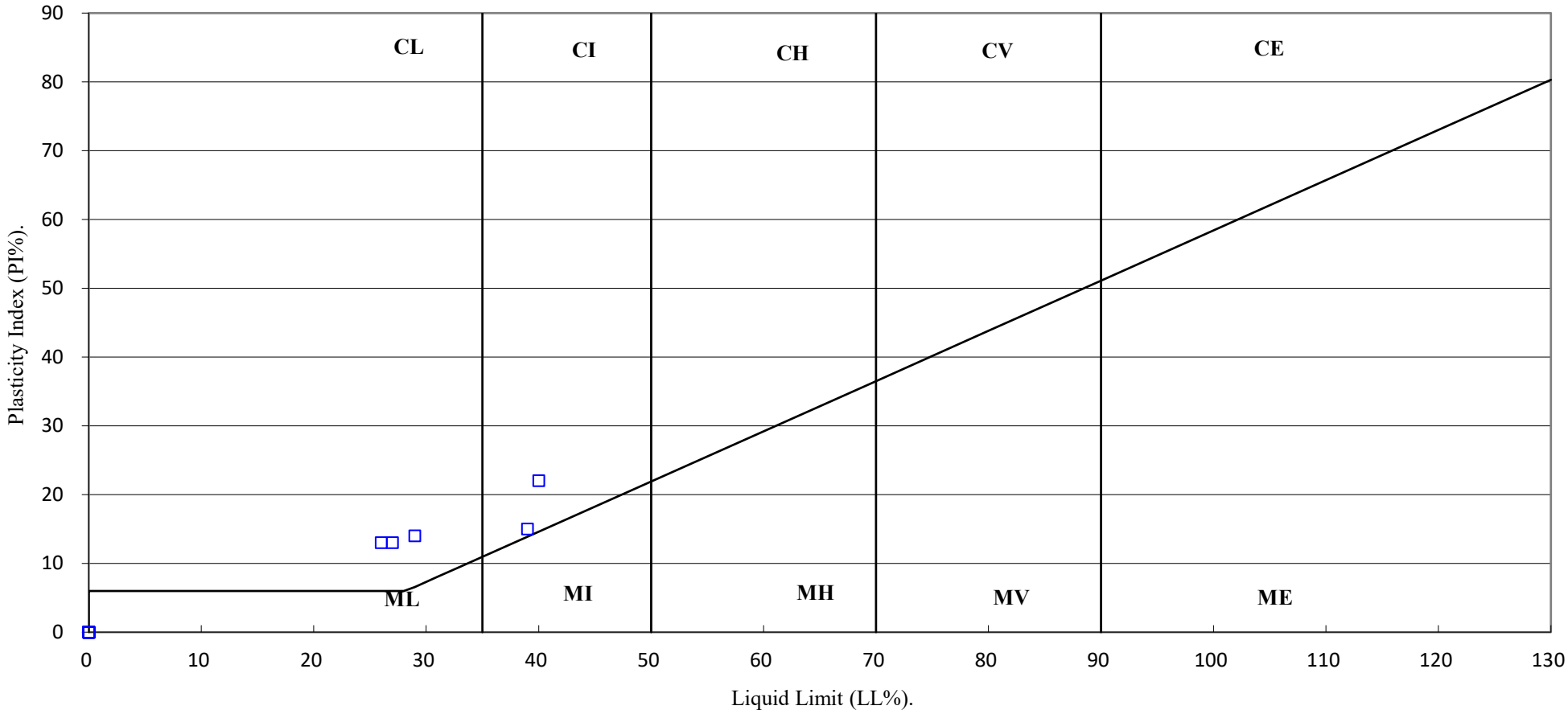
UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No:
PSL22/2588
Client Ref:
11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	**Contract No:** PSL22/2588 **Client Ref:** 11087-19-21

PARTICLE SIZE DISTRIBUTION TEST

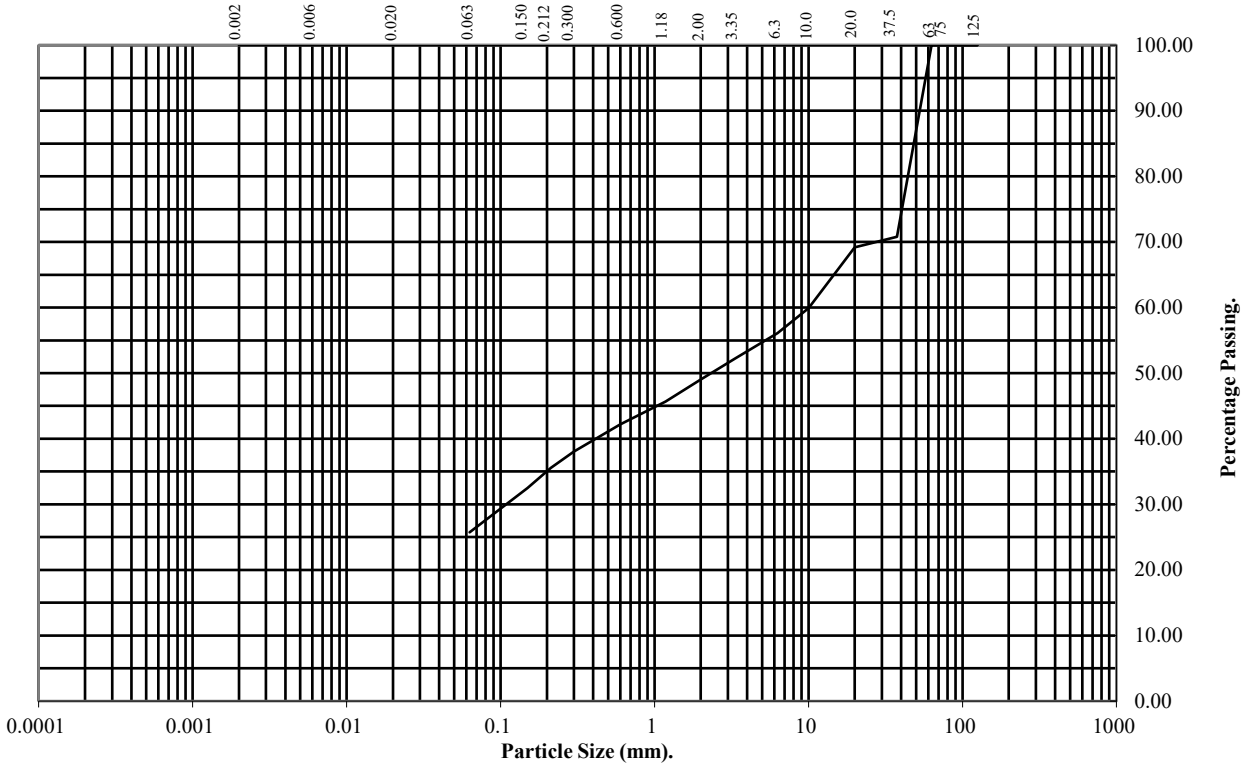
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH02** **Top Depth (m):** **1.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	71
20	69
10	60
6.3	56
3.35	52
2	49
1.18	46
0.6	42
0.3	38
0.212	36
0.15	32
0.063	26

Soil Fraction	Total Percentage
Cobbles	0
Gravel	51
Sand	23
Silt/Clay	26

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

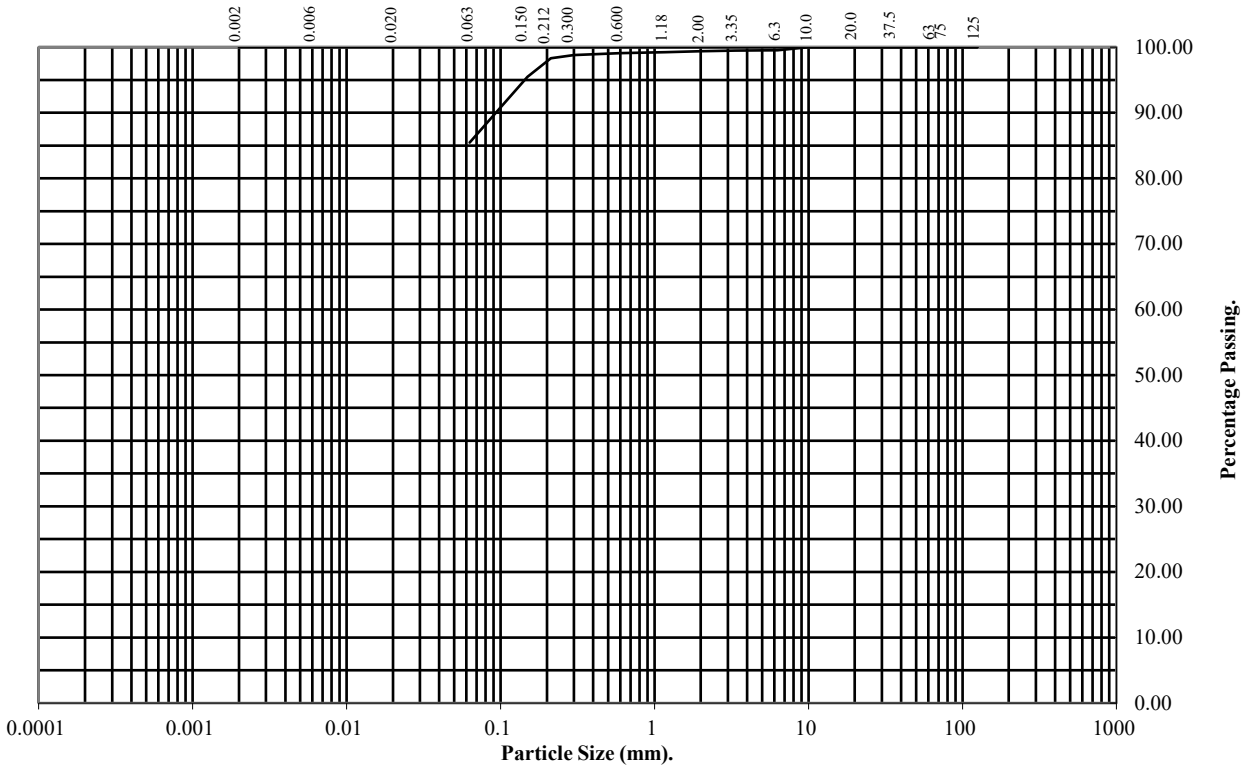
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH02** **Top Depth (m):** **3.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	99
0.6	99
0.3	99
0.212	98
0.15	95
0.063	85

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	14
Silt/Clay	85

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

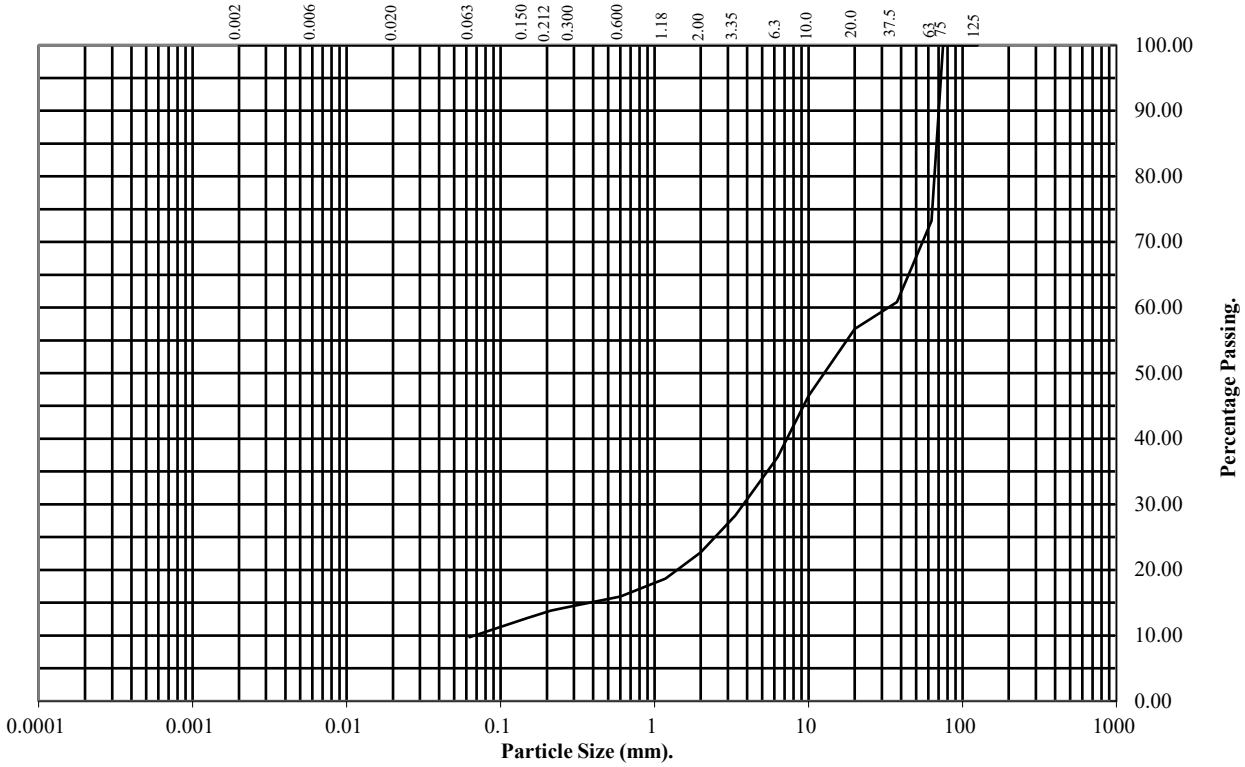
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH02** **Top Depth (m):** **5.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	73
37.5	61
20	57
10	47
6.3	37
3.35	28
2	23
1.18	19
0.6	16
0.3	15
0.212	14
0.15	13
0.063	10

Soil Fraction	Total Percentage
Cobbles	27
Gravel	50
Sand	13
Silt/Clay	10

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

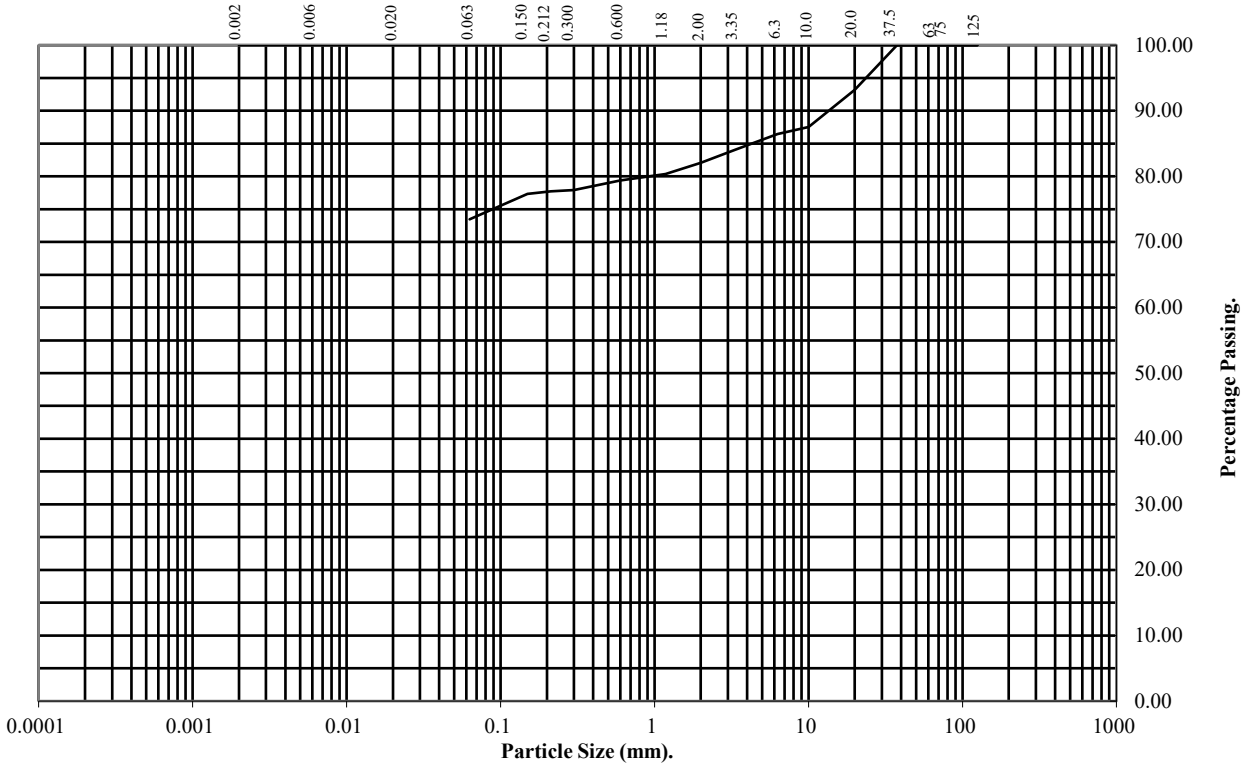
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH02** **Top Depth (m):** **6.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	88
6.3	86
3.35	84
2	82
1.18	80
0.6	79
0.3	78
0.212	78
0.15	77
0.063	73

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	9
Silt/Clay	73

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

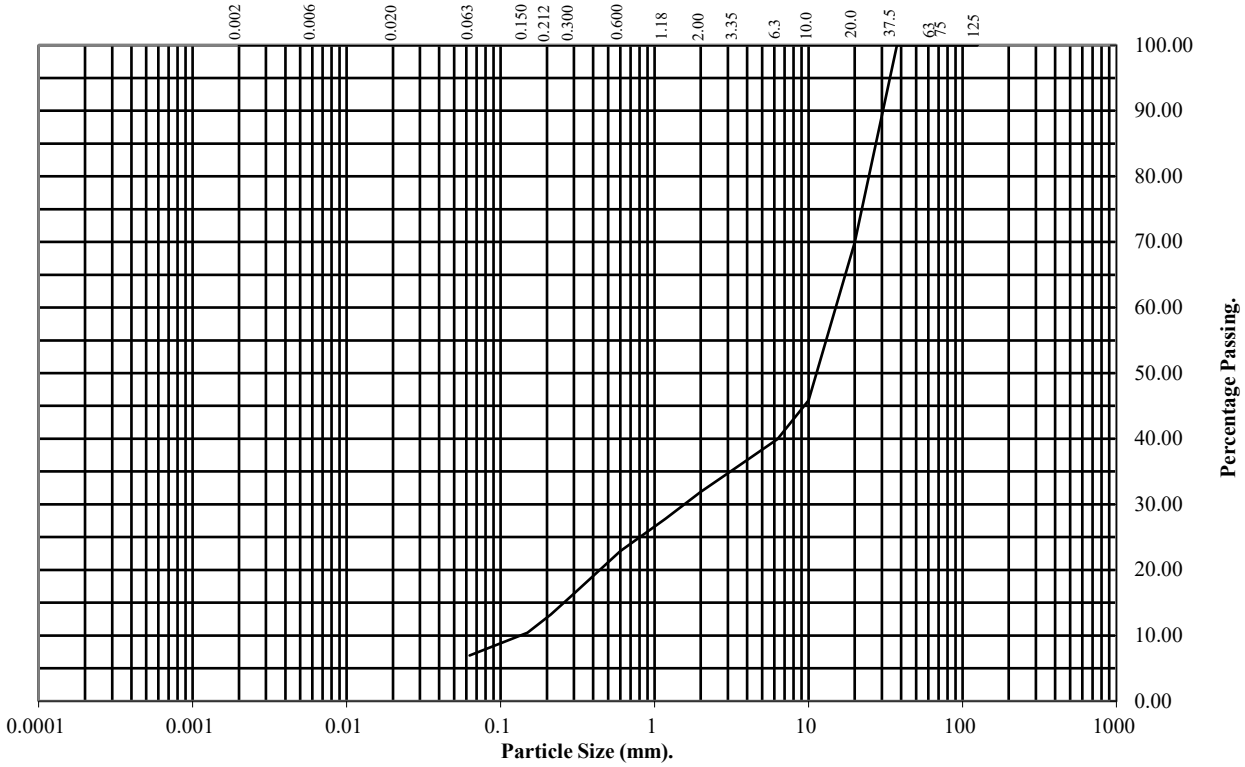
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **0.50**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	70
10	46
6.3	40
3.35	36
2	32
1.18	28
0.6	23
0.3	16
0.212	13
0.15	10
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	68
Sand	25
Silt/Clay	7

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

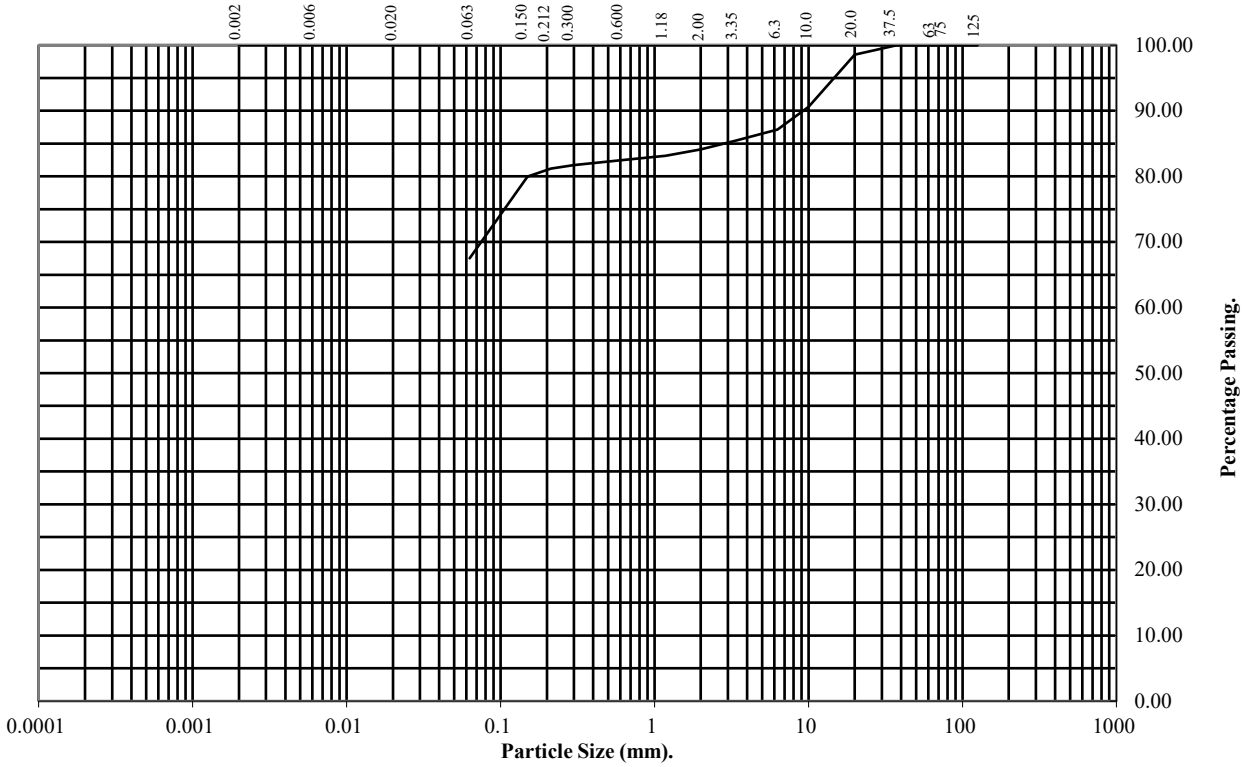
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **2.00**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	91
6.3	87
3.35	85
2	84
1.18	83
0.6	82
0.3	82
0.212	81
0.15	80
0.063	68

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	16
Silt/Clay	68

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

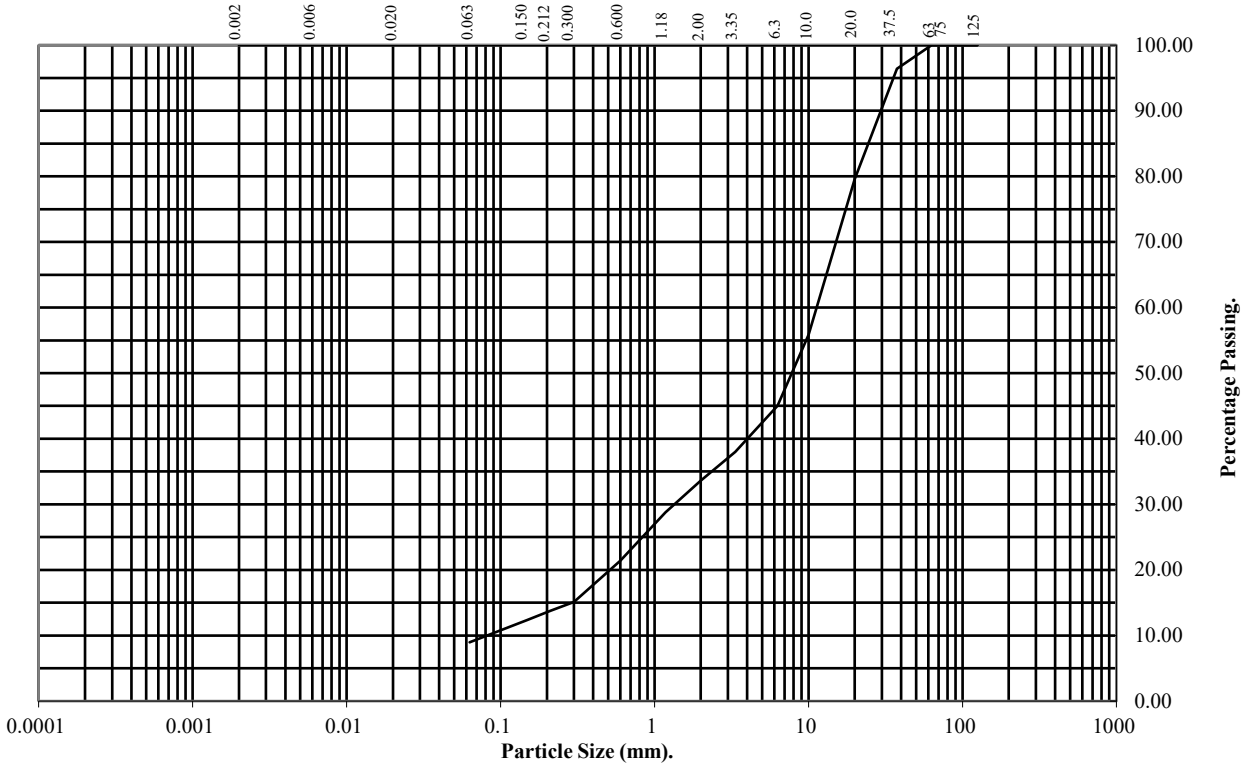
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **4.00**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	80
10	56
6.3	45
3.35	38
2	34
1.18	29
0.6	21
0.3	15
0.212	14
0.15	12
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	66
Sand	25
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

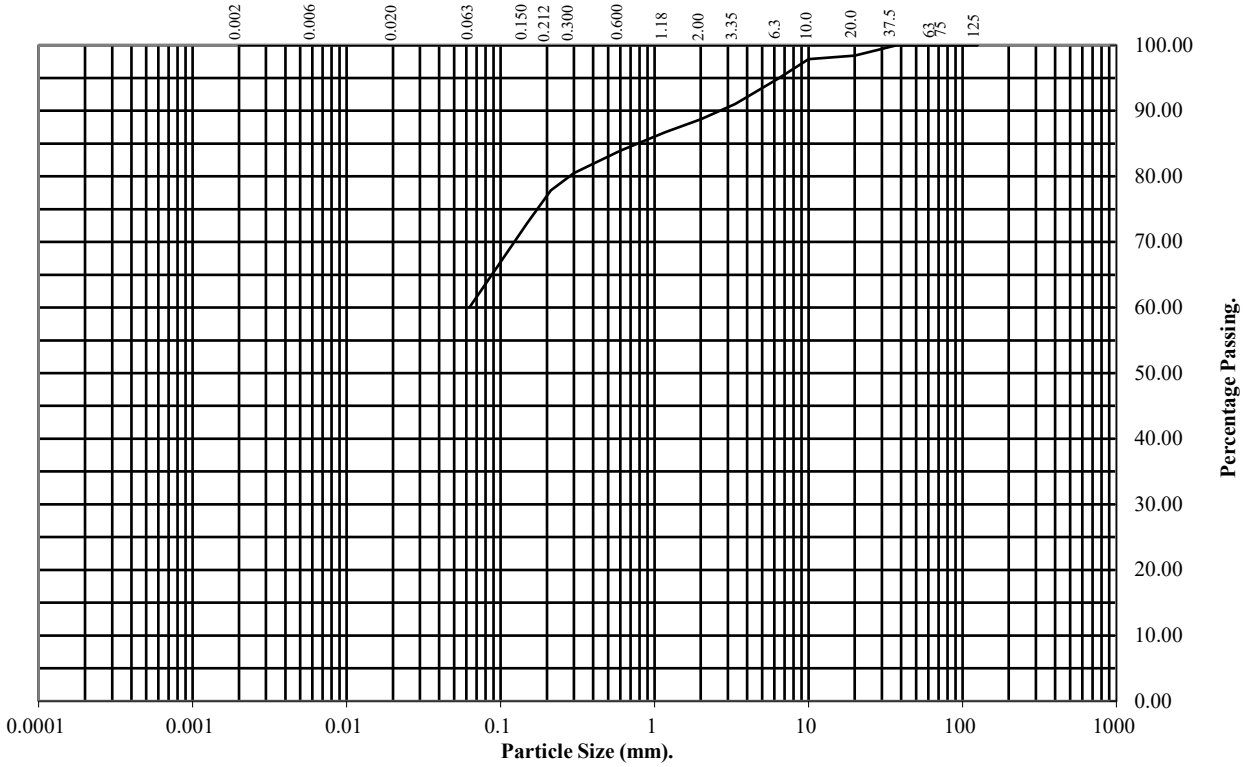
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **6.00**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	98
6.3	95
3.35	91
2	89
1.18	87
0.6	84
0.3	80
0.212	78
0.15	73
0.063	60

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	29
Silt/Clay	60

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

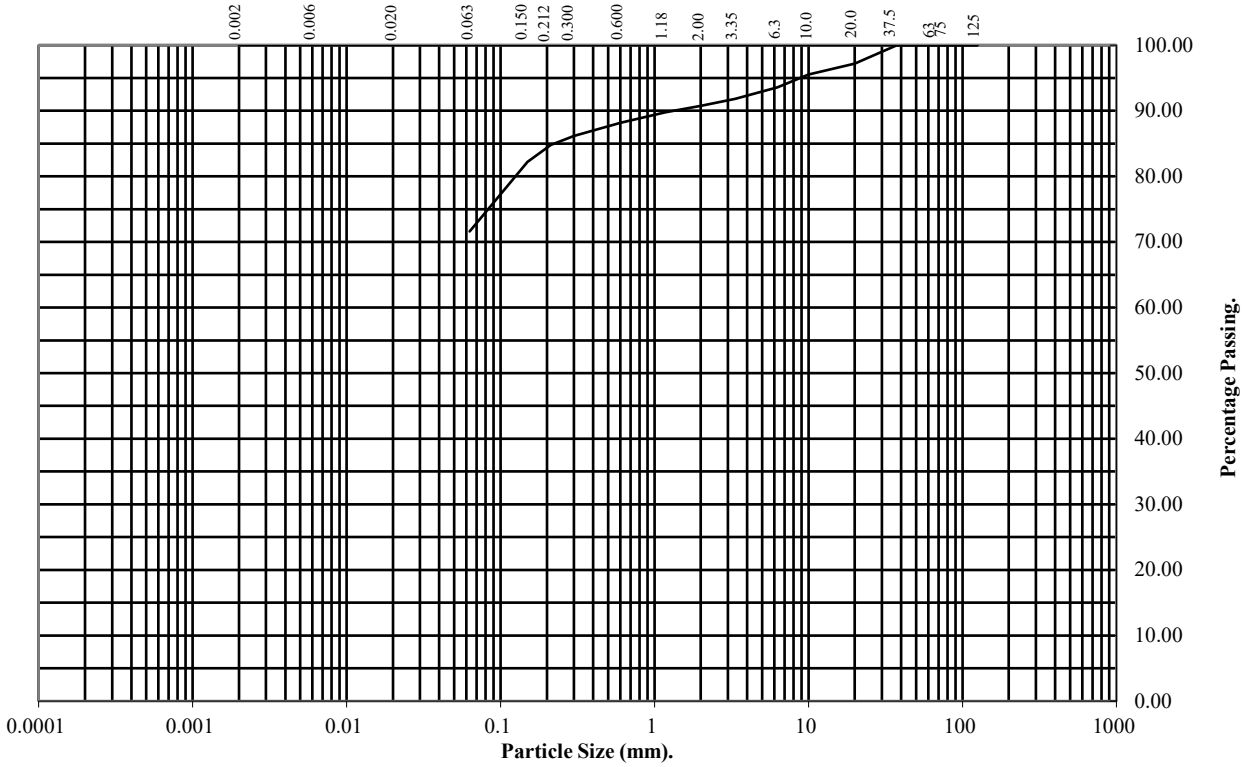
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **8.00**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	96
6.3	94
3.35	92
2	91
1.18	90
0.6	88
0.3	86
0.212	85
0.15	82
0.063	72

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	19
Silt/Clay	72

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

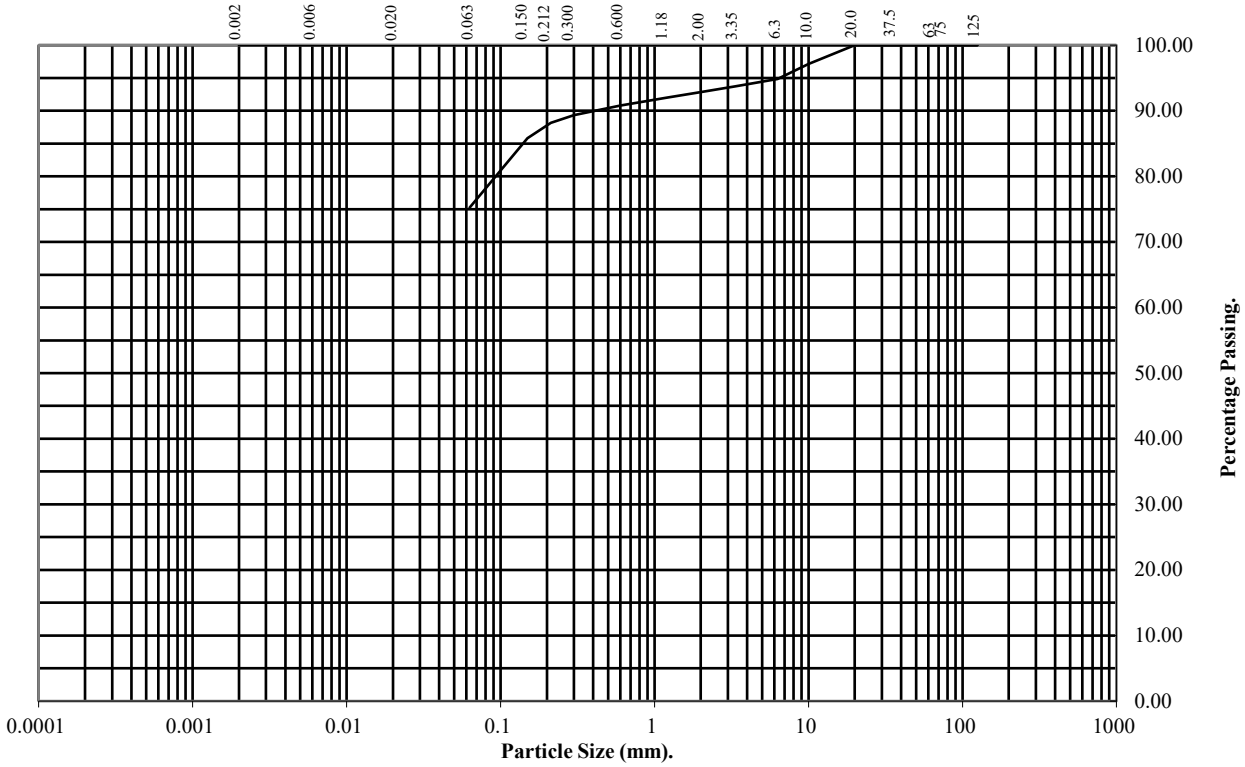
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH05** **Top Depth (m):** **9.00**

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

Sample Type: -



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	95
3.35	94
2	93
1.18	92
0.6	91
0.3	89
0.212	88
0.15	86
0.063	75

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	18
Silt/Clay	75

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

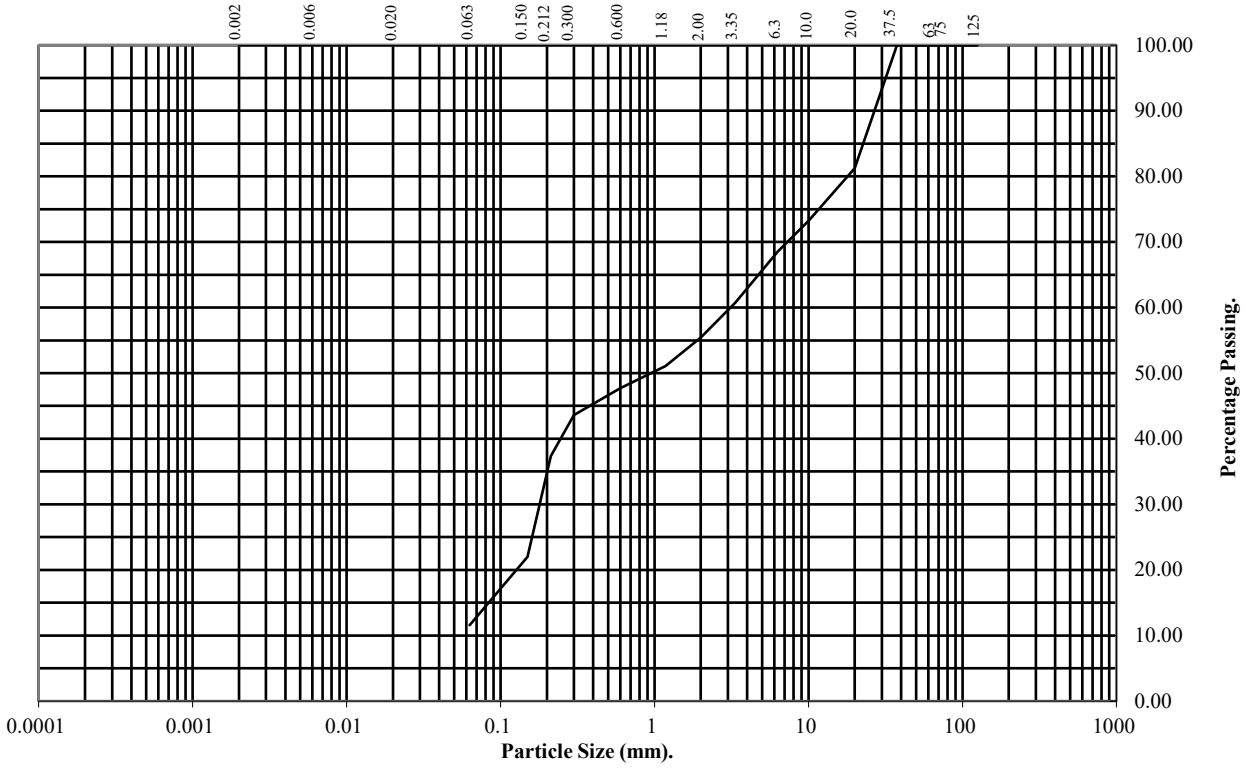
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH15** **Top Depth (m):** **1.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	81
10	73
6.3	68
3.35	61
2	55
1.18	51
0.6	48
0.3	44
0.212	37
0.15	22
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	45
Sand	43
Silt/Clay	12

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

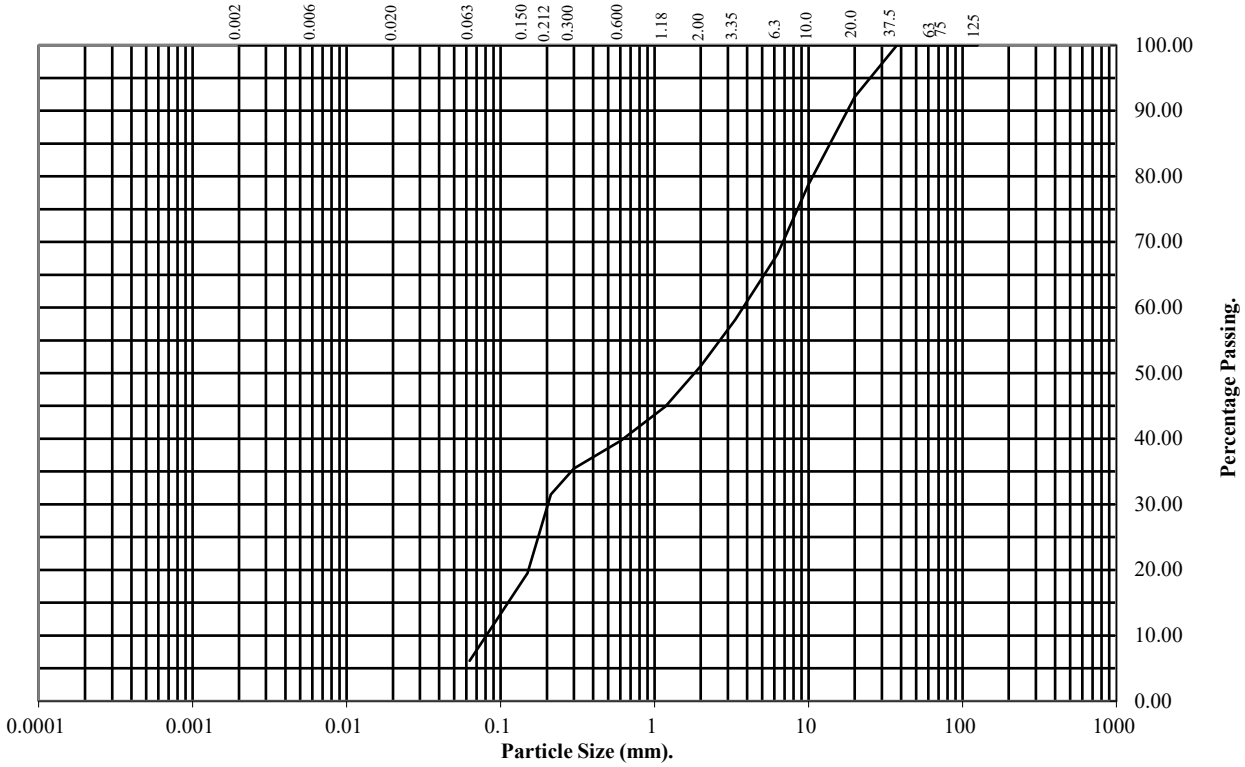
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH15** **Top Depth (m):** **3.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	79
6.3	68
3.35	58
2	51
1.18	45
0.6	40
0.3	35
0.212	32
0.15	19
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	49
Sand	45
Silt/Clay	6

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

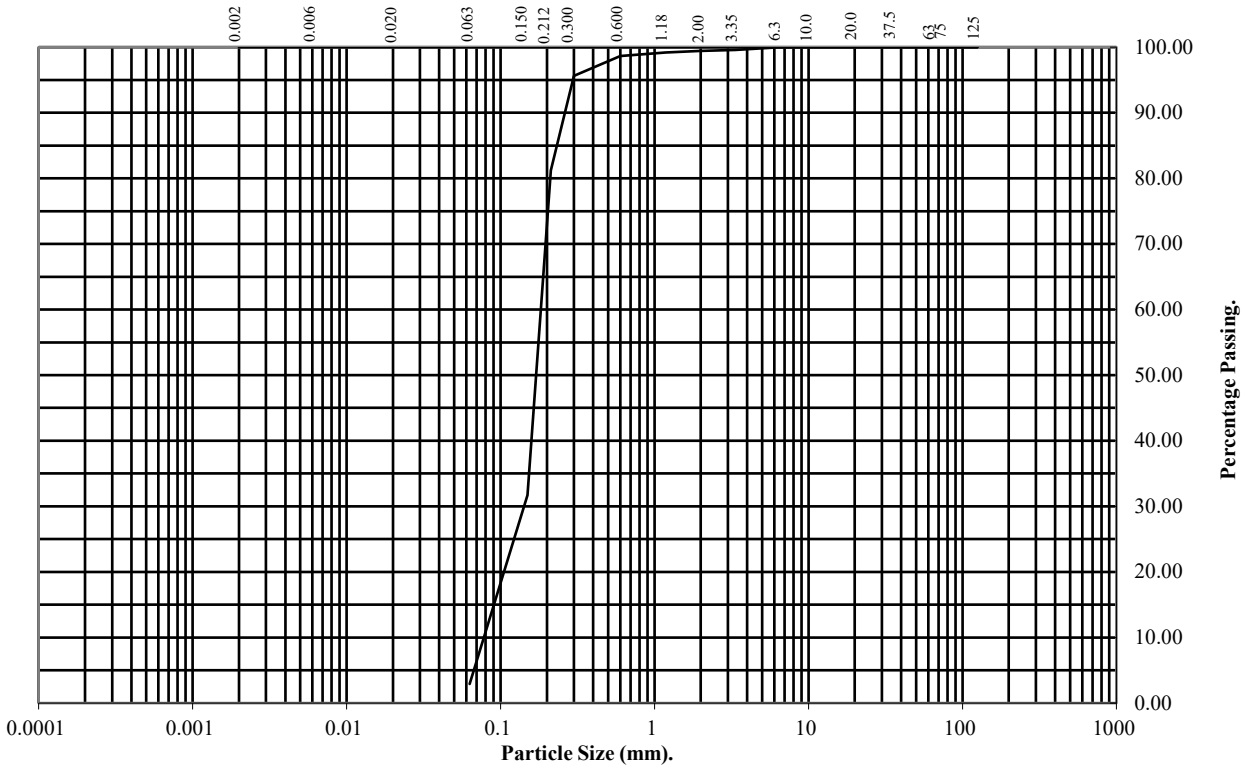
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH15** **Top Depth (m):** **5.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	99
0.3	96
0.212	81
0.15	32
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	96
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

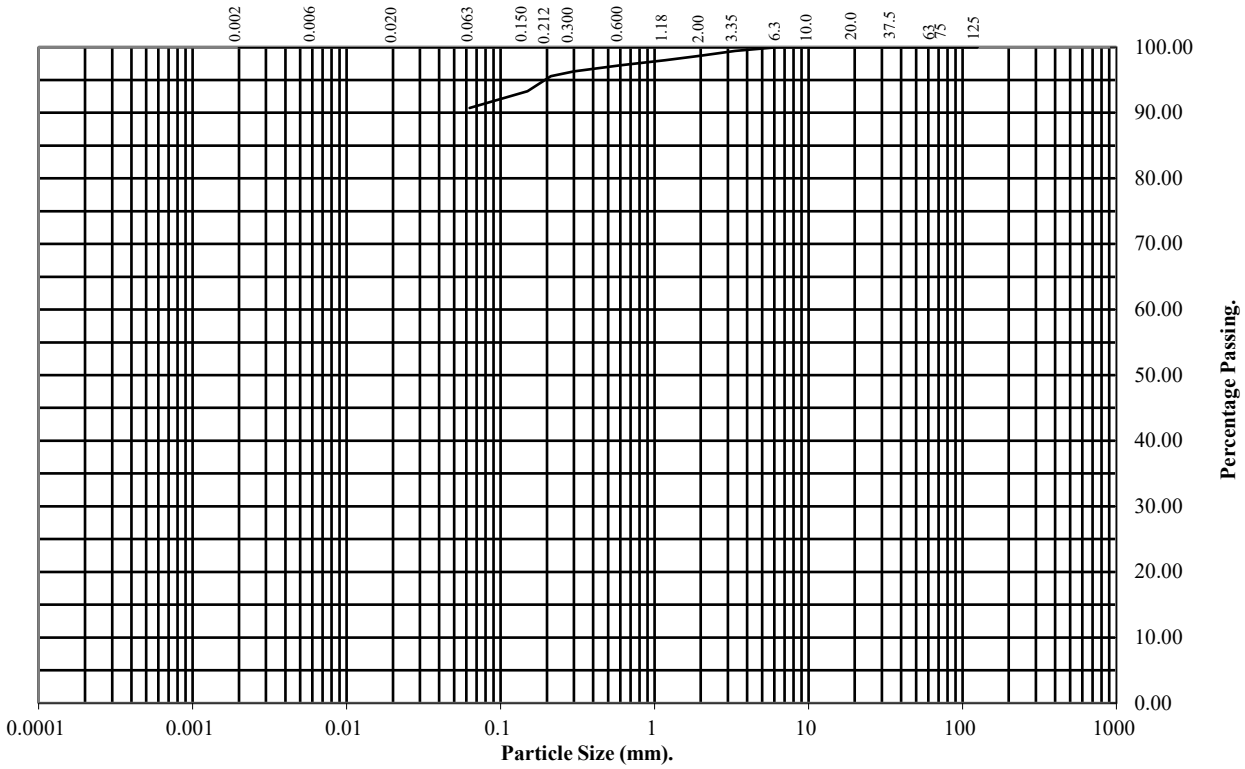
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH15** **Top Depth (m):** **10.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	97
0.3	96
0.212	96
0.15	93
0.063	91

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	8
Silt/Clay	91

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

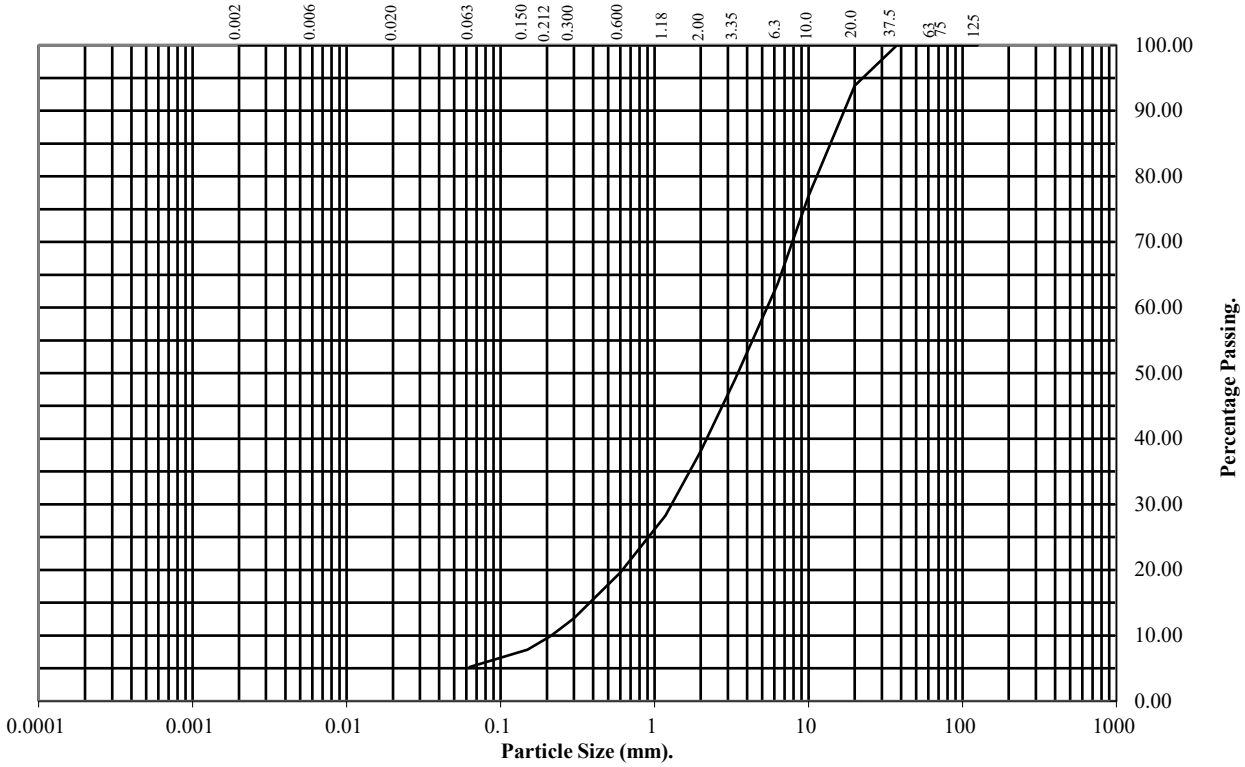
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH31** **Top Depth (m):** **0.50**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	77
6.3	64
3.35	49
2	38
1.18	28
0.6	20
0.3	13
0.212	10
0.15	8
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	33
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

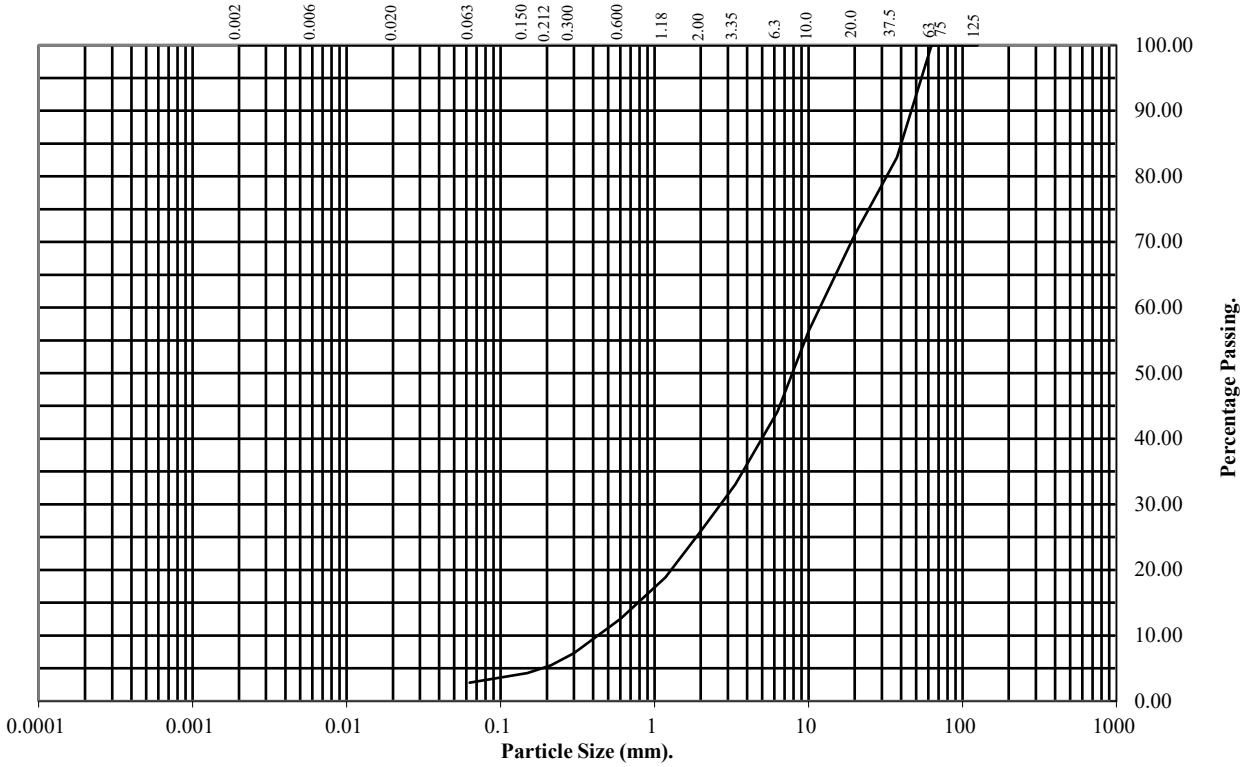
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH31 **Top Depth (m):** 1.00

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	83
20	71
10	56
6.3	44
3.35	33
2	26
1.18	19
0.6	13
0.3	7
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	74
Sand	23
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

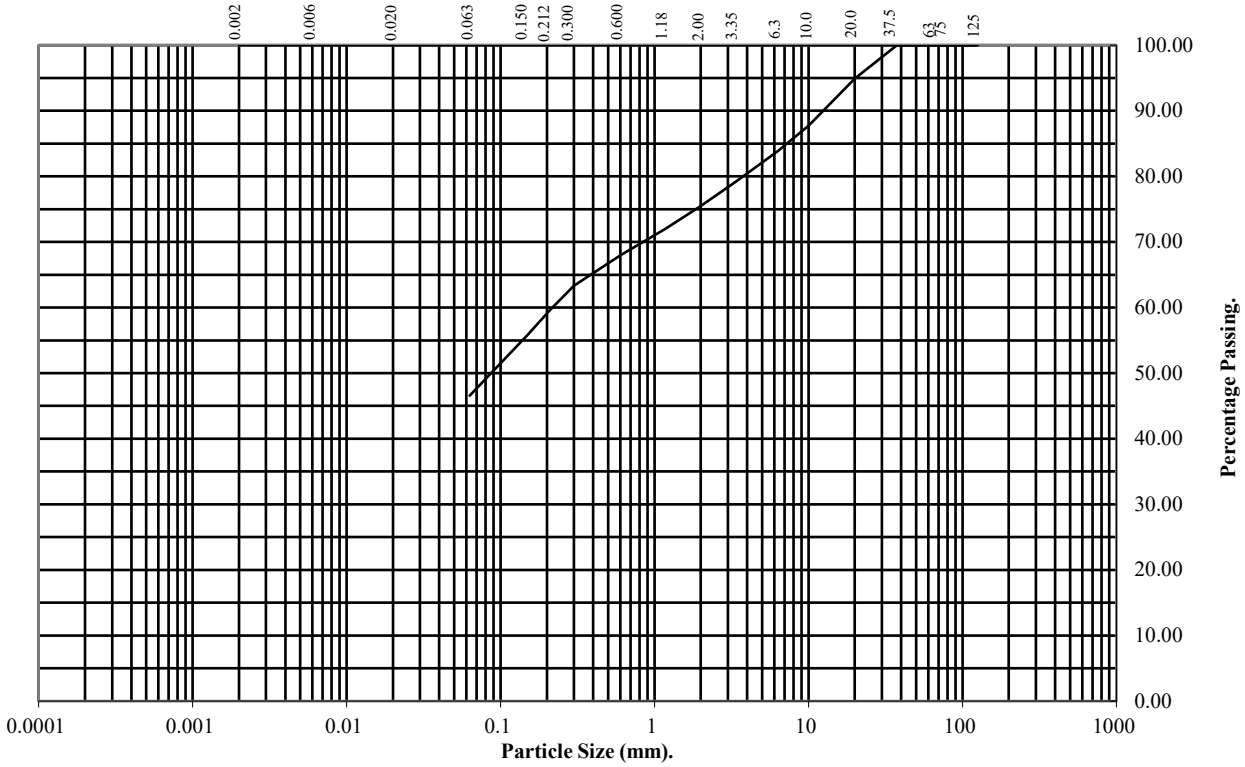
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH31** **Top Depth (m):** **4.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	88
6.3	84
3.35	79
2	75
1.18	72
0.6	68
0.3	63
0.212	60
0.15	56
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	28
Silt/Clay	47

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

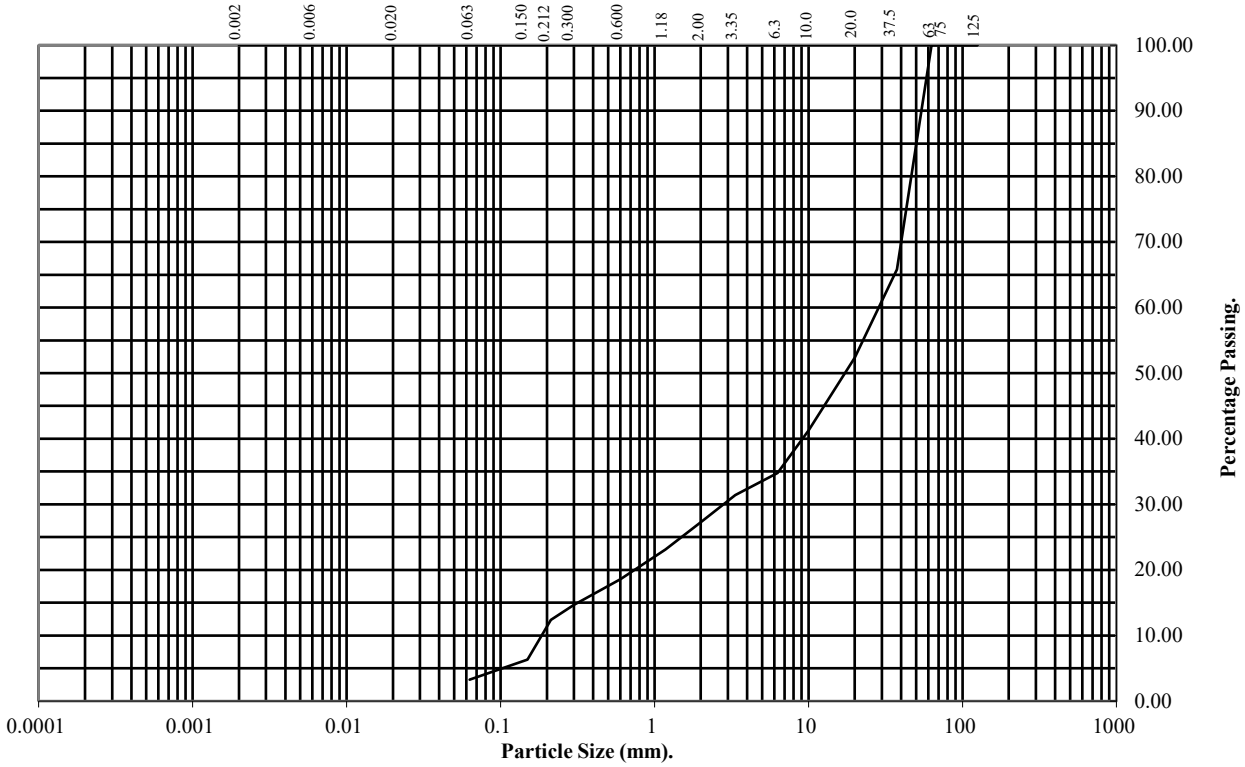
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH33 **Top Depth (m):** 1.00

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	66
20	52
10	41
6.3	35
3.35	31
2	27
1.18	23
0.6	19
0.3	15
0.212	12
0.15	6
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	73
Sand	24
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

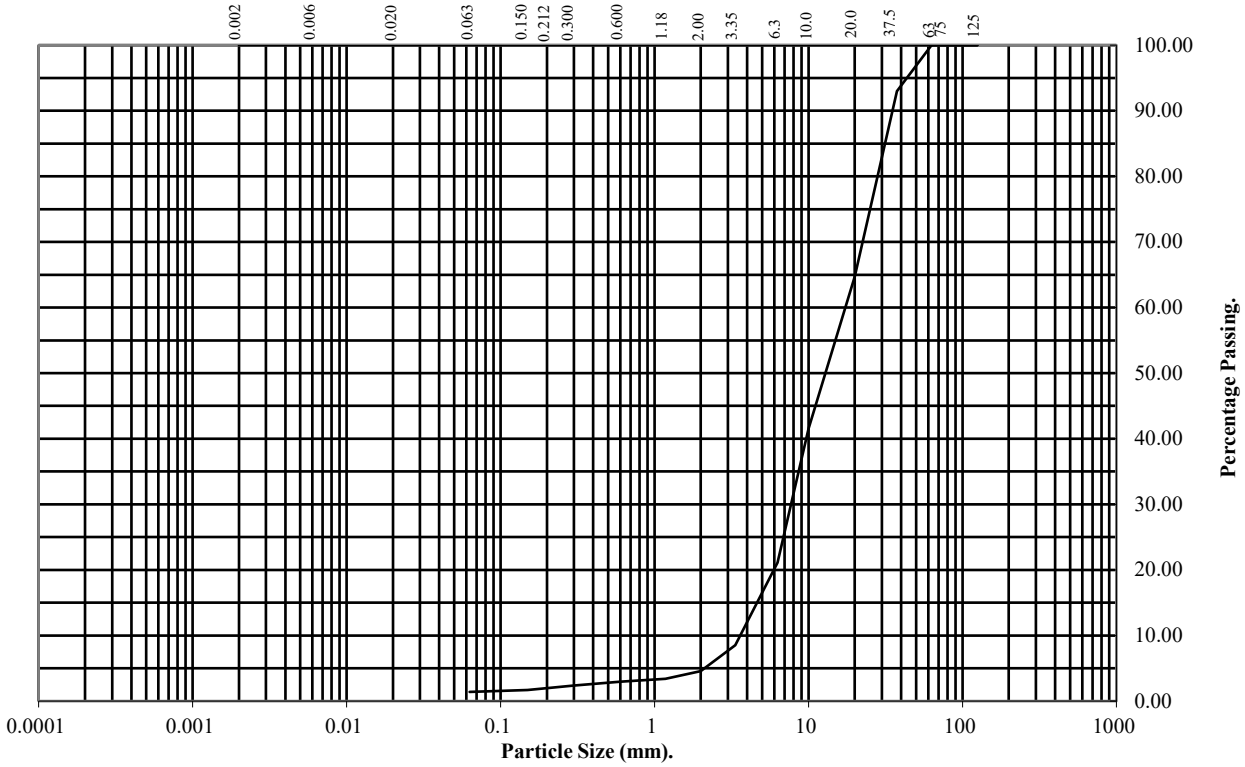
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH33** **Top Depth (m):** **2.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	65
10	42
6.3	21
3.35	9
2	5
1.18	3
0.6	3
0.3	2
0.212	2
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	95
Sand	4
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	**Rogerstown Coastal Flood and Erosion Relief Scheme**	**Contract No:** PSL22/2588 **Client Ref:** 11087-19-21

PARTICLE SIZE DISTRIBUTION TEST

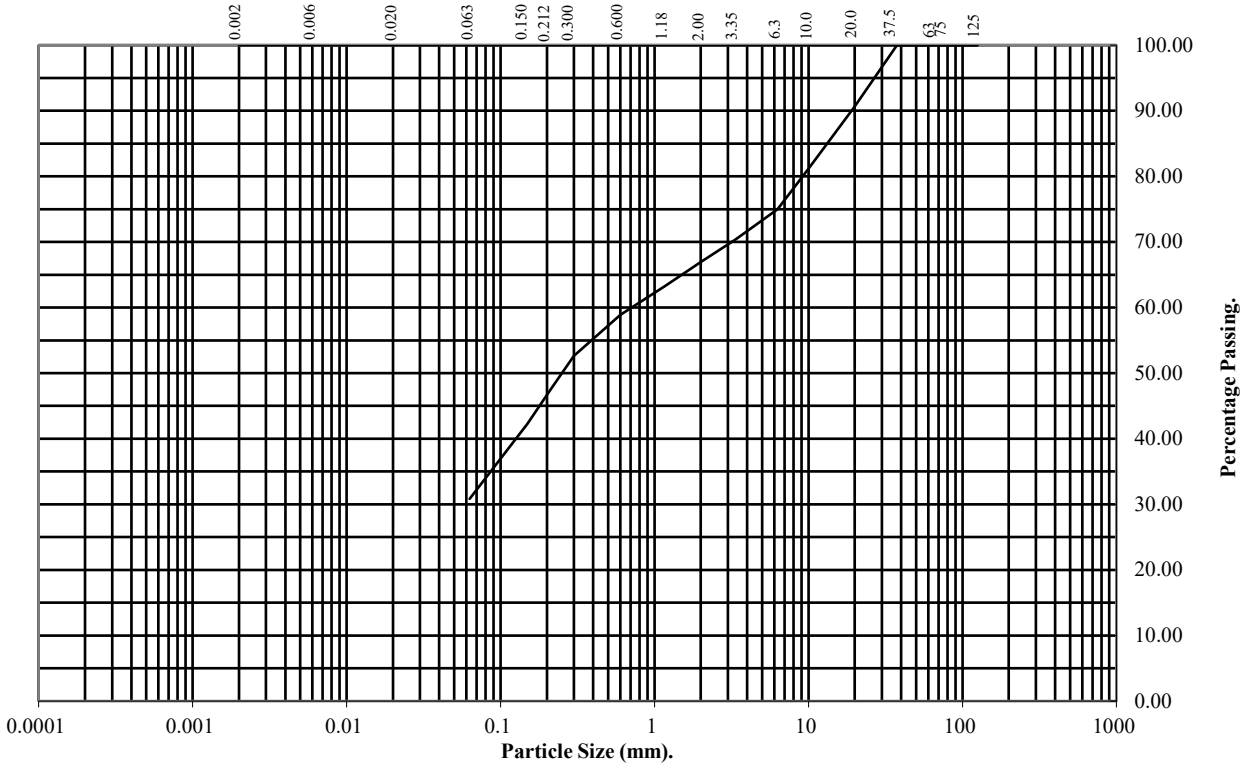
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH33** **Top Depth (m):** **3.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	81
6.3	75
3.35	70
2	67
1.18	63
0.6	59
0.3	53
0.212	48
0.15	42
0.063	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	33
Sand	36
Silt/Clay	31

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

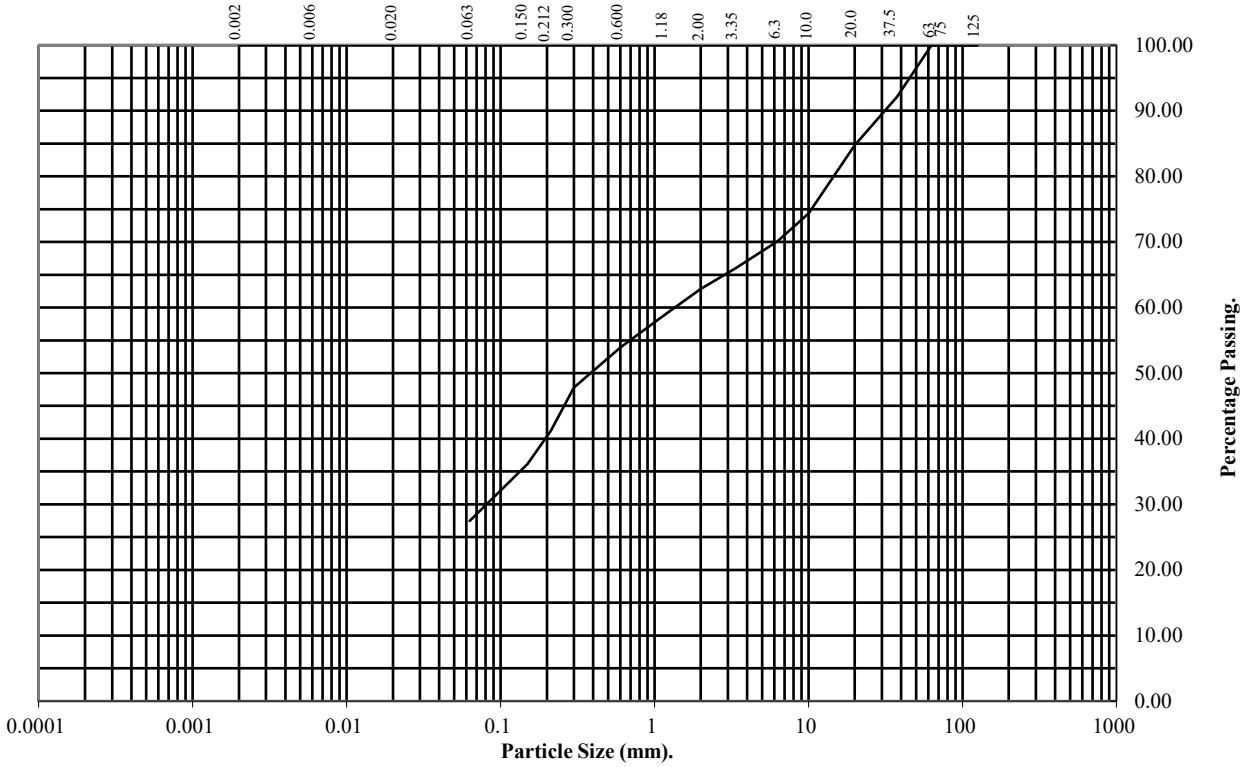
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH33** **Top Depth (m):** **4.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	85
10	74
6.3	70
3.35	66
2	63
1.18	59
0.6	54
0.3	48
0.212	41
0.15	36
0.063	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	37
Sand	36
Silt/Clay	27

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

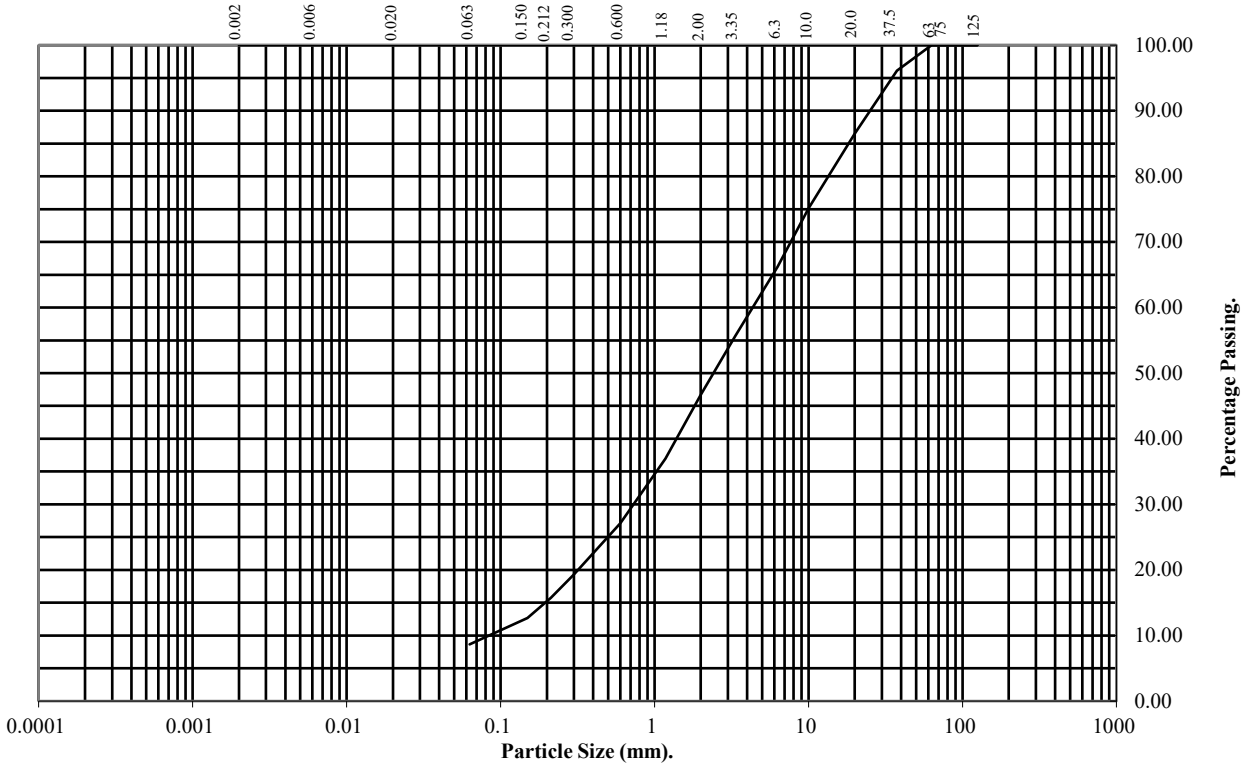
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH36 **Top Depth (m):** 0.50

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	87
10	75
6.3	66
3.35	56
2	47
1.18	37
0.6	27
0.3	19
0.212	16
0.15	13
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	53
Sand	38
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

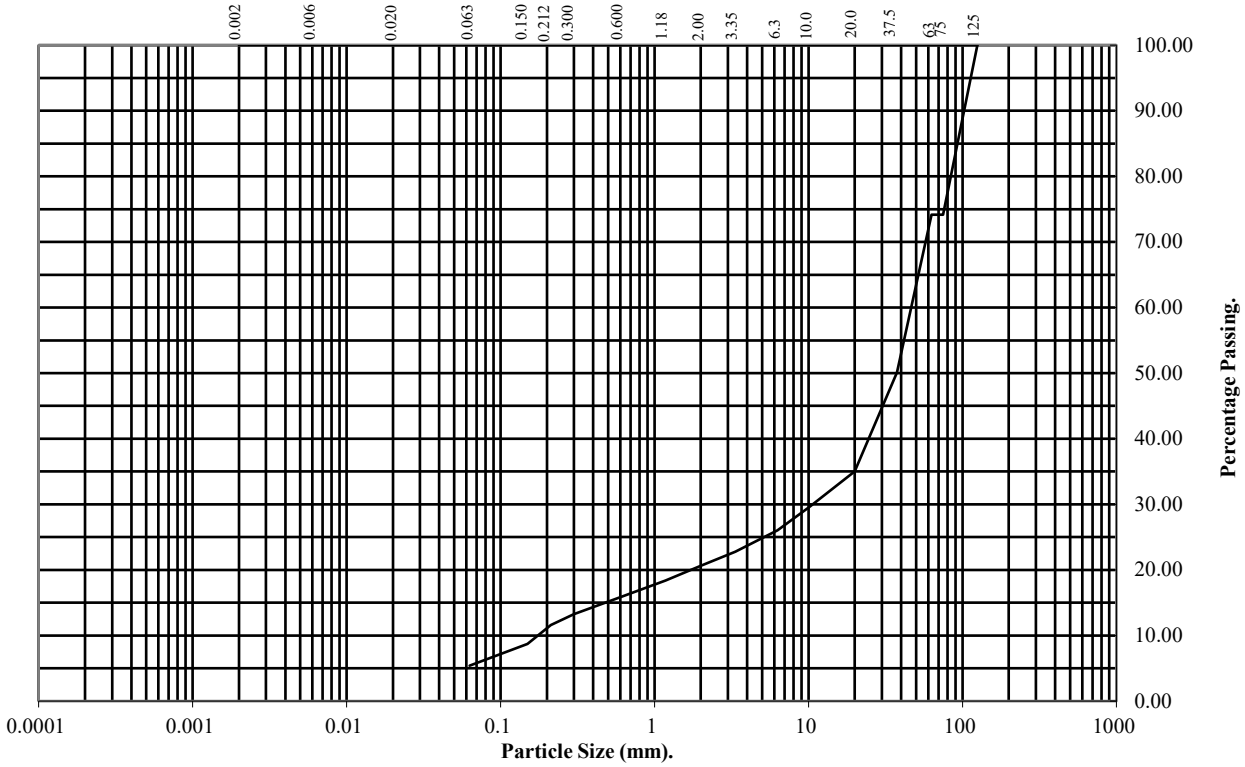
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH36 **Top Depth (m):** 1.00

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	74
63	74
37.5	50
20	35
10	29
6.3	26
3.35	23
2	21
1.18	18
0.6	16
0.3	13
0.212	12
0.15	9
0.063	5

Soil Fraction	Total Percentage
Cobbles	26
Gravel	53
Sand	16
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

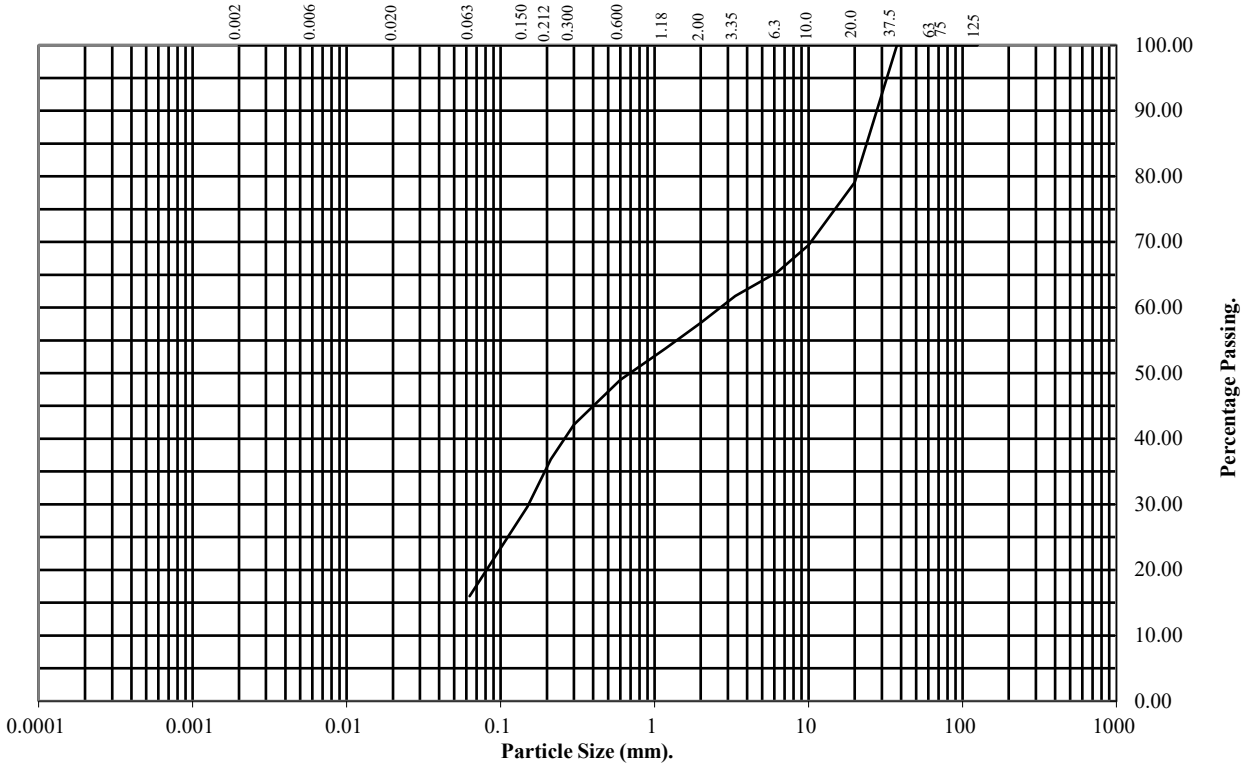
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH36** **Top Depth (m):** **3.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	79
10	69
6.3	65
3.35	62
2	58
1.18	54
0.6	49
0.3	42
0.212	37
0.15	30
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	42
Sand	42
Silt/Clay	16

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

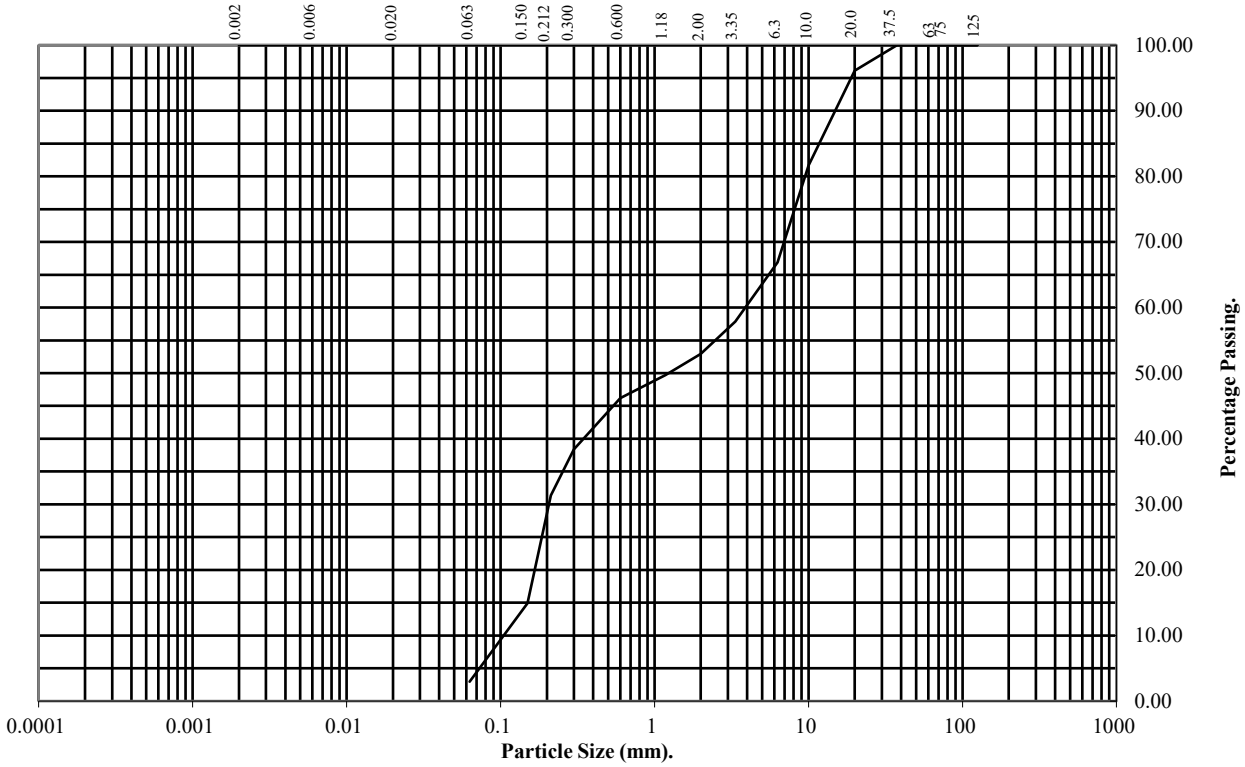
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH45** **Top Depth (m):** **2.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	82
6.3	67
3.35	58
2	53
1.18	50
0.6	46
0.3	38
0.212	31
0.15	15
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	50
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

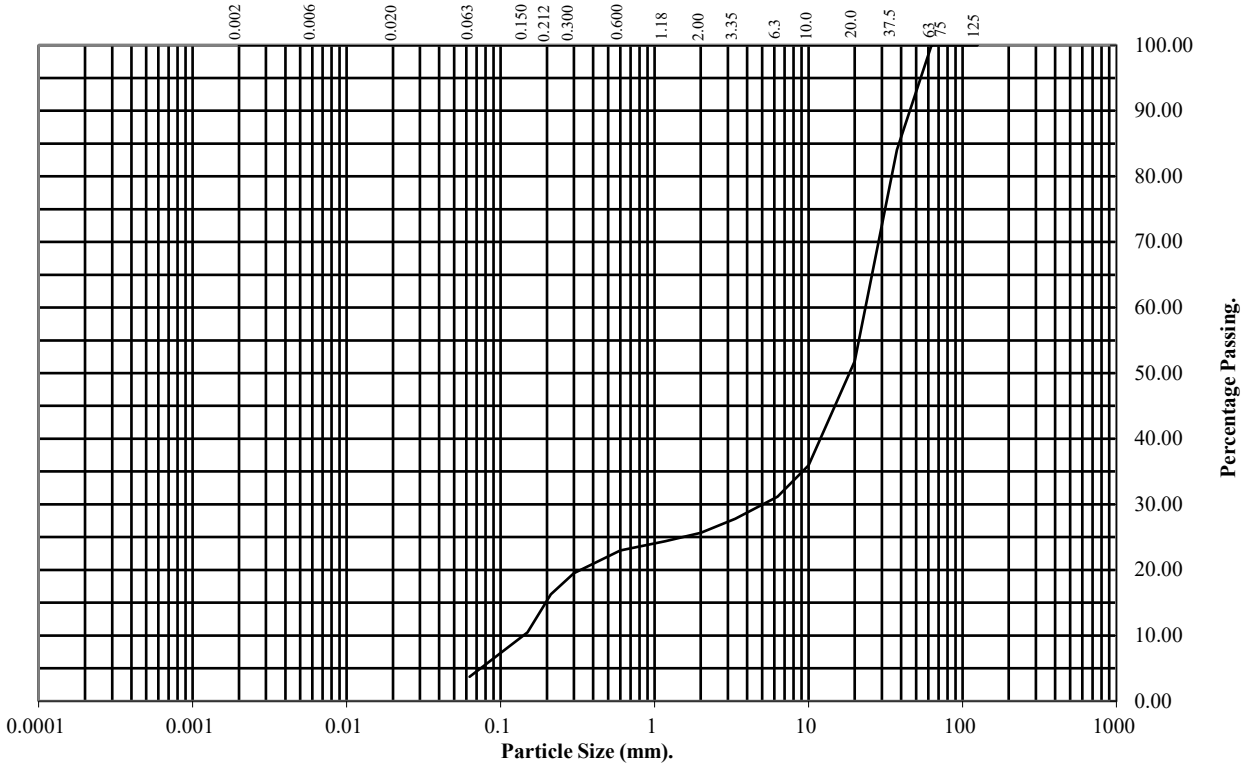
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH45** **Top Depth (m):** **4.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	84
20	52
10	36
6.3	31
3.35	28
2	26
1.18	24
0.6	23
0.3	19
0.212	16
0.15	10
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	74
Sand	22
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

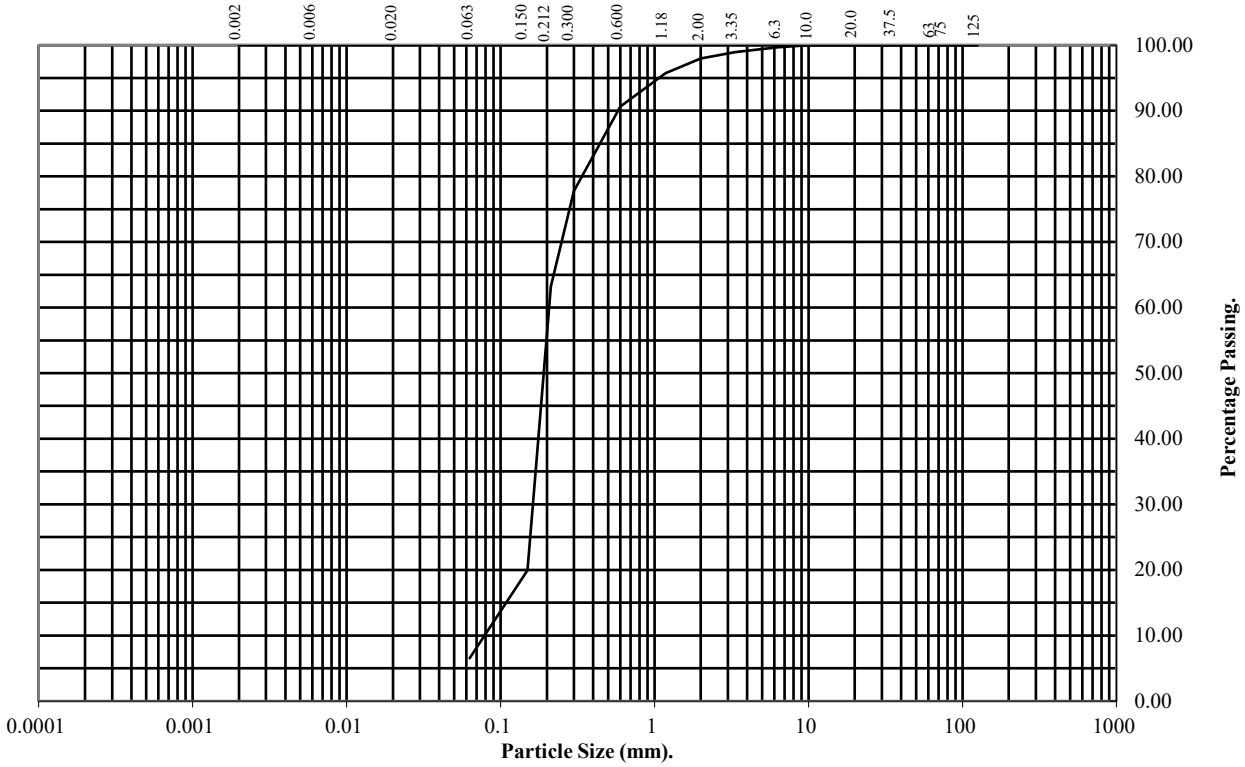
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH45** **Top Depth (m):** **6.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	96
0.6	91
0.3	78
0.212	63
0.15	20
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	91
Silt/Clay	7

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

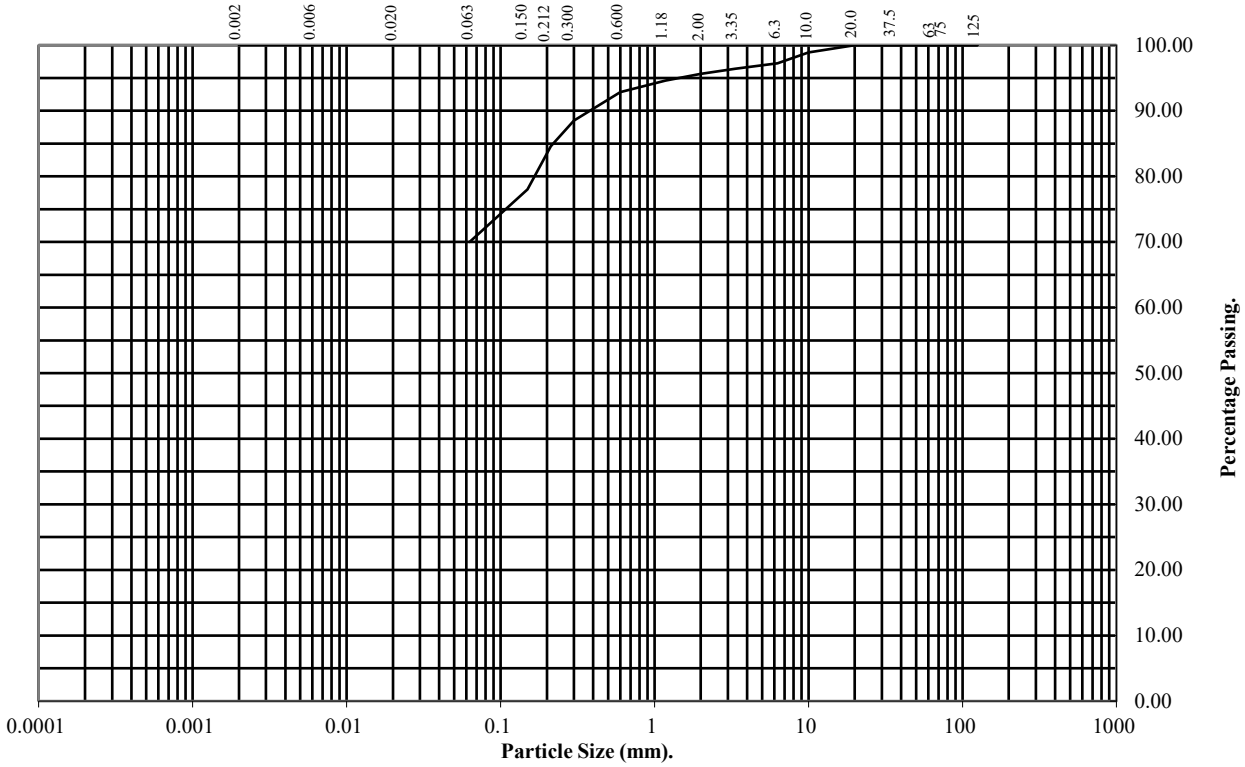
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH45** **Top Depth (m):** **9.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	96
2	96
1.18	95
0.6	93
0.3	89
0.212	85
0.15	78
0.063	70

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	26
Silt/Clay	70

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

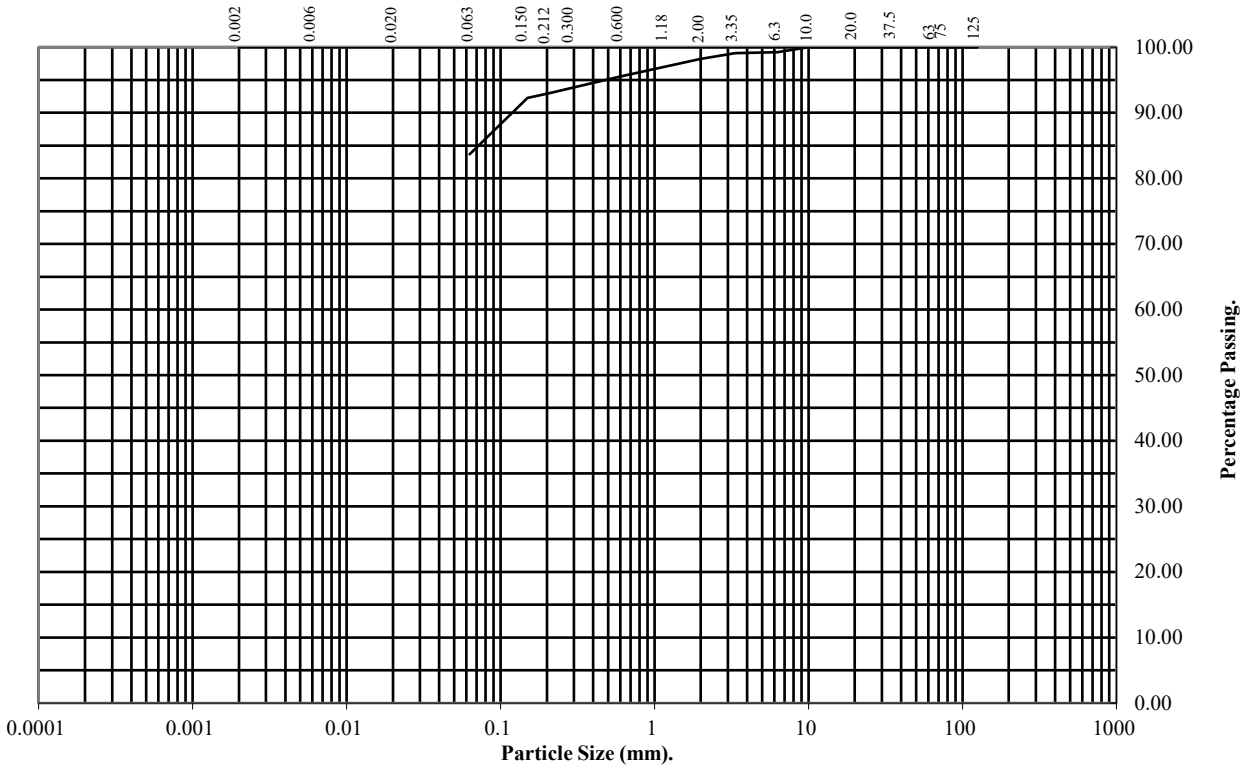
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH45** **Top Depth (m):** **10.00**

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

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	99
2	98
1.18	97
0.6	96
0.3	94
0.212	93
0.15	92
0.063	84

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	14
Silt/Clay	84

Remarks:

See Summary of Soil Descriptions

LABORATORY REPORT

4043

Contract Number: PSL22/2599

Report Date: 13 May 2022

Client's Reference: 11087-19-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Michael Sutton

Contract Title: Rogerstown Coastal Flood and Erosion Relief Scheme

Date Received: 8/4/2022
Date Commenced: 8/4/2022
Date Completed: 13/5/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS01		B	0.00	0.50	Brown TOPSOIL.
WS01		B	0.50	1.00	Brown slightly sandy gravelly CLAY.
WS01		B	1.00	1.70	Brown clayey sandy GRAVEL.
WS01		B	1.70	2.00	Brown clayey very sandy GRAVEL.
WS01		B	2.00	3.00	Brown slightly clayey very sandy GRAVEL.
WS03		B	0.00	0.10	Brown TOPSOIL.
WS03		B	0.10	0.50	Brown slightly sandy gravelly CLAY.
WS03		B	0.50	0.70	Brown clayey sandy GRAVEL.
WS03		B	0.70	1.10	Brown slightly clayey very sandy GRAVEL.
WS03		B	1.10	1.50	Brown silty SAND & GRAVEL.
WS03		B	2.00	4.00	Brown mottled grey sandy CLAY.
WS04		B	0.00	0.20	Brown clayey sandy GRAVEL.
WS04		B	0.50	0.70	Brown slightly clayey sandy GRAVEL.
WS04		B	0.70	1.60	Brown slightly silty very sandy GRAVEL.
WS04		B	1.60	1.70	Brown clayey SAND.
WS04		B	1.70	3.00	Grey slightly sandy CLAY.
WS06		B	0.00	0.70	Brown slightly silty very sandy GRAVEL.
WS06		B	0.70	1.50	Brown silty SAND & GRAVEL.
WS06		B	1.50	2.00	Brown silty slightly gravelly SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS06		B	2.00	5.00	Brown sandy CLAY.
WS14		B	0.00	1.05	Brown TOPSOIL.
WS14		B	1.15	2.00	Reddish brown slightly sandy slightly gravelly CLAY.
WS14		B	2.00	4.00	Brown slightly silty SAND.
WS16		B	0.00	1.60	Brown silty SAND & GRAVEL.
WS16		B	1.80	4.00	Brown slightly silty slightly gravelly SAND.
WS17		B	0.00	0.15	Brown TOPSOIL.
WS17		B	1.00	3.30	Brown slightly silty very sandy GRAVEL.
WS21		B	0.00	0.50	Brown silty SAND.
WS21		B	0.80	1.40	Brown slightly silty slightly gravelly SAND.
WS21		B	2.00	2.50	Brown slightly silty slightly gravelly SAND.
WS22		B	0.00	0.60	Brown silty SAND.
WS22		B	0.60	2.00	Brown slightly silty gravelly SAND.
WS23		B	0.00	1.20	Brown silty slightly gravelly SAND.
WS24		B	0.00	0.60	Brown silty SAND.
WS24		B	0.60	2.00	Brown slightly silty gravelly SAND.
WS25		B	0.00	0.50	Brown silty slightly gravelly SAND.
WS25		B	0.50	1.50	Brown slightly silty slightly gravelly SAND.
WS26		B	0.00	0.50	Brown silty slightly gravelly SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS26		B	0.50	1.00	Brown slightly silty very sandy GRAVEL.
WS26		B	1.00	1.75	Brown clayey gravelly SAND.
WS26		B	1.75	2.00	Brown slightly clayey very gravelly SAND.
WS27		B	0.00	0.30	Brown silty SAND & GRAVEL.
WS27		B	0.30	0.65	Brown slightly silty very gravelly SAND.
WS27		B	0.65	2.30	Brown slightly clayey slightly gravelly SAND.
WS28		B	0.00	0.15	Brown silty slightly gravelly SAND.
WS28		B	0.45	3.00	Brown slightly silty gravelly SAND.
WS29		B	0.00	0.30	Brown very clayey sandy GRAVEL.
WS29		B	0.30	1.40	Brown clayey very gravelly SAND.
WS29		B	1.40	2.50	Brown very gravelly SAND.
WS29		B	2.70	2.30	Brown silty gravelly SAND.
WS30		B	0.00	1.20	MADE GROUND brown clayey sandy gravel.
WS30		B	1.20	2.00	Brown slightly silty very gravelly SAND.
WS30		B	2.00	2.40	Brown silty very sandy GRAVEL.
WS37		B	0.00	0.75	Brown mottled grey sandy clayey GRAVEL.
WS37		B	1.10	1.40	Brown clayey very gravelly SAND.
WS38		B	0.00	0.25	Brown TOPSOIL
WS38		B	0.60	1.80	Brown clayey SAND & GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS38		B	2.00	2.50	Brown slightly clayey slightly gravelly SAND.
WS38		B	2.90	3.40	Brown clayey very sandy GRAVEL.
WS38		B	3.65	4.00	Brown mottled grey sandy slightly gravelly CLAY.
WS38		B	4.40	4.60	Brown mottled grey slightly sandy slightly gravelly CLAY.
WS39		B	0.00	0.90	MADE GROUND brown silty sandy gravel.
WS39		B	0.90	1.90	Grey slightly silty very gravelly SAND.
WS39		B	1.90	3.00	Grey silty very gravelly SAND.
WS39		B	3.30	4.00	Grey slightly sandy CLAY.
WS39		B	4.50	4.80	Brown silty very sandy GRAVEL.
WS40		B	0.00	1.00	Brown slightly clayey silty very gravelly SAND.
WS40		B	1.10	1.35	Brown silty slightly gravelly SAND.
WS40		B	1.50	2.50	Brown slightly clayey gravelly SAND.
WS40		B	2.50	4.00	Grey clayey slightly gravelly SAND.
WS41		B	0.00	0.60	Brown very clayey slightly gravelly SAND.
WS41		B	0.95	1.30	Brown silty gravelly SAND.
WS41		B	1.50	1.75	Brown silty slightly gravelly SAND.
WS41		B	2.00	2.40	Brown slightly clayey slightly gravelly SAND.
WS41		B	3.00	3.45	Brown clayey slightly gravelly SAND.
WS41		B	3.85	4.00	Brown very clayey gravelly SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS42		B	0.00	0.94	Brown clayey very sandy GRAVEL.
WS42		B	1.50	2.65	Brown slightly silty gravelly SAND.
WS42		B	3.00	3.50	Brown slightly silty gravelly SAND.
WS43		B	0.00	0.45	Brown sandy gravelly CLAY.
WS43		B	0.70	1.50	Brown clayey gravelly SAND.
WS43		B	1.50	3.00	Brown silty very gravelly SAND.
WS44		B	0.00	0.30	Brown slightly clayey slightly gravelly SAND.
WS44		B	0.30	0.60	Brown slightly clayey gravelly SAND.
WS44		B	0.60	0.95	Brown silty slightly gravelly SAND.
WS44		B	1.20	1.50	Brown silty slightly gravelly SAND.
WS44		B	1.50	3.00	Brown slightly silty slightly gravelly SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS01		B	0.00	0.50	22							
WS01		B	0.50	1.00	21			32	17	15	35	Low Plasticity CL
WS01		B	1.00	1.70	11							
WS01		B	2.00	3.00	10							
WS03		B	0.00	0.10	51							
WS03		B	0.10	0.50	12			27	14	13	45	Low Plasticity CL
WS03		B	0.50	0.70	27							
WS03		B	1.10	1.50	13							
WS03		B	2.00	4.00	27							
WS04		B	0.00	0.20	8.2							
WS04		B	0.50	0.70	4.6							
WS04		B	1.60	1.70	22							
WS04		B	1.70	3.00	30			37	20	17	100	Intermediate Plasticity CI
WS06		B	0.00	0.70	11							
WS06		B	1.50	2.00	12							
WS14		B	0.00	1.05	16							
WS14		B	1.15	2.00	23							
WS16		B	0.00	1.60	14							
WS16		B	1.80	4.00	20							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

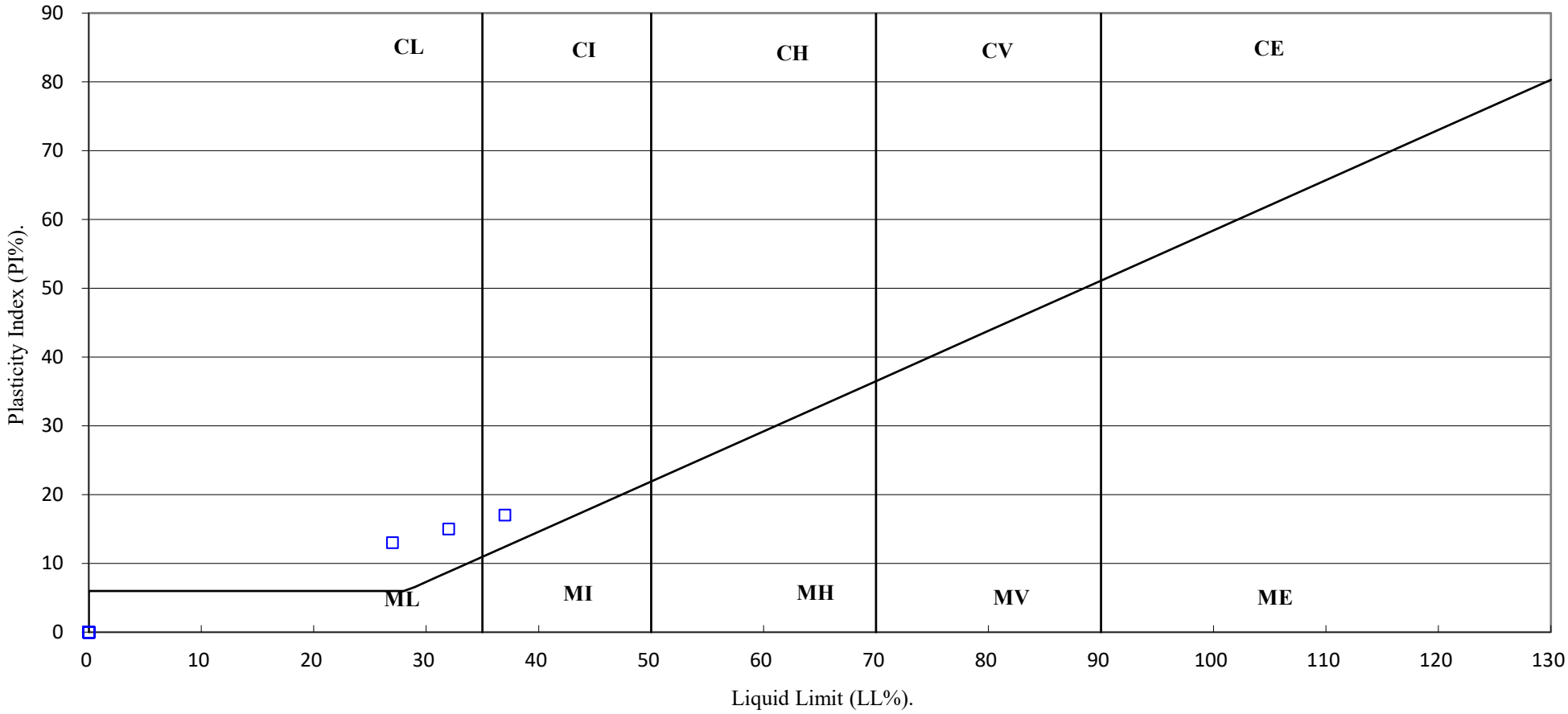
PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No: PSL22/2599

Client Ref: 11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	Contract No: PSL22/2599 Client Ref: 11087-19-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS17		B	0.00	0.15	25							
WS17		B	1.00	3.30	5.4							
WS21		B	0.00	0.50	18							
WS21		B	0.80	1.40	17							
WS21		B	2.00	2.50	12							
WS22		B	0.00	0.60	12							
WS23		B	0.00	1.20	15							
WS24		B	0.00	0.60	12							
WS25		B	0.00	0.50	9.2							
WS26		B	0.00	0.50	17							
WS26		B	1.00	1.75	25							
WS27		B	0.00	0.30	5.6							
WS27		B	0.65	2.30	24							
WS28		B	0.00	0.15	13							
WS28		B	0.45	3.00	7.4							
WS29		B	0.00	0.30	26							
WS29		B	1.40	2.50	12							
WS29		B	2.70	2.30	10							
WS30		B	0.00	1.20	12			37	20	17	25	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

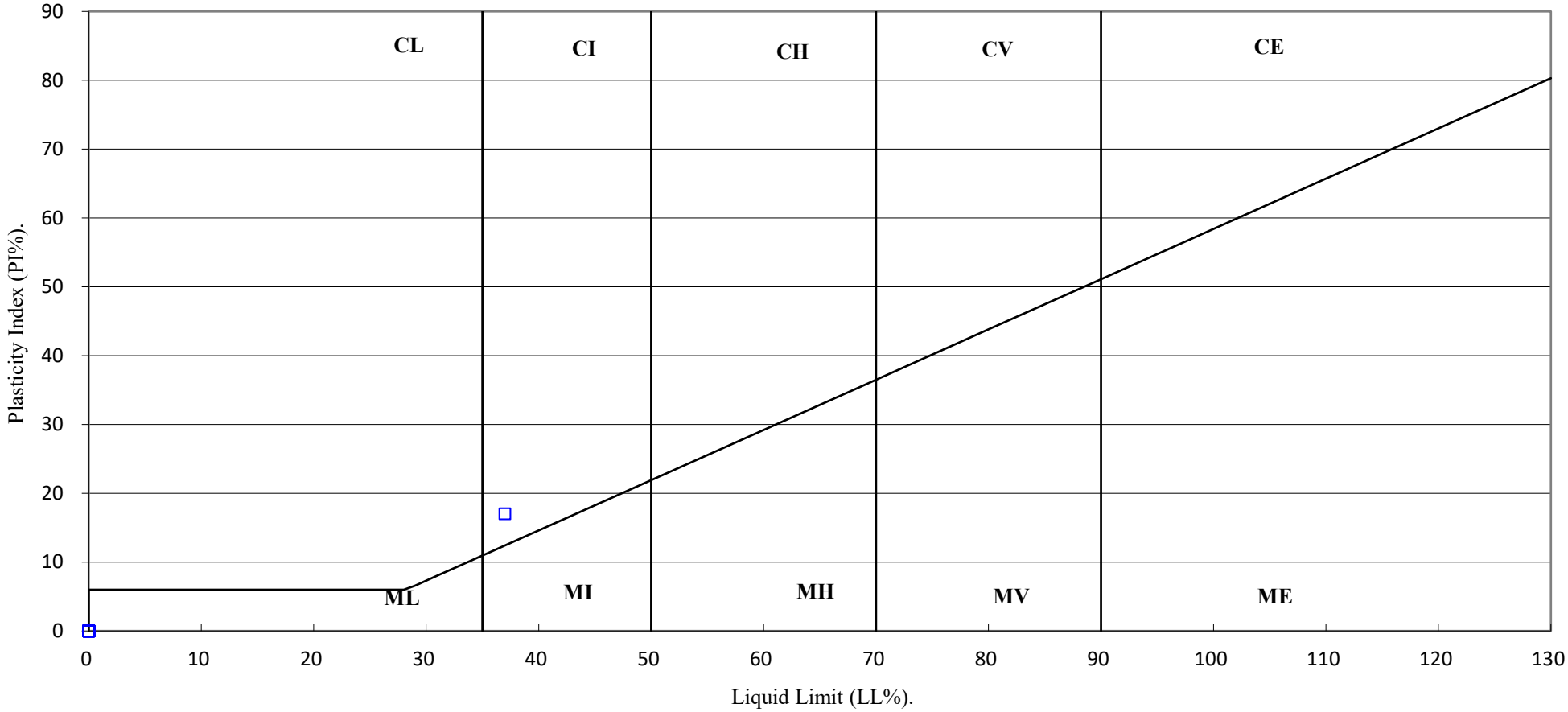
Contract No:

PSL22/2599

Client Ref:

11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	**Contract No:** PSL22/2599 **Client Ref:** 11087-19-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS30		B	2.00	2.40	17							
WS37		B	0.00	0.75	9.6				NP			
WS37		B	1.10	1.40	10							
WS38		B	0.00	0.25	17							
WS38		B	0.60	1.80	8.7							
WS38		B	2.00	2.50	17							
WS38		B	2.90	3.40	12							
WS38		B	3.65	4.00	35							
WS38		B	4.40	4.60	38							
WS39		B	0.00	0.90	9.1							
WS39		B	1.90	3.00	21							
WS39		B	3.30	4.00	39							
WS39		B	4.50	4.80	9.8							
WS40		B	0.00	1.00	15				NP			
WS40		B	1.10	1.35	14							
WS40		B	1.50	2.50	14							
WS41		B	0.00	0.60	18			35	16	19	60	Intermediate Plasticity CI
WS41		B	0.95	1.30	17							
WS41		B	1.50	1.75	13							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

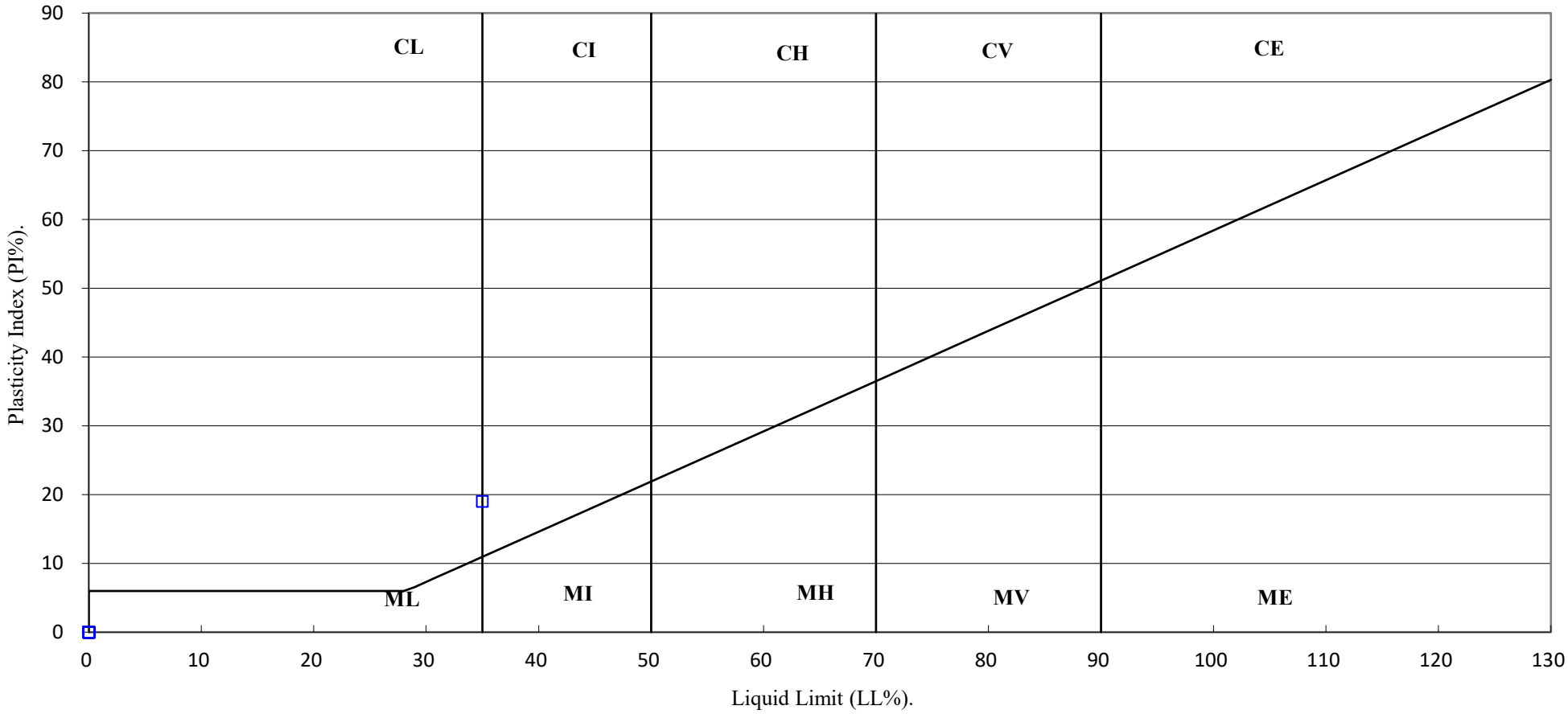
UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No:
PSL22/2599
Client Ref:
11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	**Contract No:** PSL22/2599 **Client Ref:** 11087-19-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS41		B	2.00	2.40	14							
WS41		B	3.00	3.45	26							
WS41		B	3.85	4.00	22			38	18	20	80	Intermediate Plasticity CI
WS42		B	0.00	0.94	11							
WS42		B	1.50	2.65	22							
WS42		B	3.00	3.50	16							
WS43		B	0.00	0.45	17							
WS43		B	0.70	1.50	26							
WS44		B	0.00	0.30	14							
WS44		B	0.60	0.95	17							
WS44		B	1.20	1.50	23							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

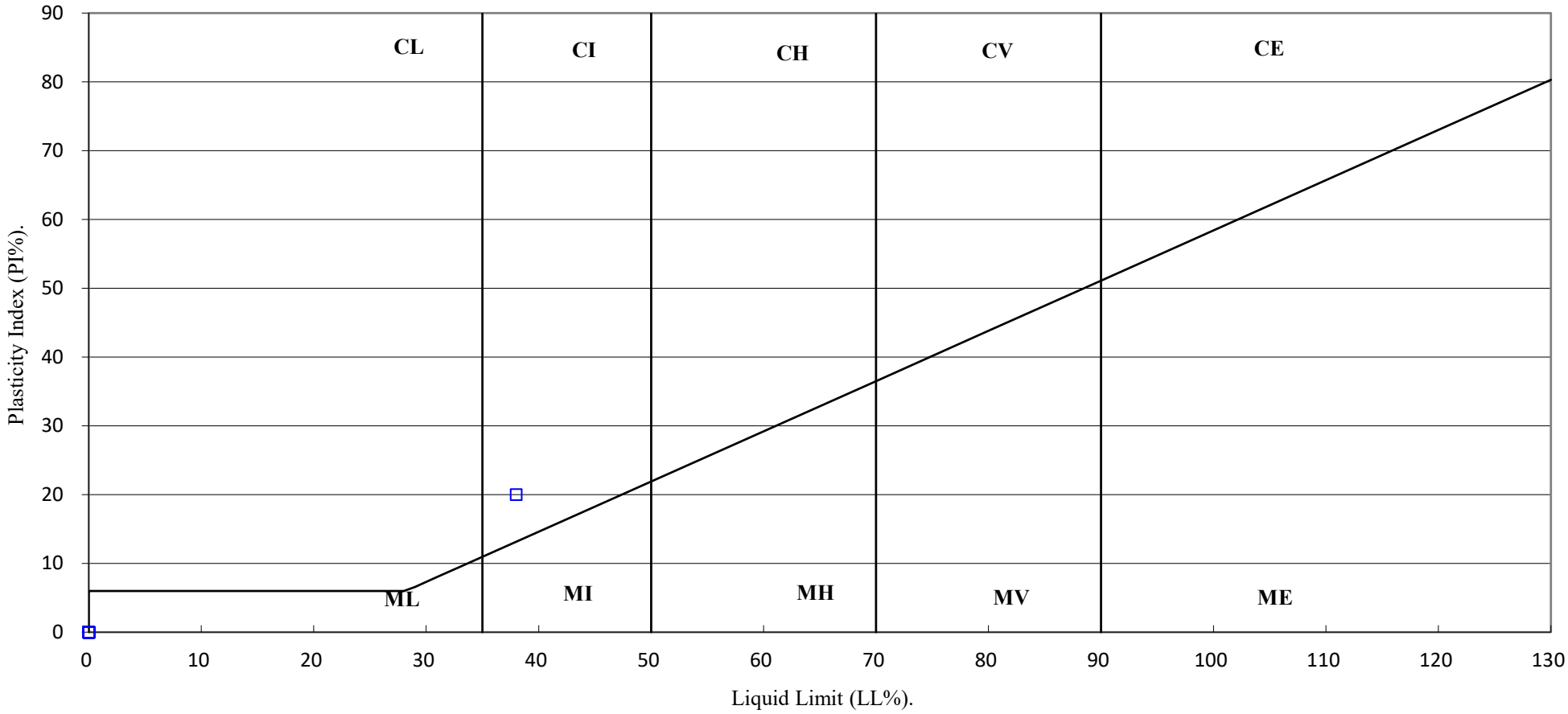
UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No:
PSL22/2599
Client Ref:
11087-19-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Rogerstown Coastal Flood and Erosion Relief Scheme	**Contract No:** PSL22/2599 **Client Ref:** 11087-19-21

PARTICLE SIZE DISTRIBUTION TEST

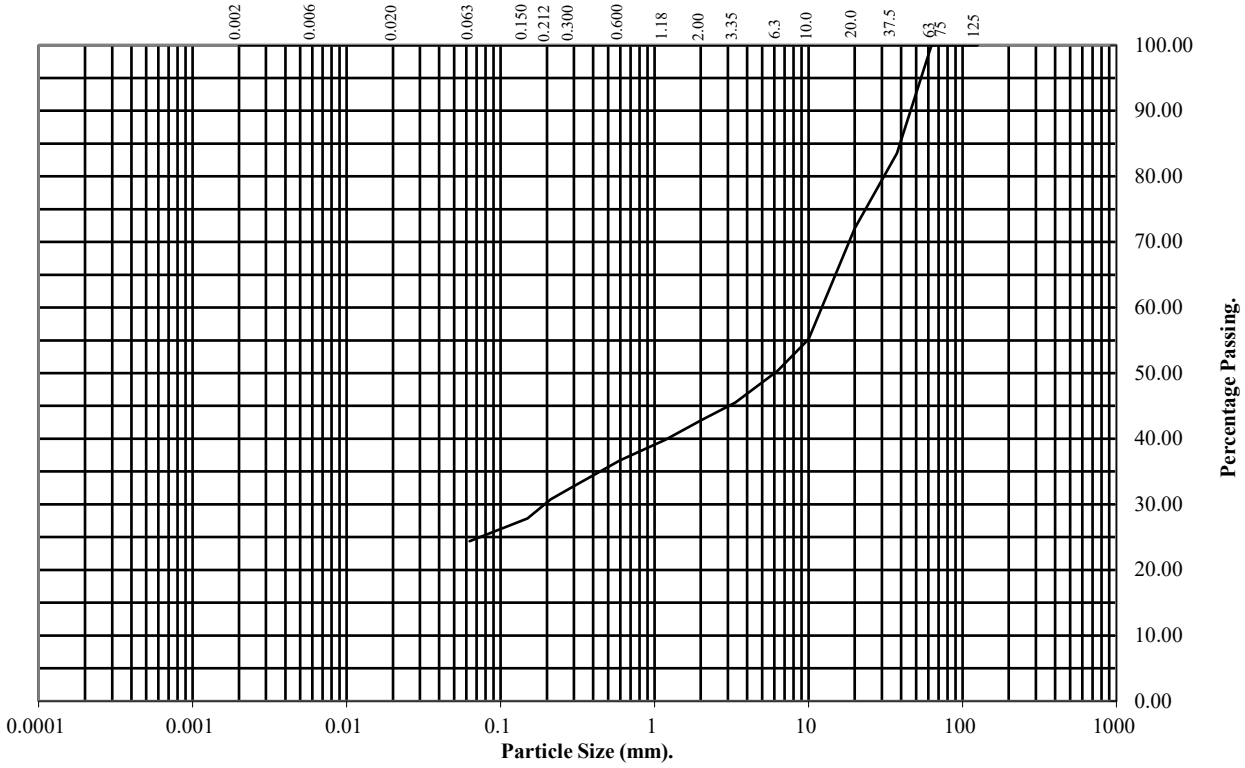
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS01** **Top Depth (m):** **0.50**

Sample Number: **Base Depth(m):** **1.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	84
20	72
10	55
6.3	50
3.35	46
2	43
1.18	40
0.6	37
0.3	33
0.212	31
0.15	28
0.063	24

Soil Fraction	Total Percentage
Cobbles	0
Gravel	57
Sand	19
Silt/Clay	24

Remarks:

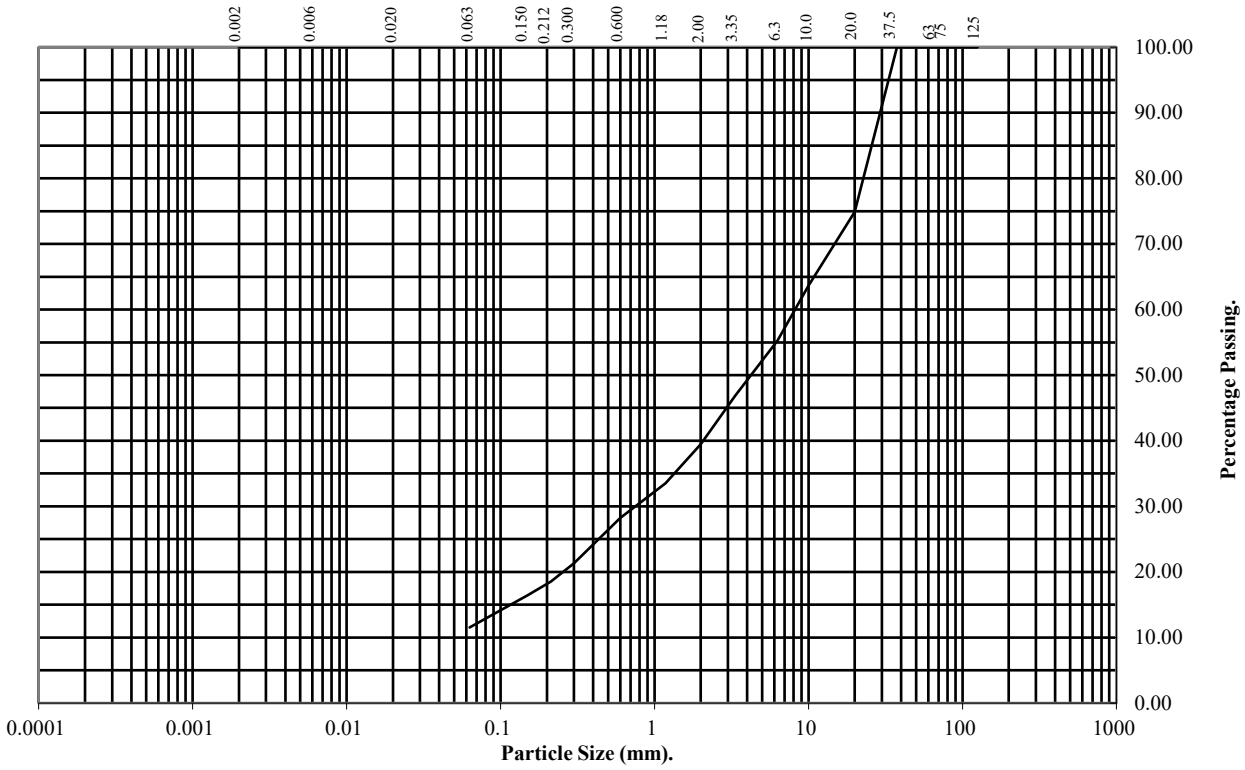
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS01**	**Top Depth (m):**	**1.70**
Sample Number:		**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	75
10	64
6.3	55
3.35	47
2	39
1.18	33
0.6	28
0.3	21
0.212	19
0.15	16
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	61
Sand	27
Silt/Clay	12

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

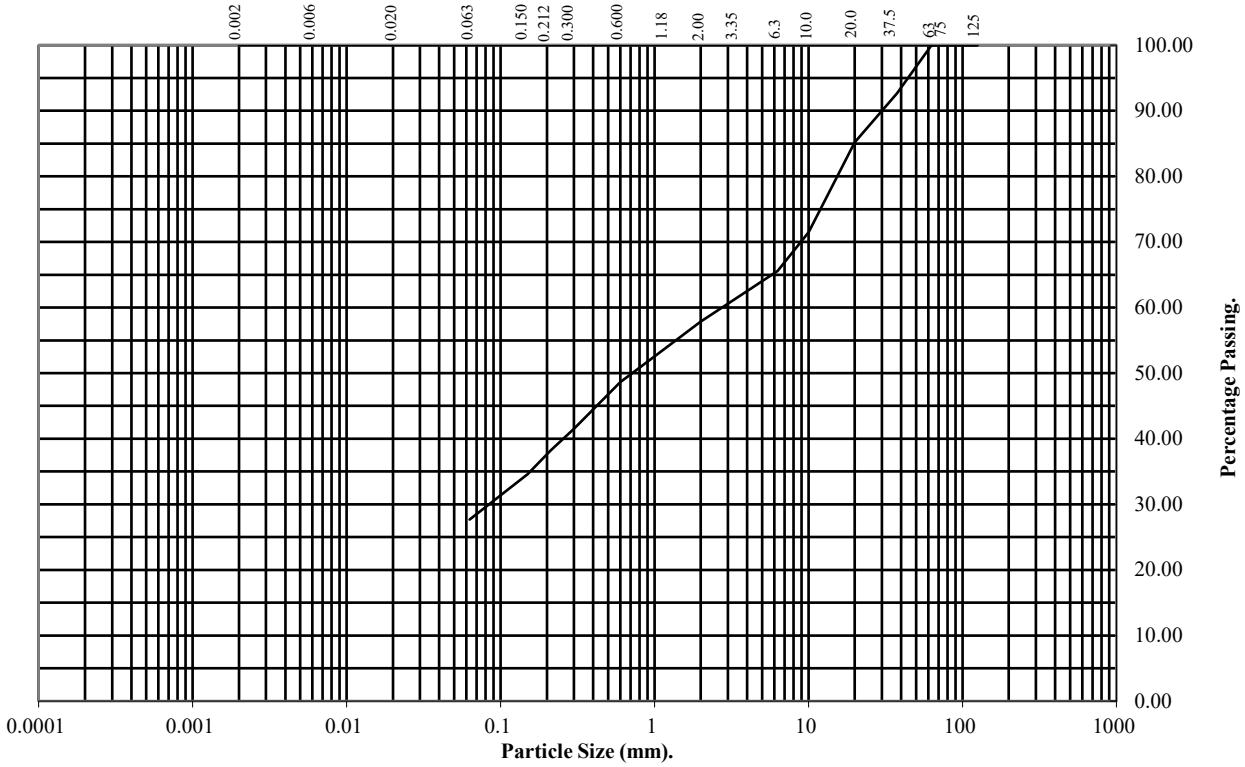
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS03** **Top Depth (m):** **0.10**

Sample Number: **Base Depth(m):** **0.50**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	85
10	71
6.3	66
3.35	61
2	58
1.18	54
0.6	49
0.3	41
0.212	38
0.15	35
0.063	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	42
Sand	30
Silt/Clay	28

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

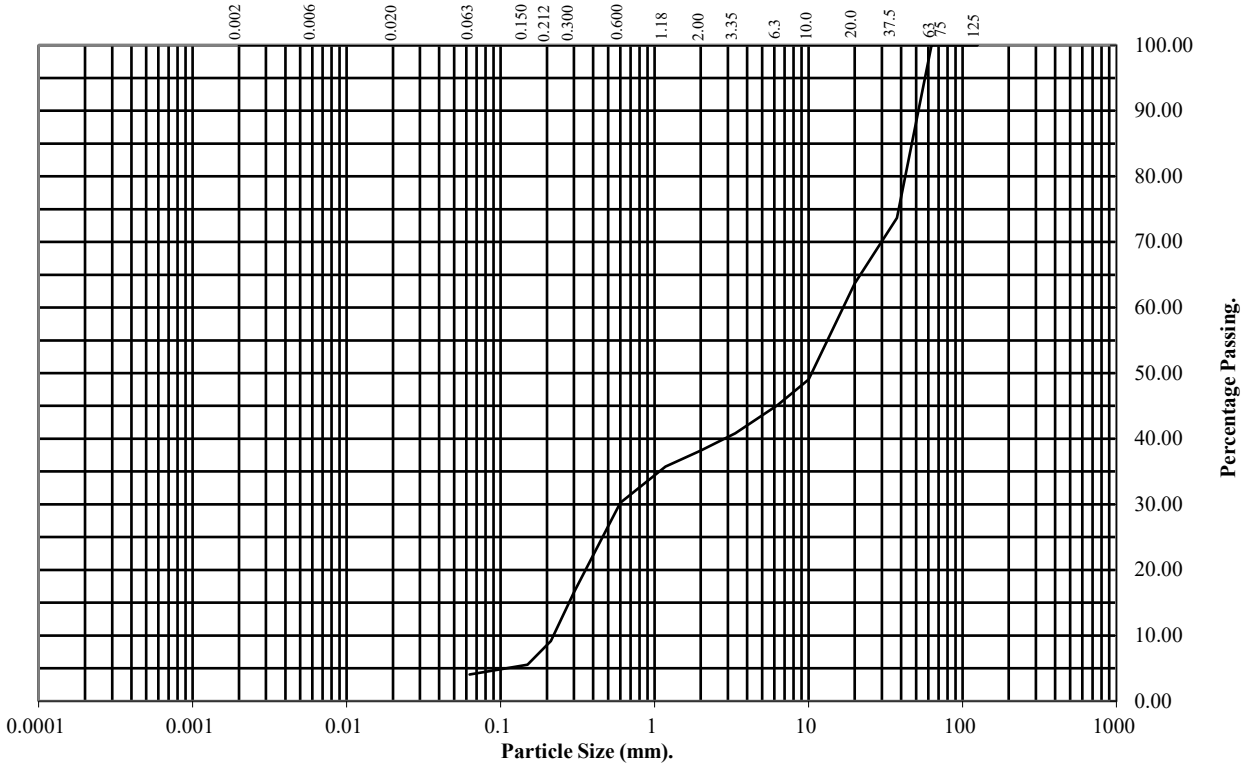
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS03** **Top Depth (m):** **0.70**

Sample Number: **Base Depth(m):** **1.10**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	74
20	64
10	49
6.3	45
3.35	41
2	38
1.18	36
0.6	30
0.3	17
0.212	9
0.15	6
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	34
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

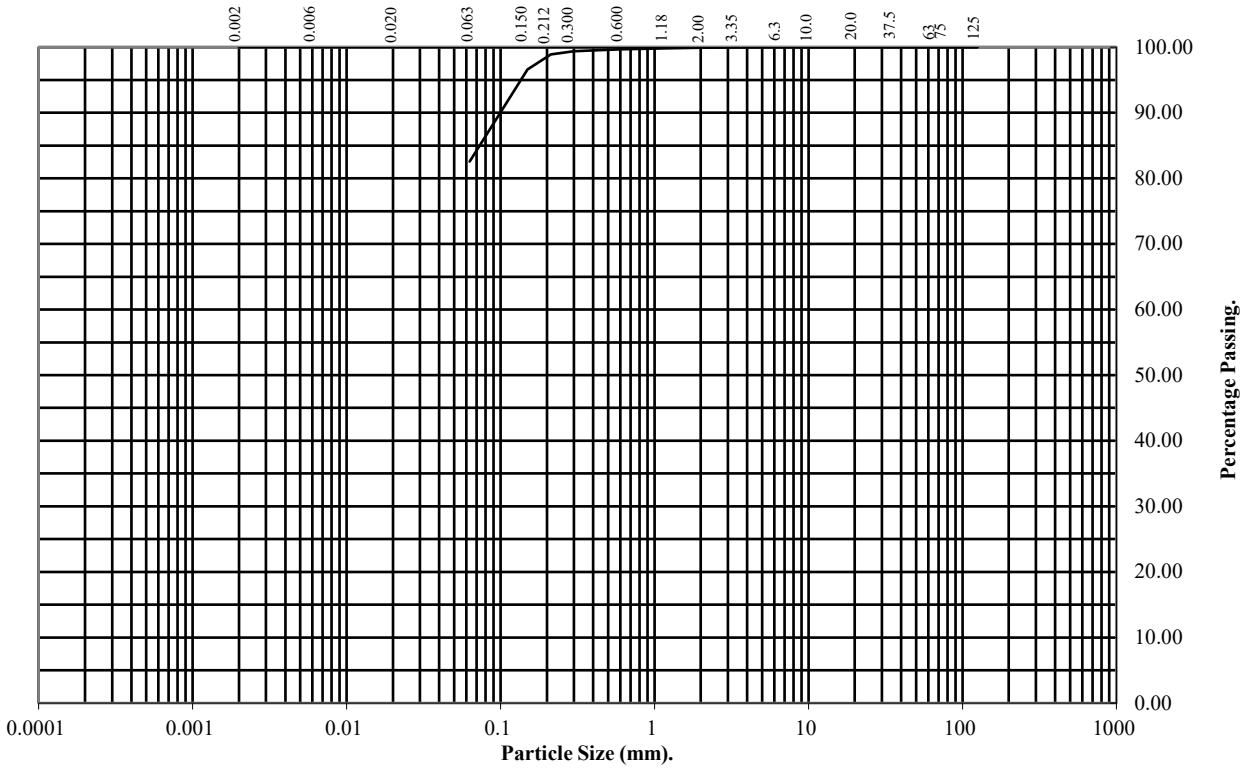
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS03** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):** **4.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	99
0.15	97
0.063	83

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	17
Silt/Clay	83

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

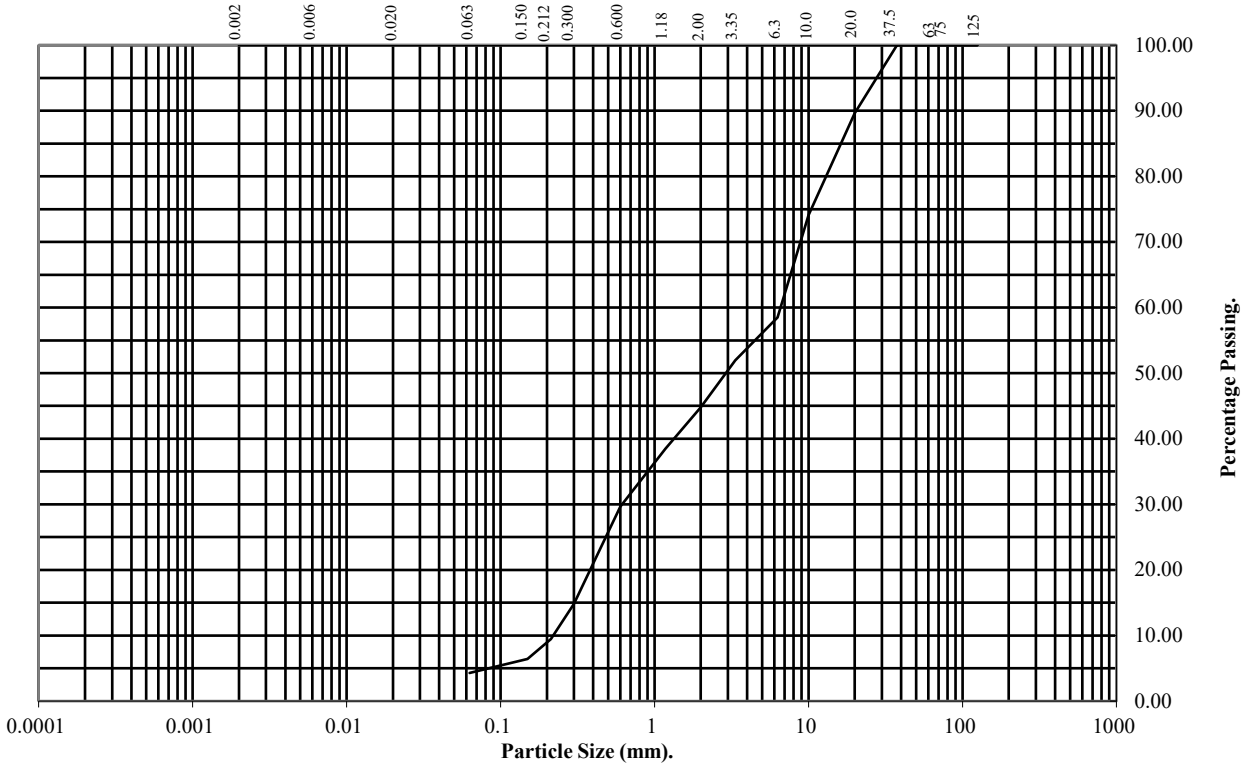
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS04** **Top Depth (m):** **0.70**

Sample Number: **Base Depth(m):** **1.60**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	74
6.3	58
3.35	52
2	45
1.18	39
0.6	30
0.3	15
0.212	9
0.15	6
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	55
Sand	41
Silt/Clay	4

Remarks:

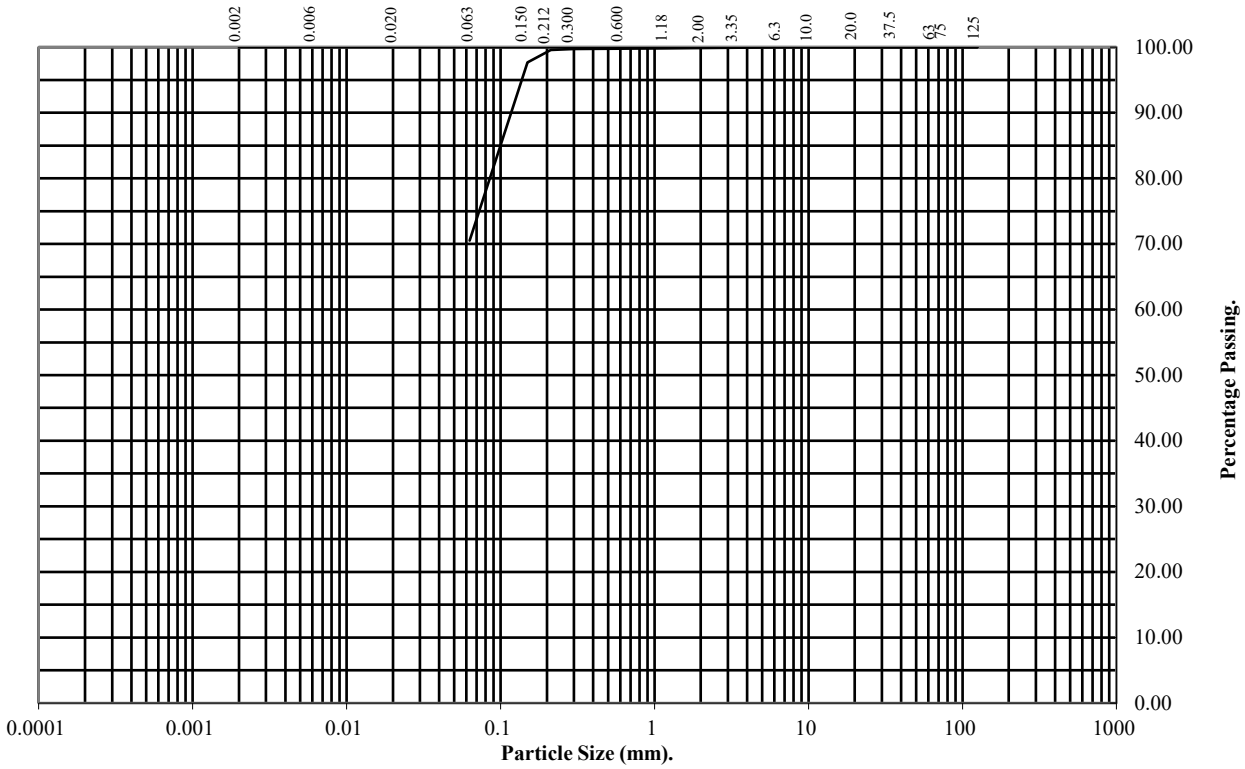
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS04**	**Top Depth (m):**	**1.70**
Sample Number:		**Base Depth(m):**	**3.00**
Sample Type:	**B**		



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

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	29
Silt/Clay	71

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

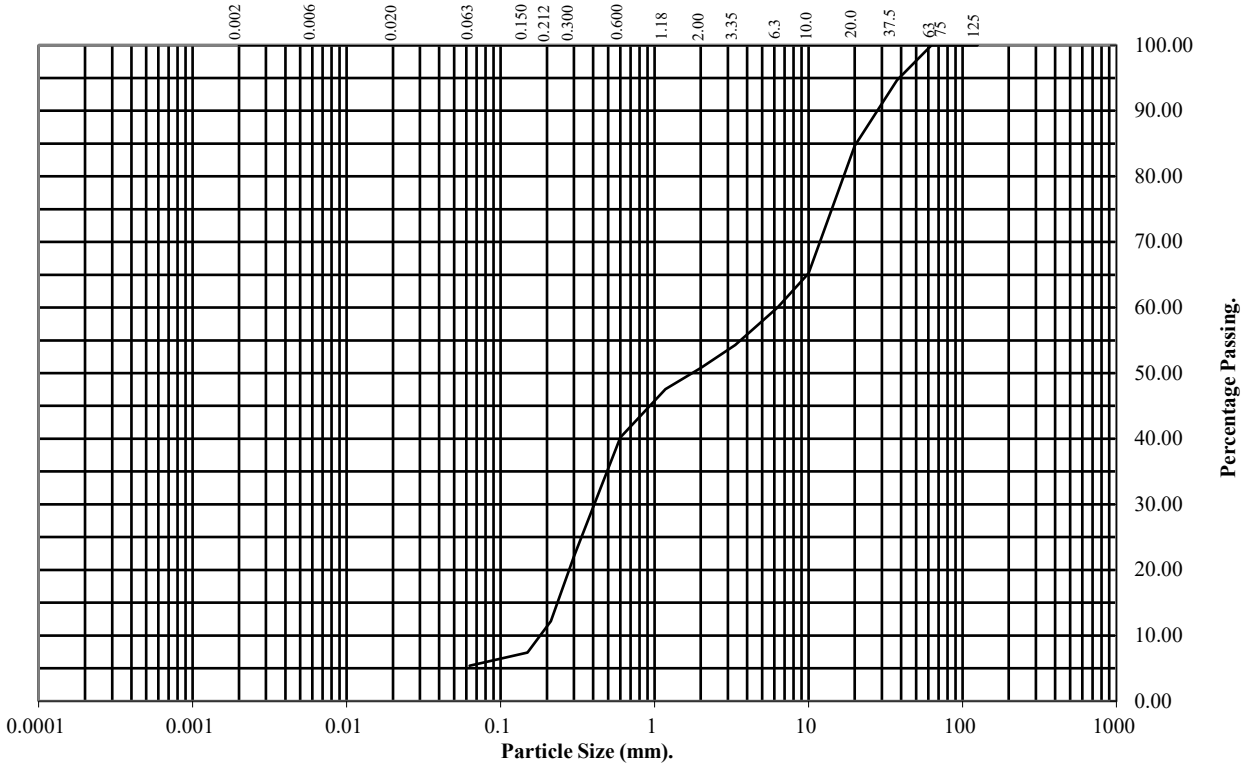
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS06** **Top Depth (m):** **0.70**

Sample Number: **Base Depth(m):** **1.50**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	85
10	65
6.3	60
3.35	54
2	51
1.18	48
0.6	40
0.3	22
0.212	12
0.15	7
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	49
Sand	46
Silt/Clay	5

Remarks:

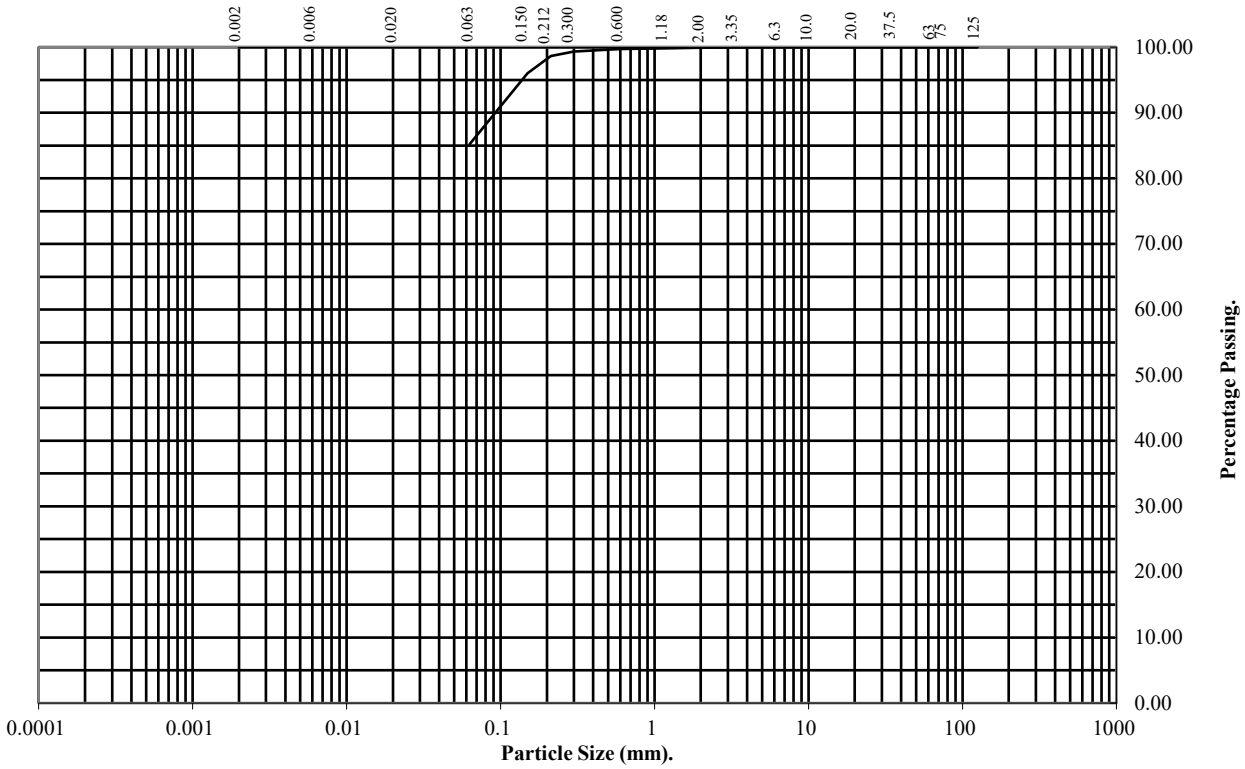
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS06**	**Top Depth (m):**	**2.00**
Sample Number:		**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	99
0.15	96
0.063	85

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	15
Silt/Clay	85

Remarks:

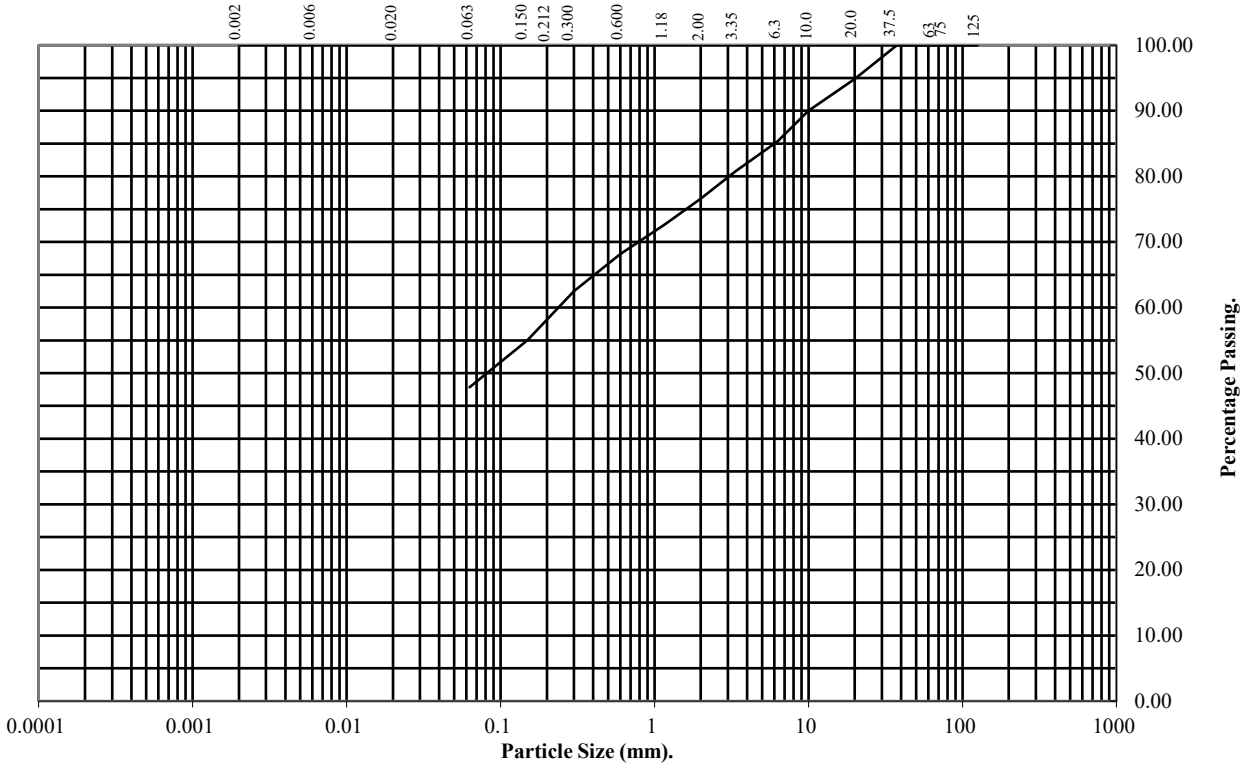
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS14**	**Top Depth (m):**	**1.15**
Sample Number:		**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	90
6.3	85
3.35	81
2	77
1.18	73
0.6	68
0.3	63
0.212	59
0.15	55
0.063	48

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	29
Silt/Clay	48

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

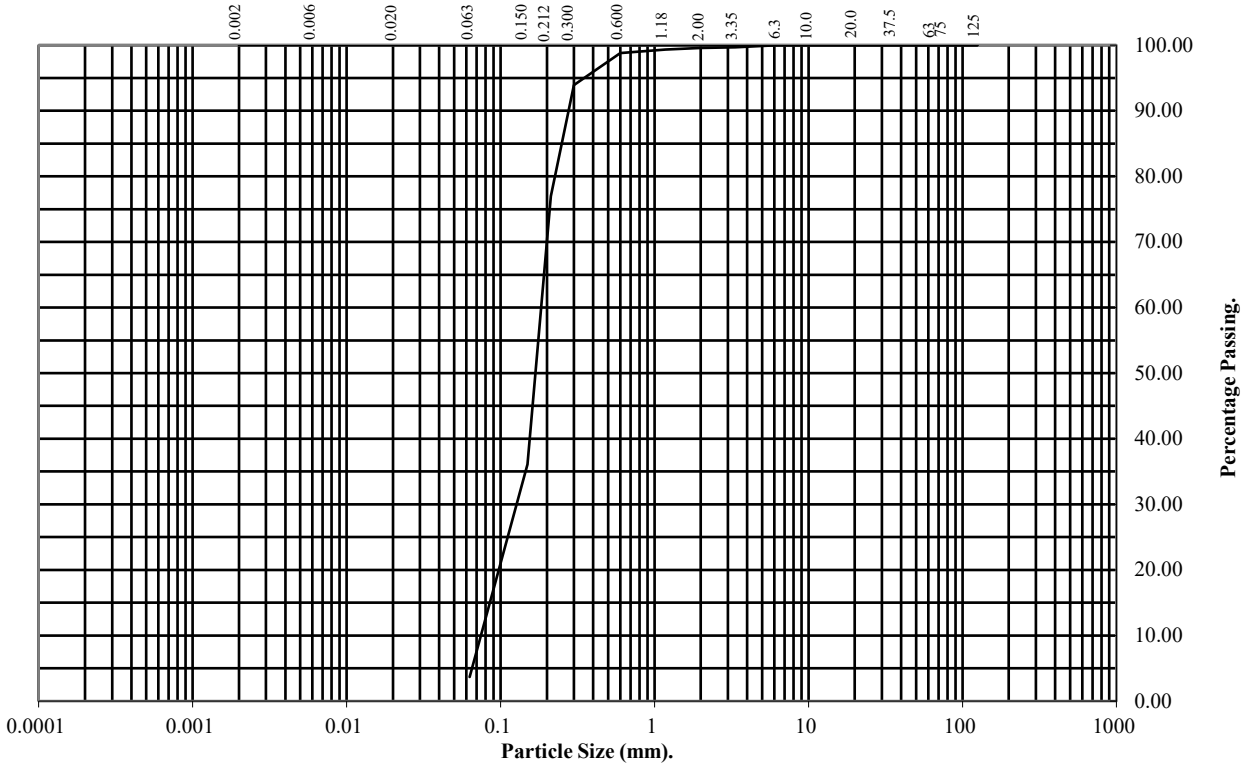
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS14** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):** **4.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	94
0.212	77
0.15	36
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	96
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

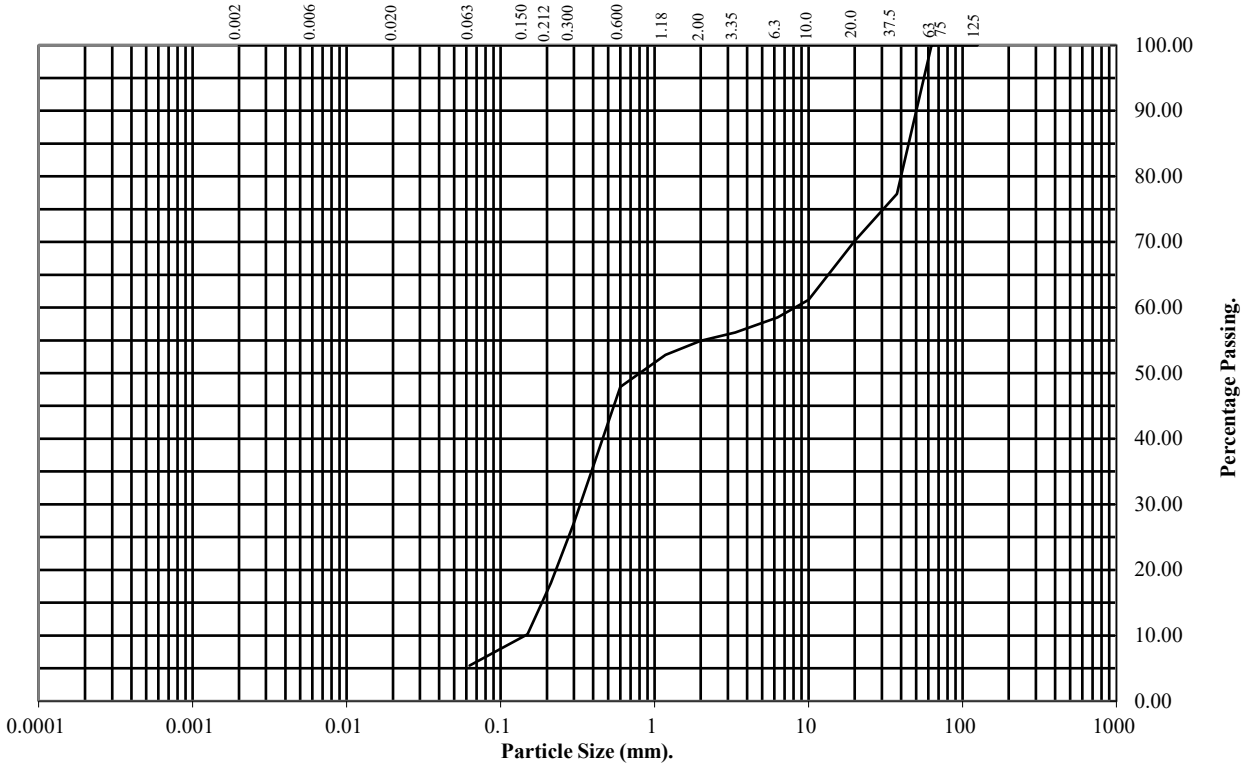
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: WS16 **Top Depth (m):** 0.00

Sample Number: **Base Depth(m):** 1.60

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	77
20	70
10	61
6.3	58
3.35	56
2	55
1.18	53
0.6	48
0.3	27
0.212	18
0.15	10
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	45
Sand	50
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

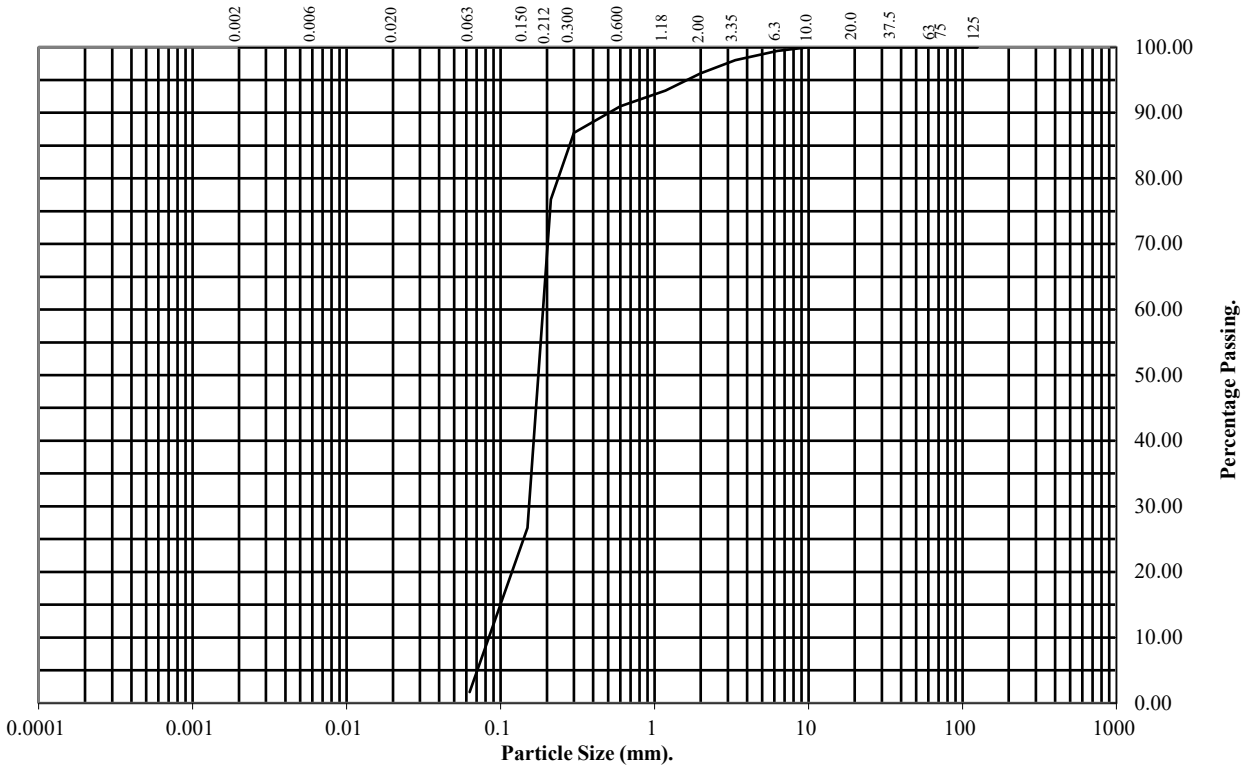
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS16** **Top Depth (m):** **1.80**

Sample Number: **Base Depth(m):** **4.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	96
1.18	93
0.6	91
0.3	87
0.212	77
0.15	27
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	94
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No: **PSL22/2599**

Client Ref: **11087-19-21**

PARTICLE SIZE DISTRIBUTION TEST

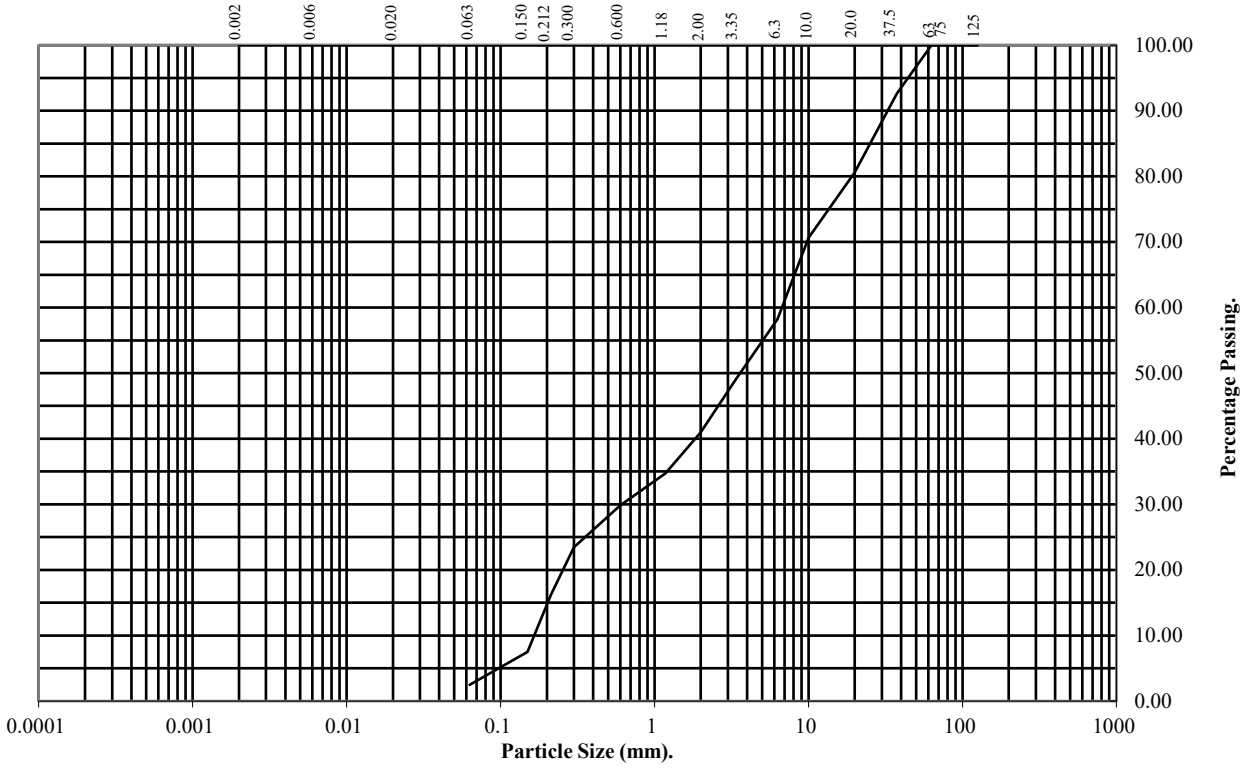
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS17** **Top Depth (m):** **1.00**

Sample Number: **Base Depth(m):** **3.30**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	81
10	71
6.3	58
3.35	49
2	41
1.18	35
0.6	30
0.3	23
0.212	16
0.15	8
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	59
Sand	39
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

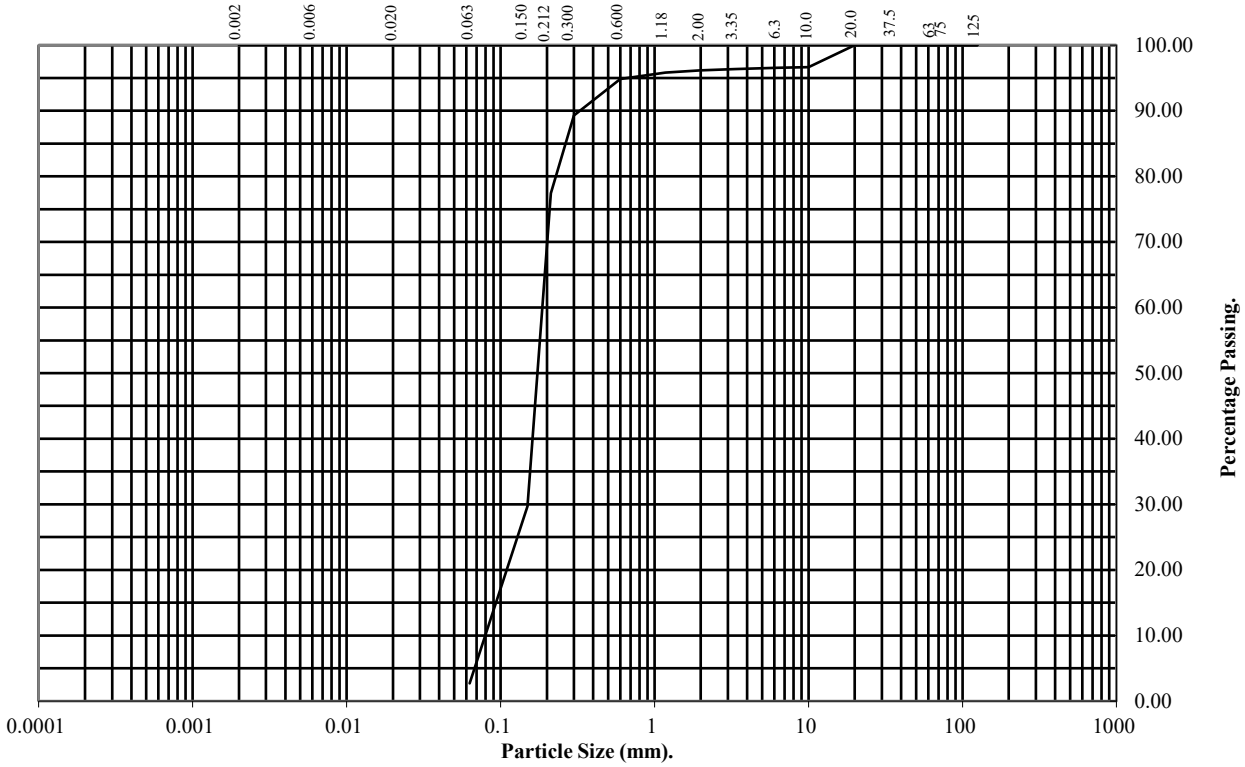
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS21** **Top Depth (m):** **0.80**

Sample Number: **Base Depth(m):** **1.40**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	97
3.35	96
2	96
1.18	96
0.6	95
0.3	89
0.212	77
0.15	30
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	93
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

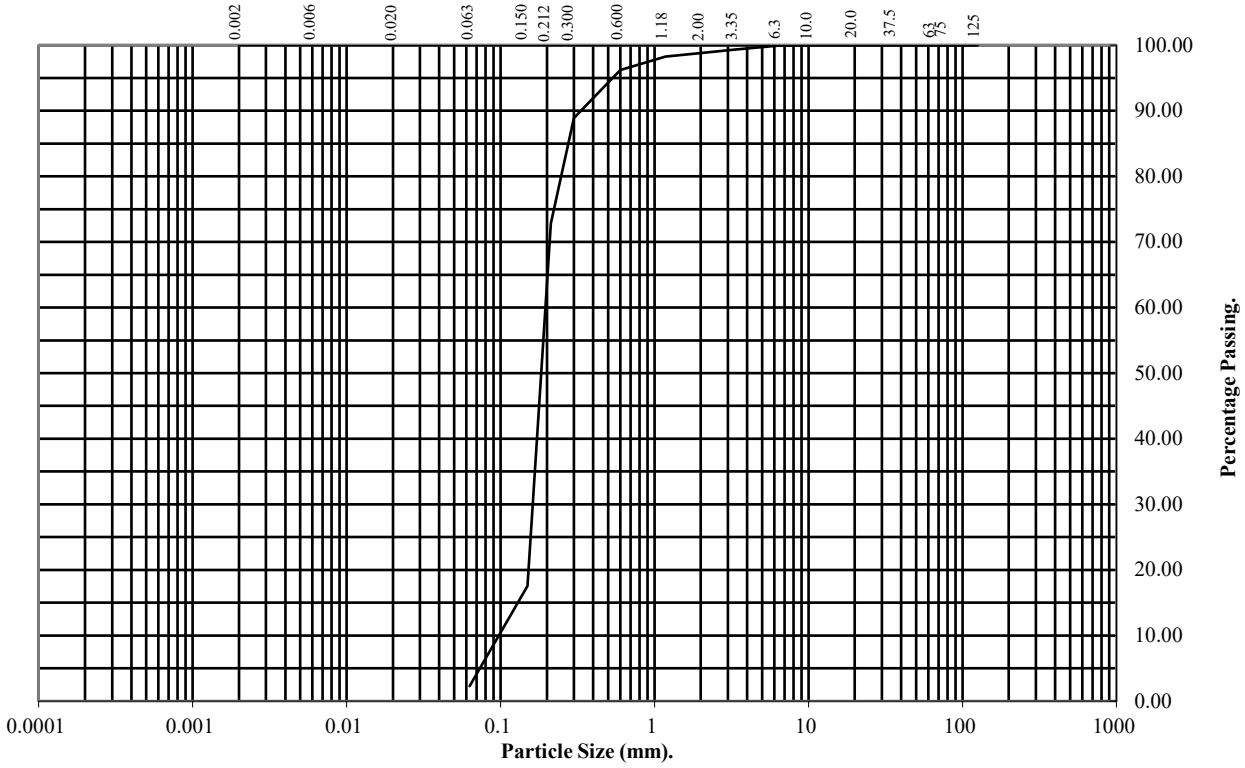
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS21** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):** **2.50**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	96
0.3	89
0.212	73
0.15	18
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	97
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

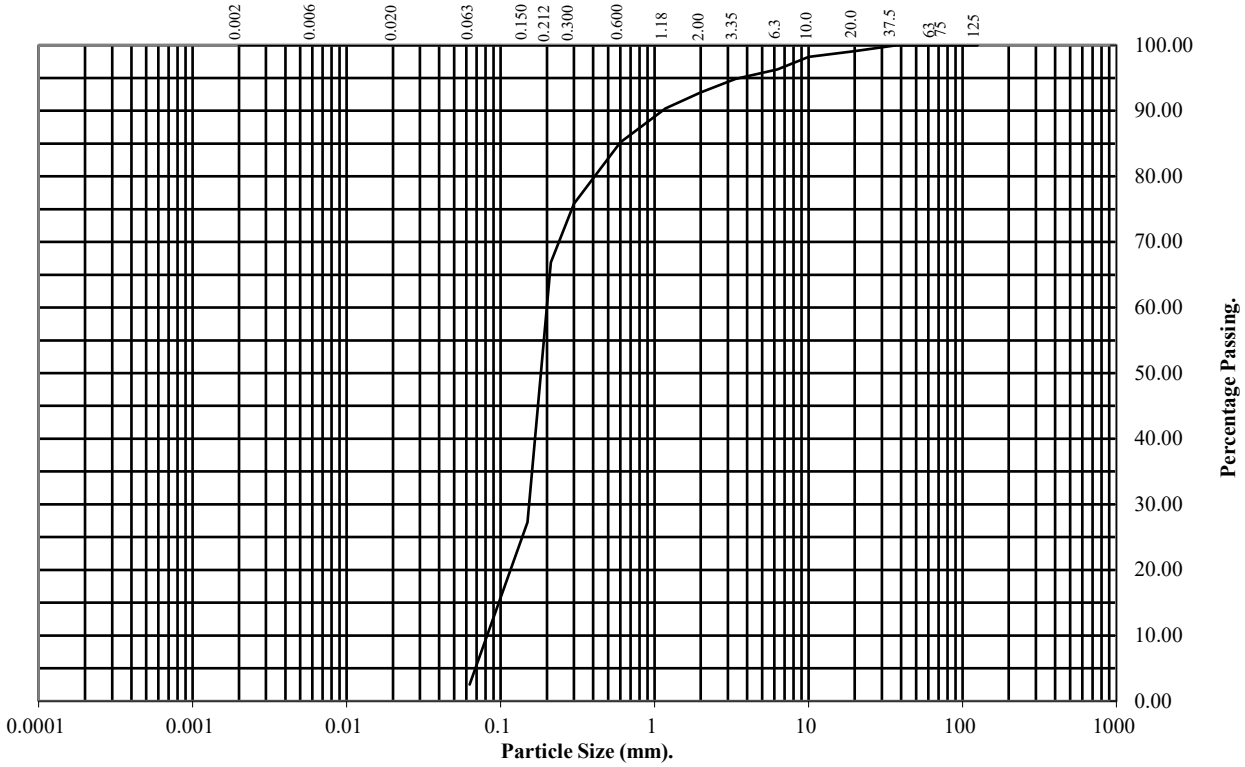
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS22** **Top Depth (m):** **0.60**

Sample Number: **Base Depth(m):** **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	98
6.3	96
3.35	95
2	93
1.18	90
0.6	85
0.3	76
0.212	67
0.15	27
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	90
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

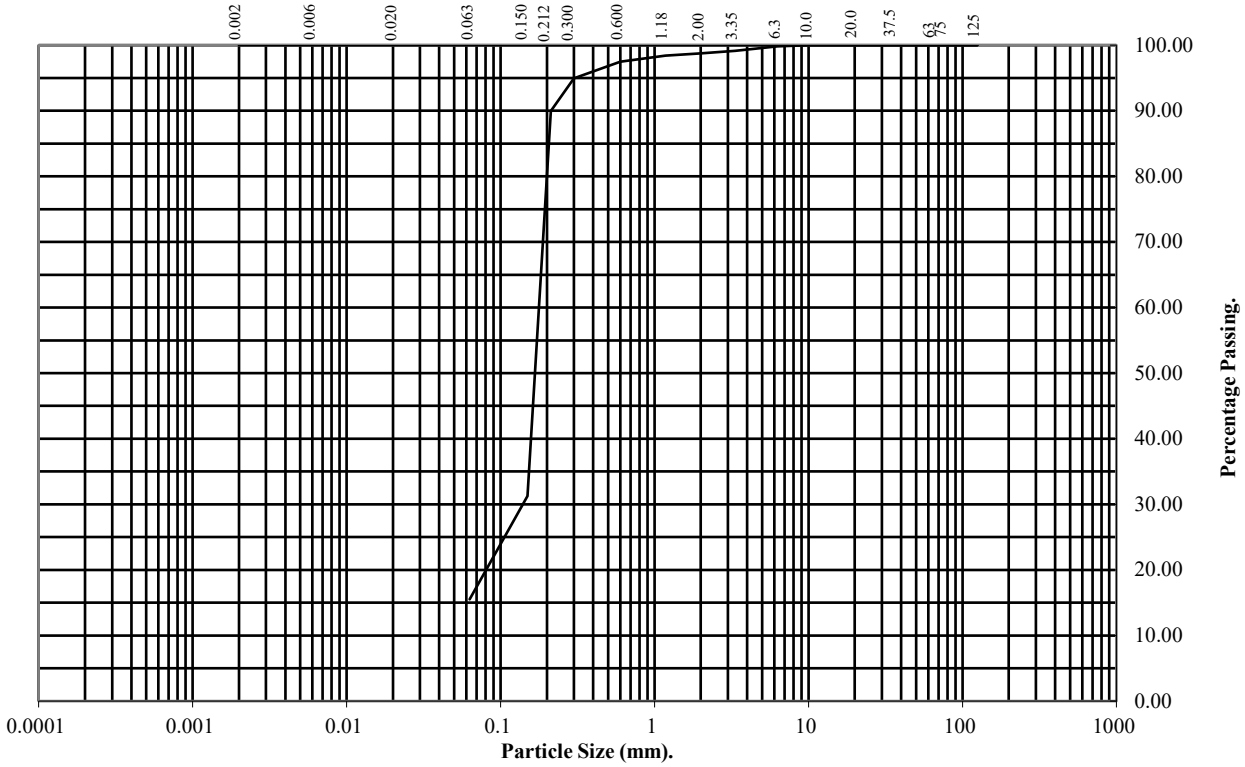
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS23** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **1.20**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	97
0.3	95
0.212	90
0.15	31
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	83
Silt/Clay	16

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	**Rogerstown Coastal Flood and Erosion Relief Scheme**	**Contract No:** PSL22/2599 **Client Ref:** 11087-19-21

PARTICLE SIZE DISTRIBUTION TEST

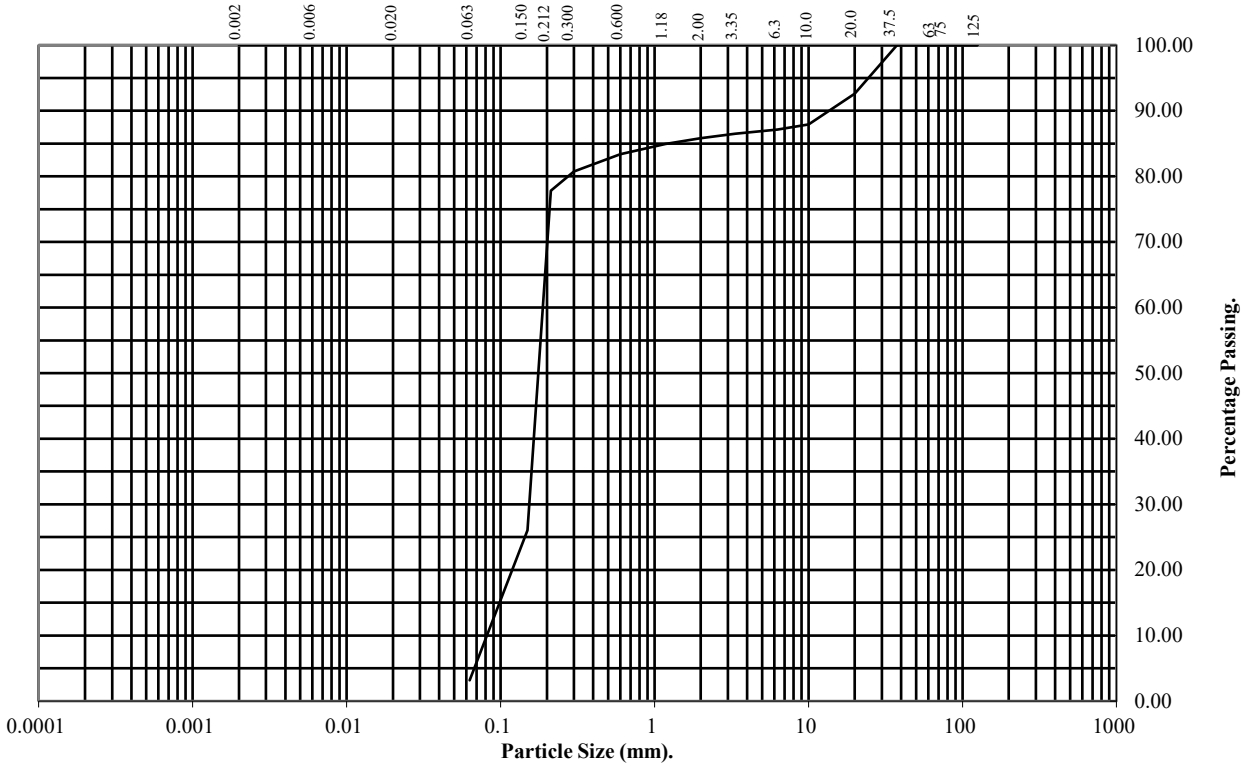
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS24** **Top Depth (m):** **0.60**

Sample Number: **Base Depth(m):** **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	88
6.3	87
3.35	86
2	86
1.18	85
0.6	83
0.3	81
0.212	78
0.15	26
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	83
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

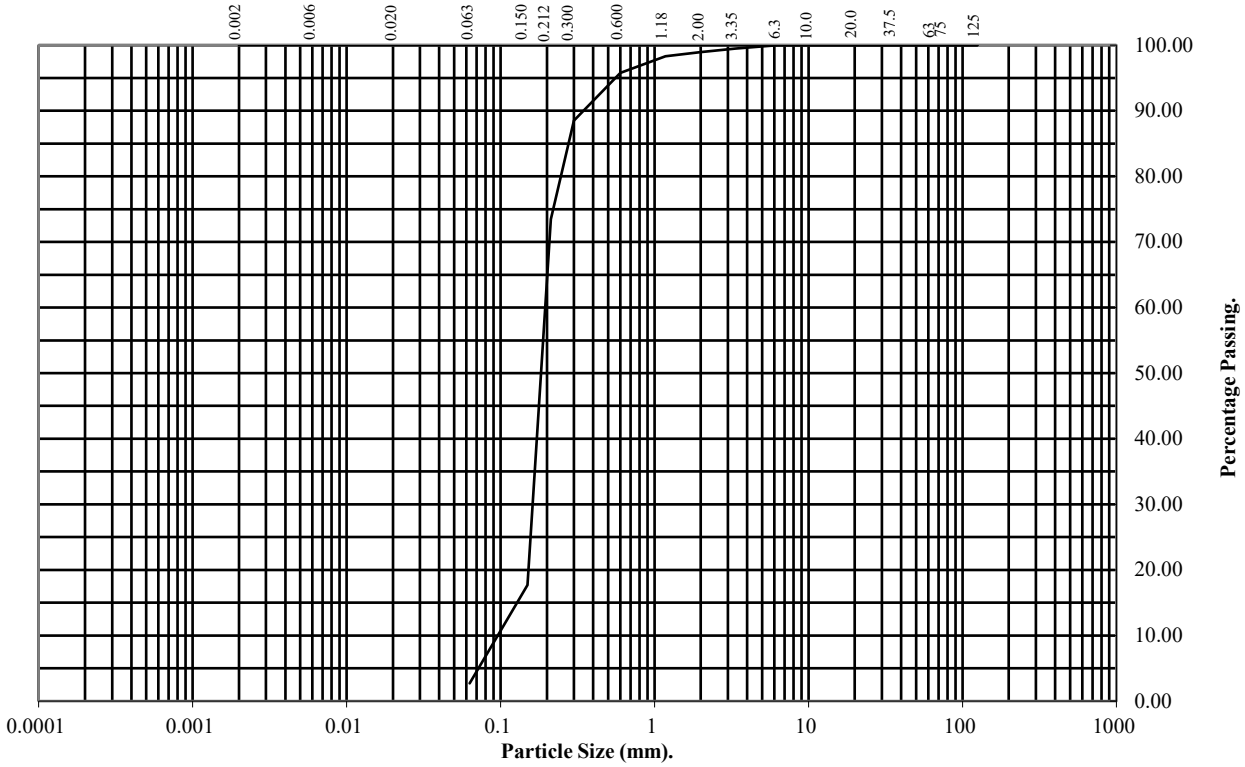
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS25** **Top Depth (m):** **0.50**

Sample Number: **Base Depth(m):** **1.50**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	96
0.3	89
0.212	73
0.15	18
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	96
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

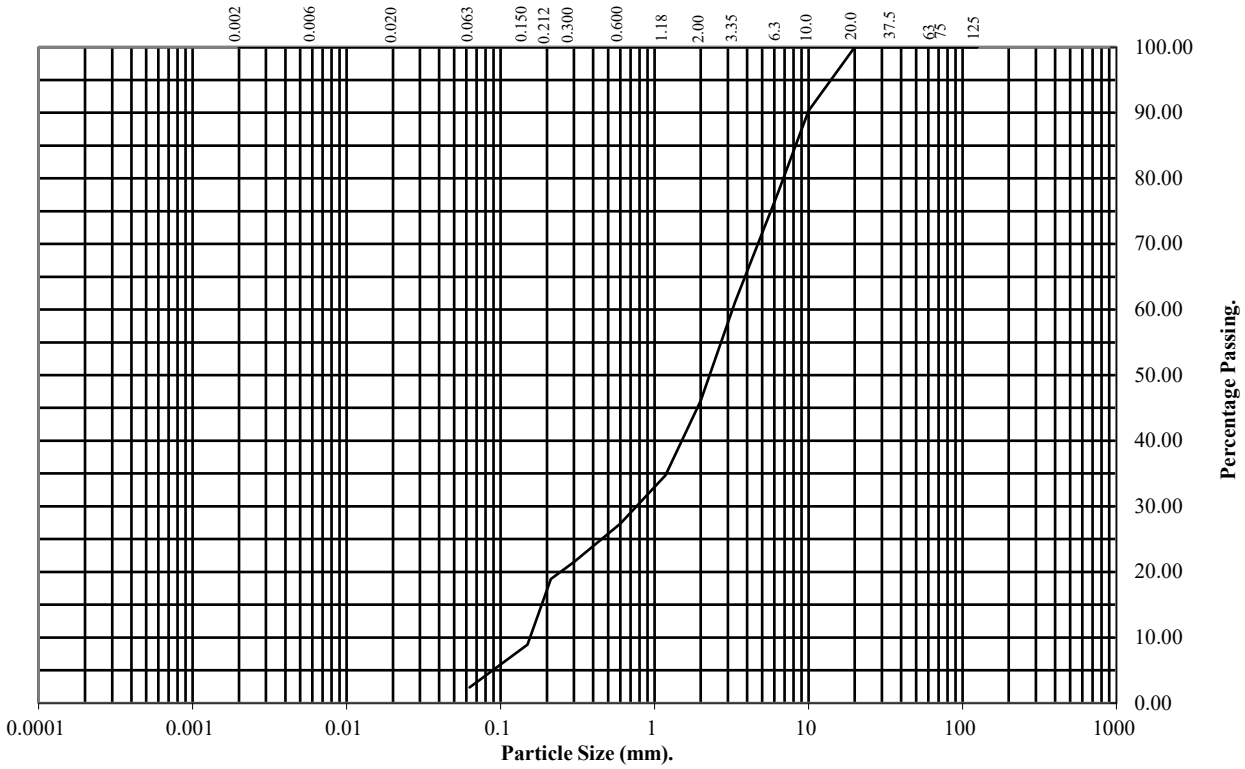
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS26** **Top Depth (m):** **0.50**

Sample Number: **Base Depth(m):** **1.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	90
6.3	78
3.35	61
2	46
1.18	35
0.6	27
0.3	21
0.212	19
0.15	9
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	54
Sand	44
Silt/Clay	2

Remarks:

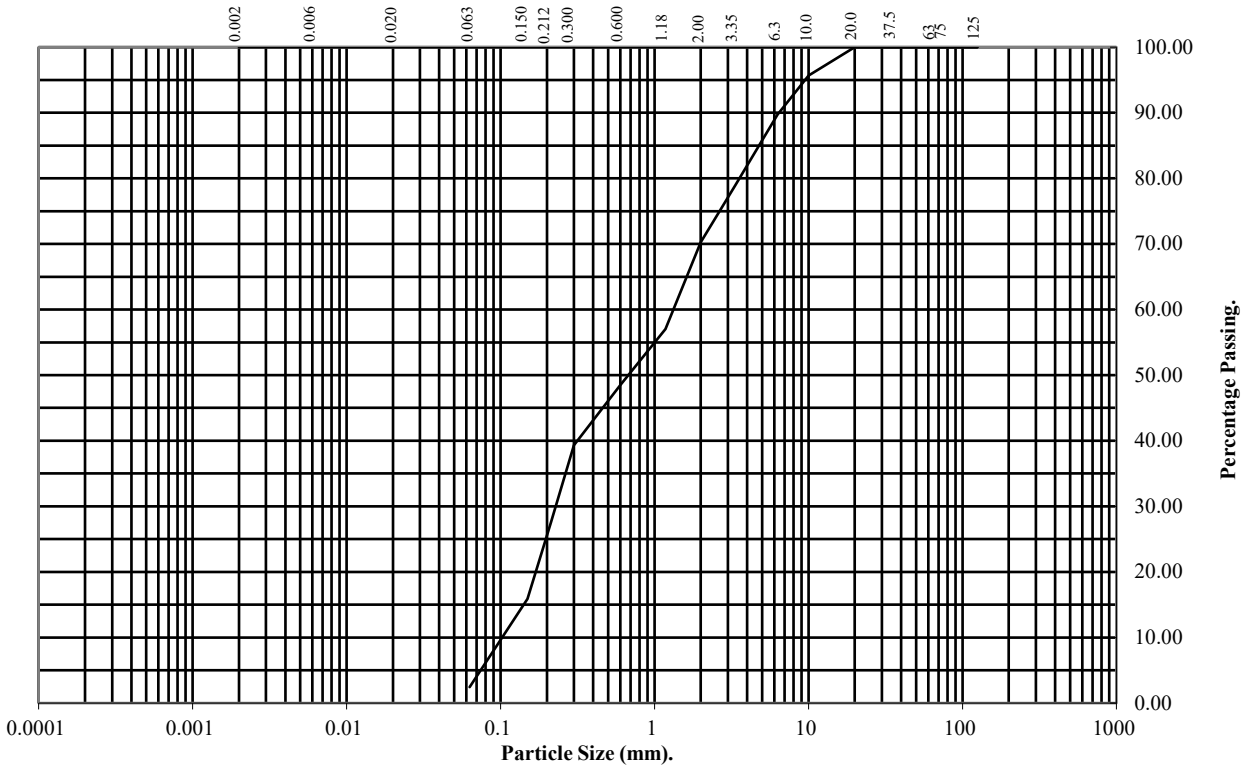
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS26**	**Top Depth (m):**	**1.75**
Sample Number:		**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	90
3.35	79
2	70
1.18	57
0.6	49
0.3	39
0.212	27
0.15	16
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	68
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

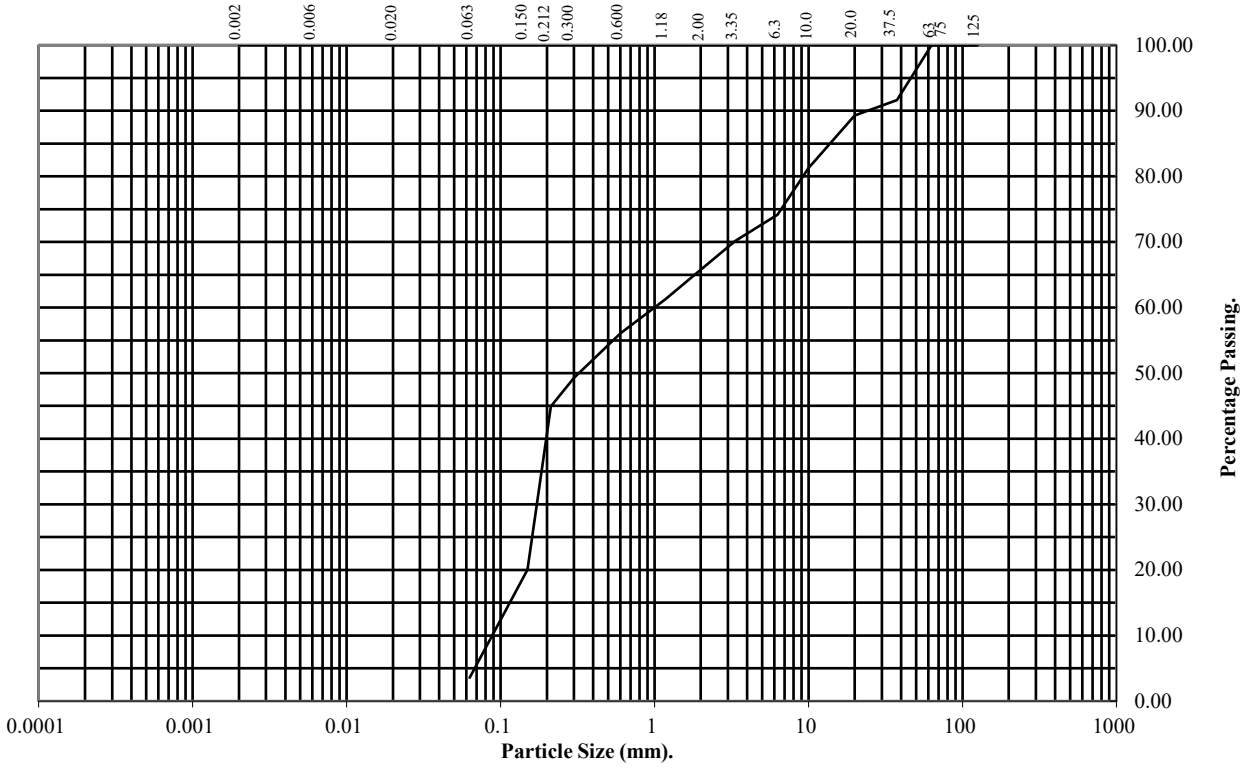
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS27** **Top Depth (m):** **0.30**

Sample Number: **Base Depth(m):** **0.65**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	89
10	81
6.3	74
3.35	70
2	66
1.18	61
0.6	56
0.3	49
0.212	45
0.15	20
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	62
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

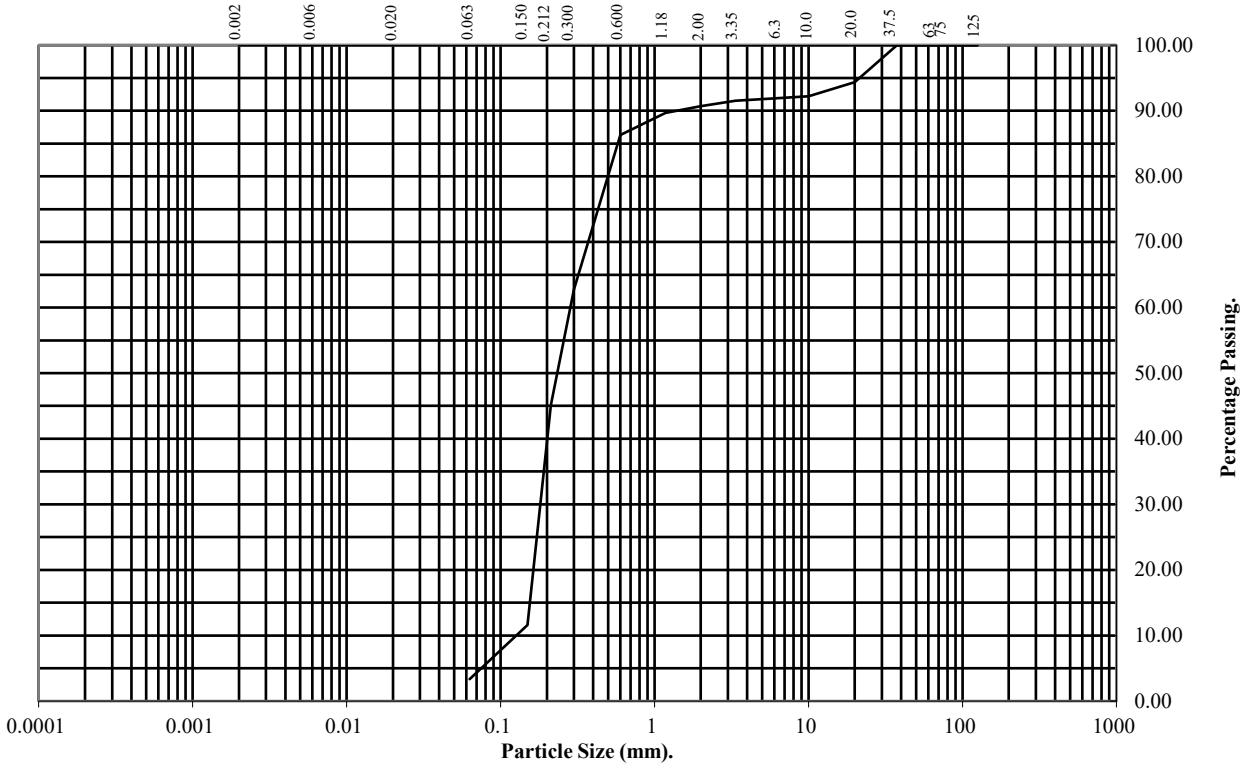
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS28** **Top Depth (m):** **0.45**

Sample Number: **Base Depth(m):** **3.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	92
6.3	92
3.35	92
2	91
1.18	90
0.6	86
0.3	63
0.212	45
0.15	12
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	88
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

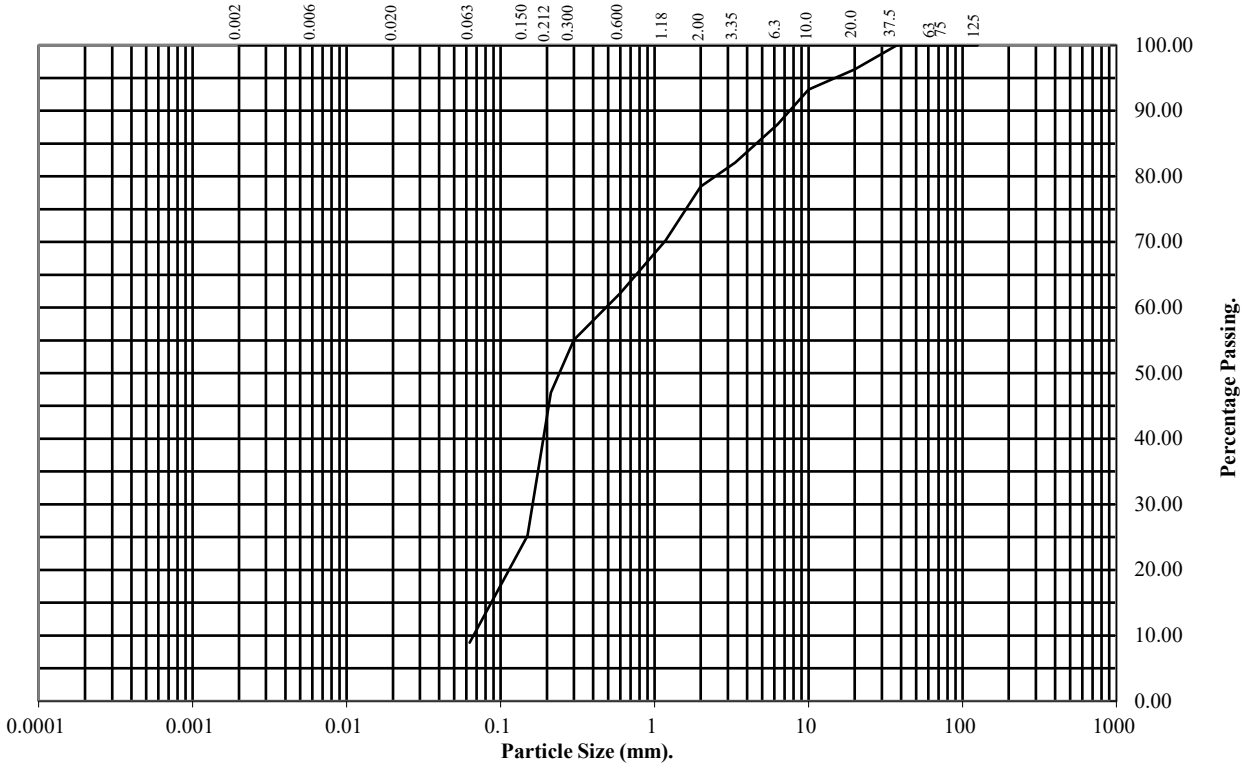
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS29** **Top Depth (m):** **0.30**

Sample Number: **Base Depth(m):** **1.40**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	93
6.3	88
3.35	82
2	78
1.18	70
0.6	62
0.3	55
0.212	47
0.15	25
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	22
Sand	69
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

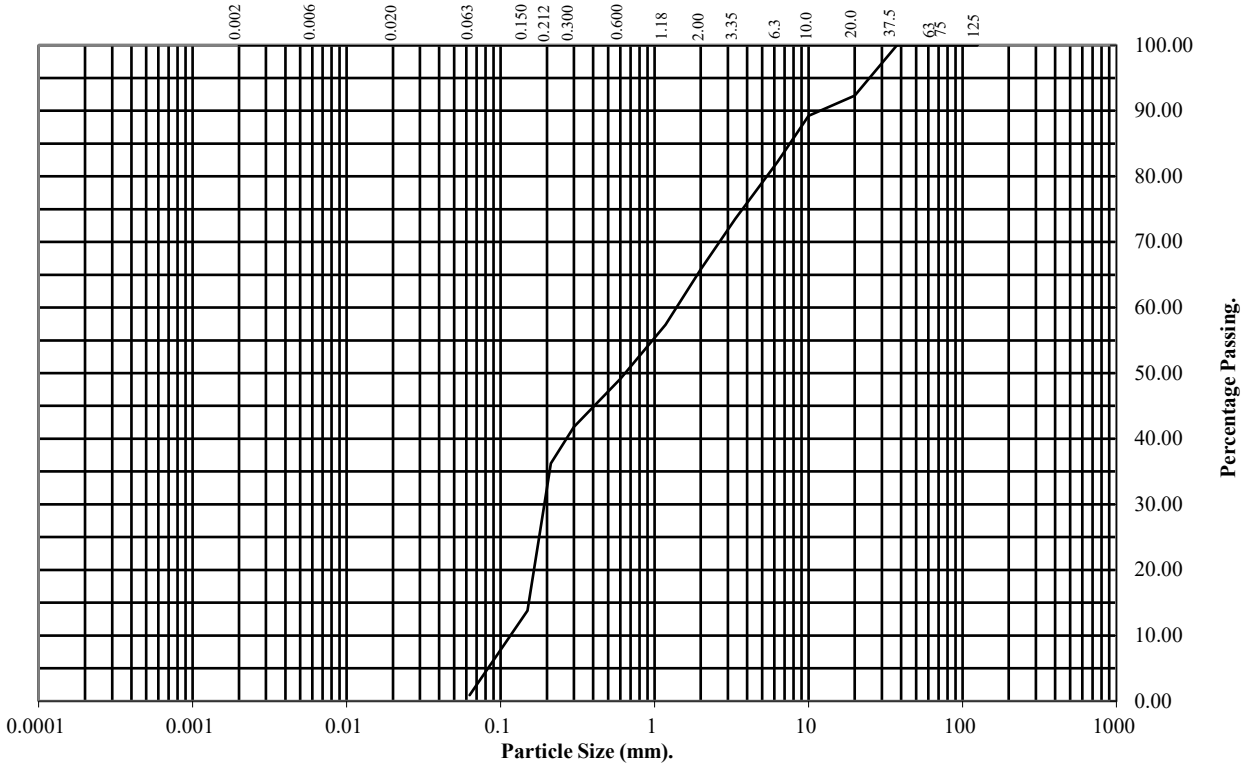
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS29** **Top Depth (m):** **1.40**

Sample Number: **Base Depth(m):** **2.50**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	89
6.3	82
3.35	74
2	66
1.18	57
0.6	49
0.3	42
0.212	36
0.15	14
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	65
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

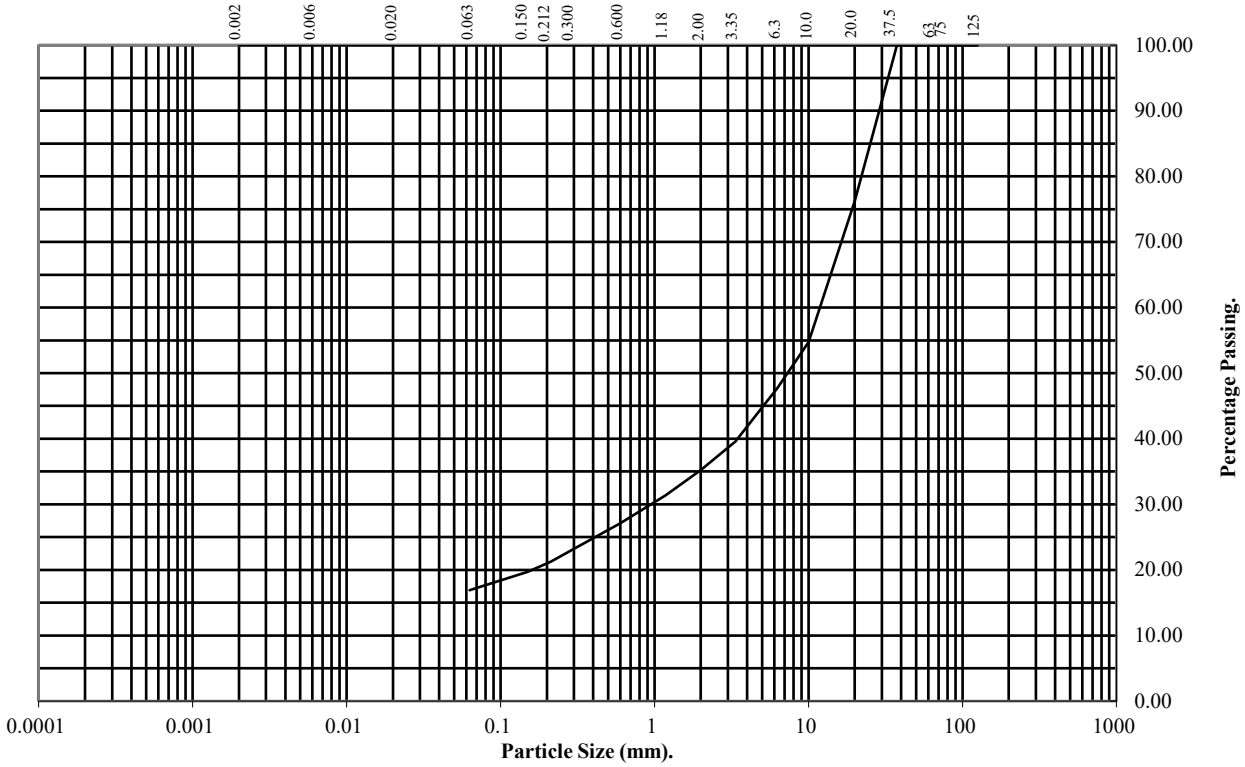
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS30** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **1.20**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	76
10	55
6.3	48
3.35	40
2	35
1.18	31
0.6	27
0.3	23
0.212	21
0.15	20
0.063	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	18
Silt/Clay	17

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

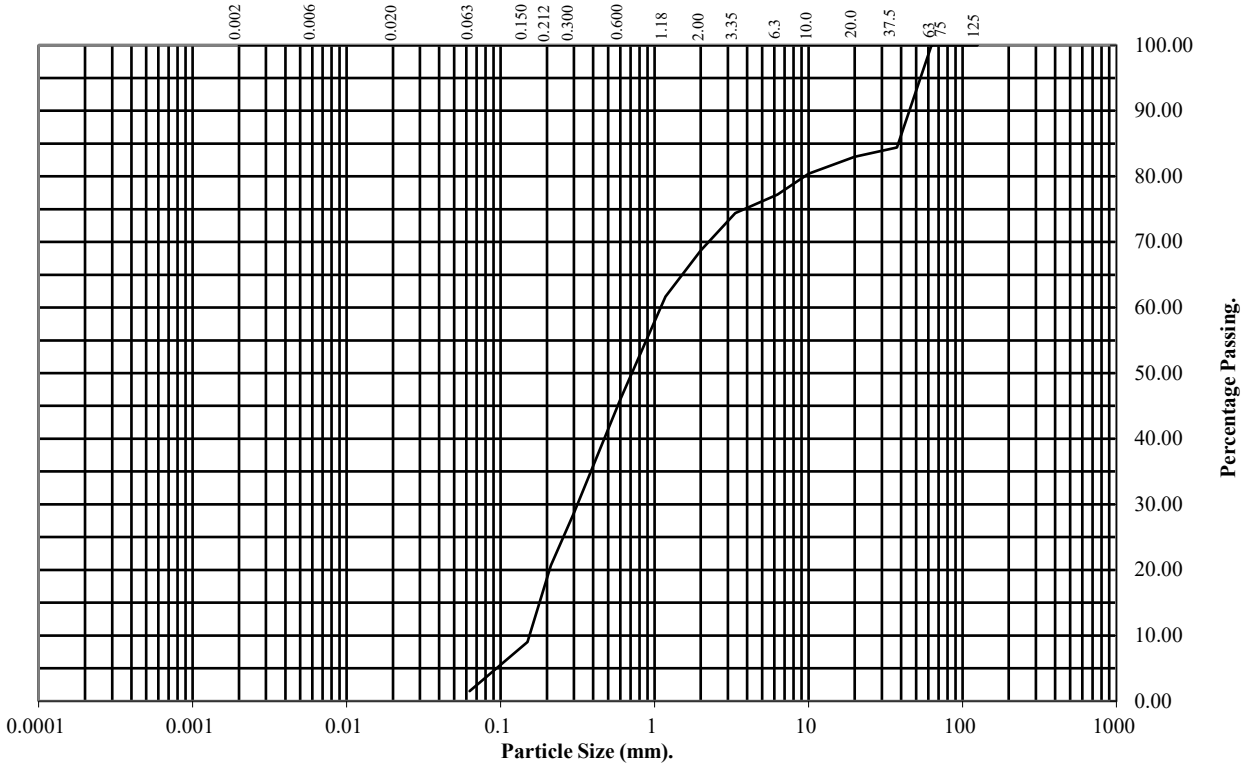
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS30** **Top Depth (m):** **1.20**

Sample Number: **Base Depth(m):** **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	84
20	83
10	80
6.3	77
3.35	74
2	69
1.18	62
0.6	46
0.3	29
0.212	21
0.15	9
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	67
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

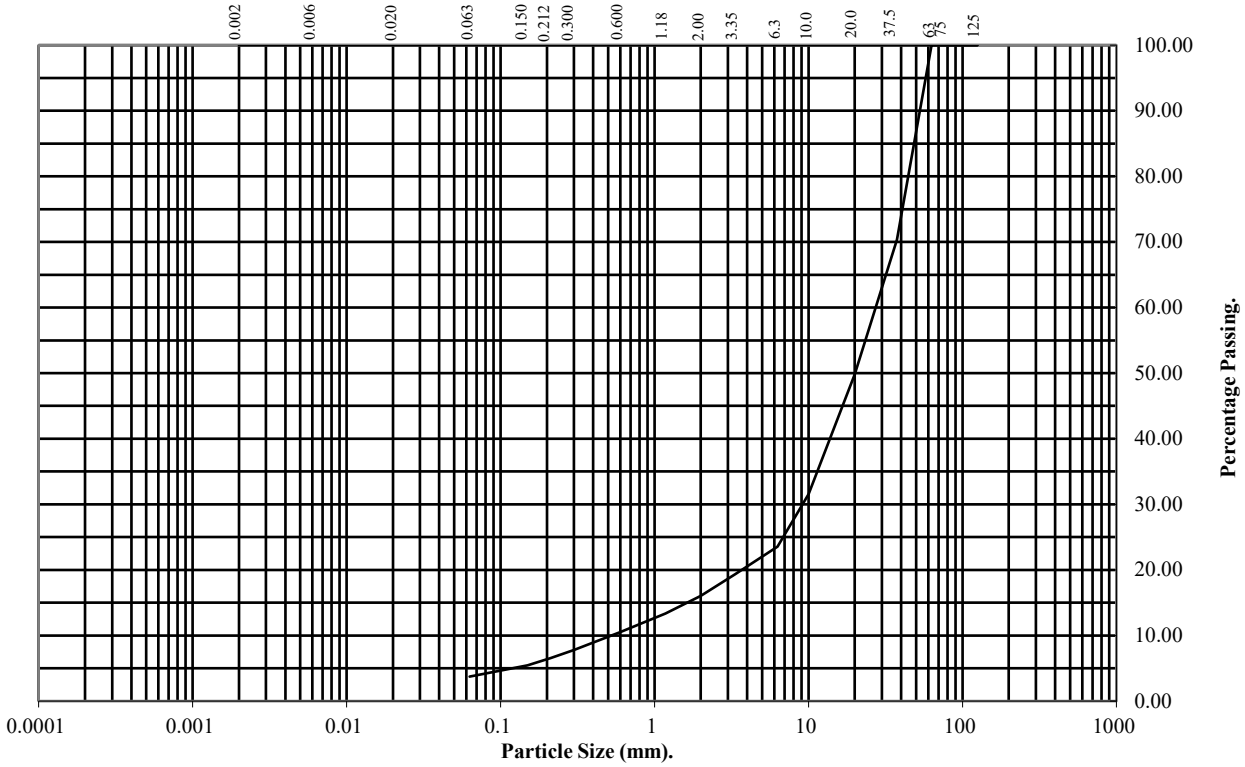
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS37** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **0.75**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	70
20	50
10	32
6.3	24
3.35	19
2	16
1.18	13
0.6	10
0.3	8
0.212	7
0.15	5
0.063	4

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

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

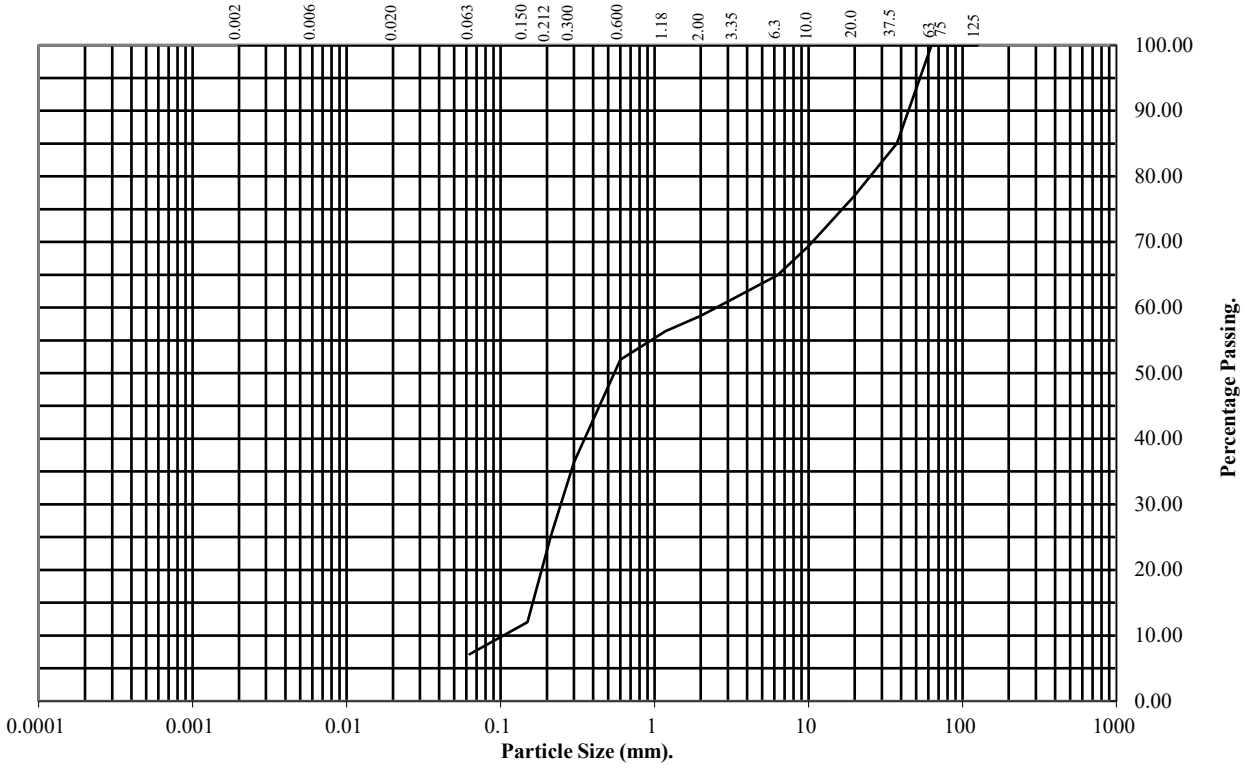
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS37** **Top Depth (m):** **1.10**

Sample Number: **Base Depth(m):** **1.40**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	85
20	77
10	69
6.3	65
3.35	62
2	59
1.18	56
0.6	52
0.3	36
0.212	25
0.15	12
0.063	7

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

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

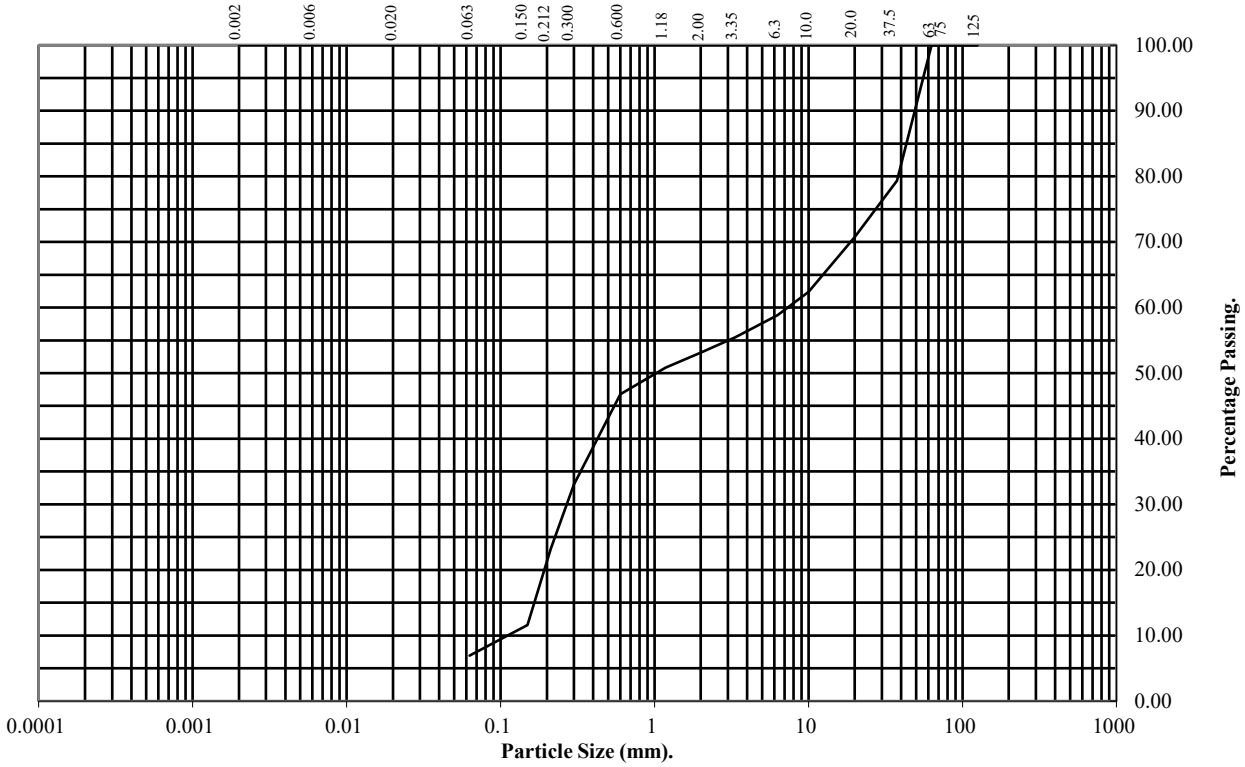
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS38** **Top Depth (m):** **0.60**

Sample Number: **Base Depth(m):** **1.80**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	79
20	71
10	62
6.3	59
3.35	55
2	53
1.18	51
0.6	47
0.3	33
0.212	23
0.15	12
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	46
Silt/Clay	7

Remarks:

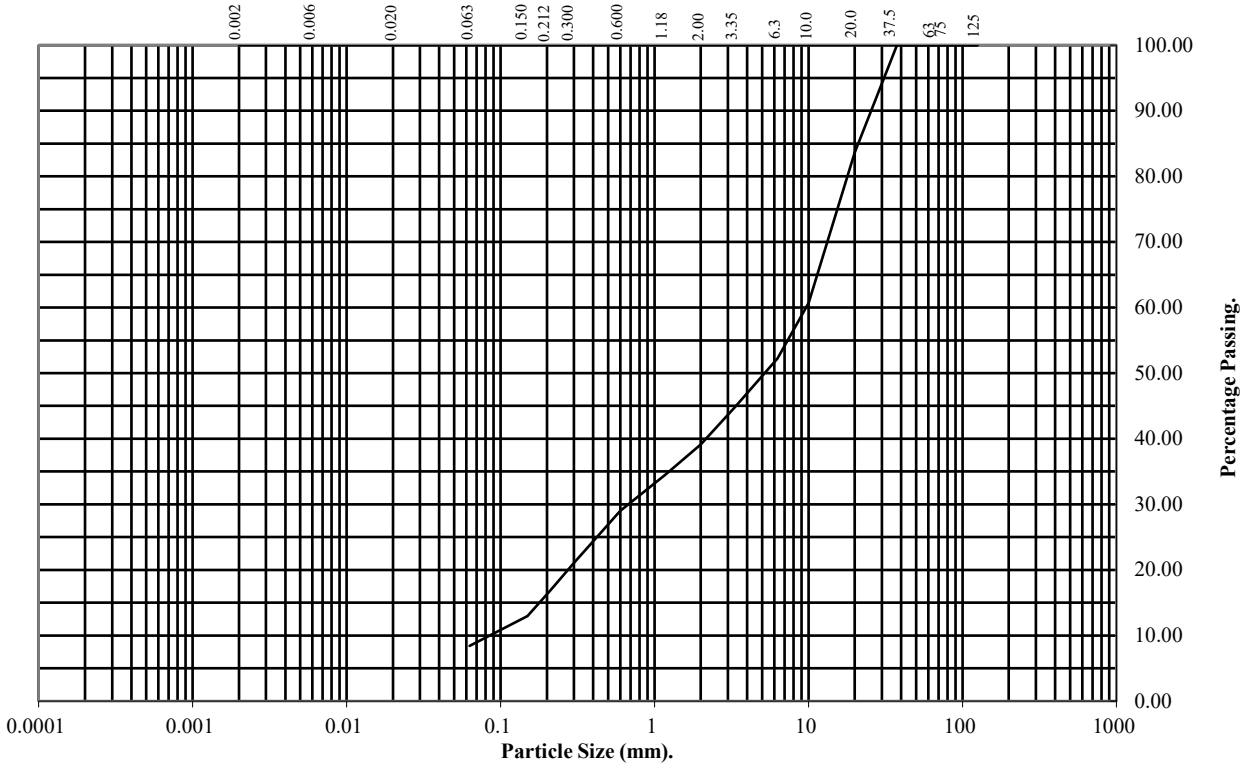
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS38**	**Top Depth (m):**	**2.90**
Sample Number:		**Base Depth(m):**	**3.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	61
6.3	52
3.35	45
2	39
1.18	35
0.6	29
0.3	21
0.212	17
0.15	13
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	61
Sand	31
Silt/Clay	8

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

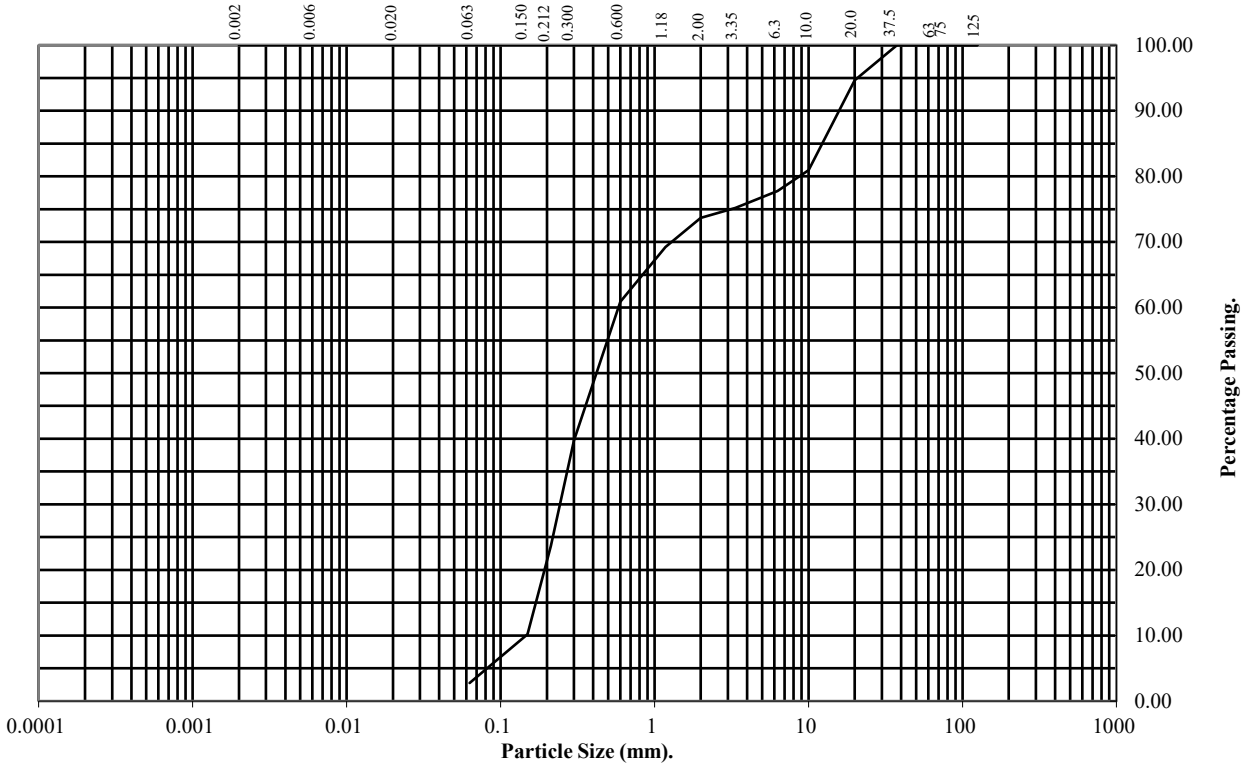
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS39** **Top Depth (m):** **0.90**

Sample Number: **Base Depth(m):** **1.90**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	81
6.3	78
3.35	75
2	74
1.18	69
0.6	61
0.3	40
0.212	24
0.15	10
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	71
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

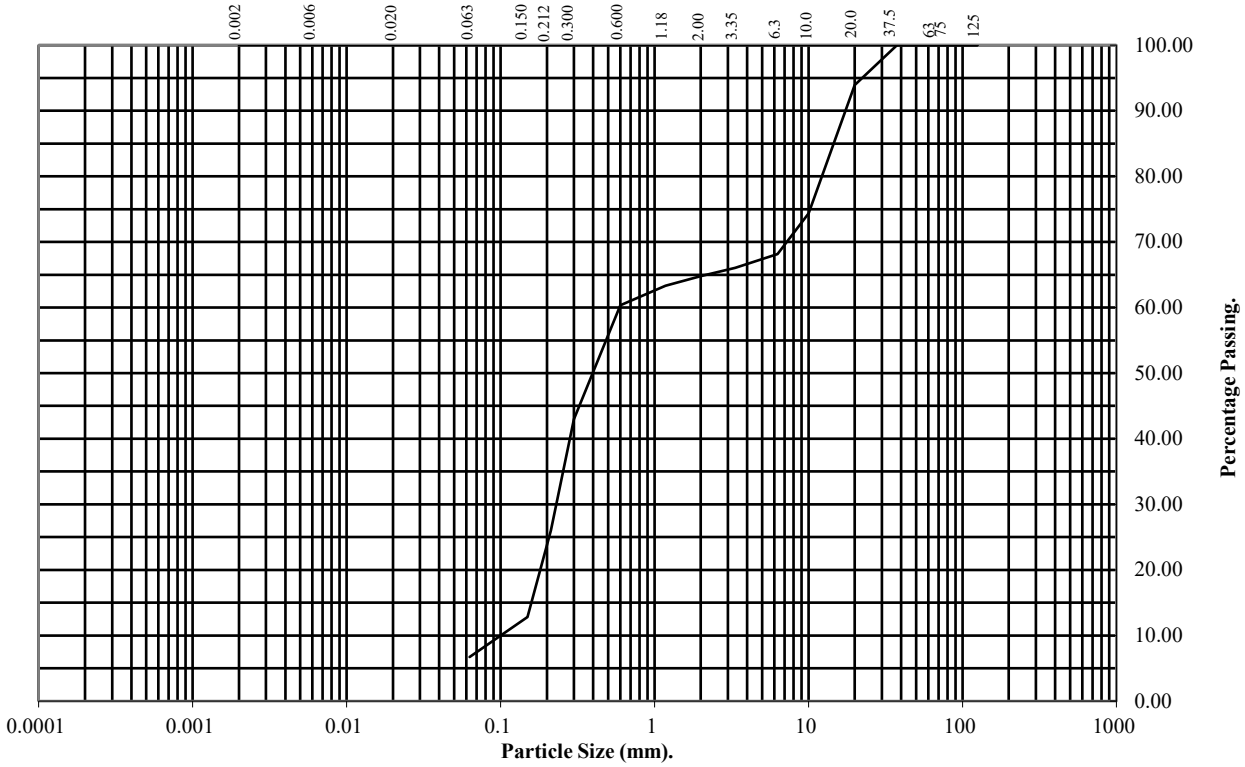
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS39** **Top Depth (m):** **1.90**

Sample Number: **Base Depth(m):** **3.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	74
6.3	68
3.35	66
2	65
1.18	63
0.6	60
0.3	43
0.212	26
0.15	13
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	35
Sand	58
Silt/Clay	7

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

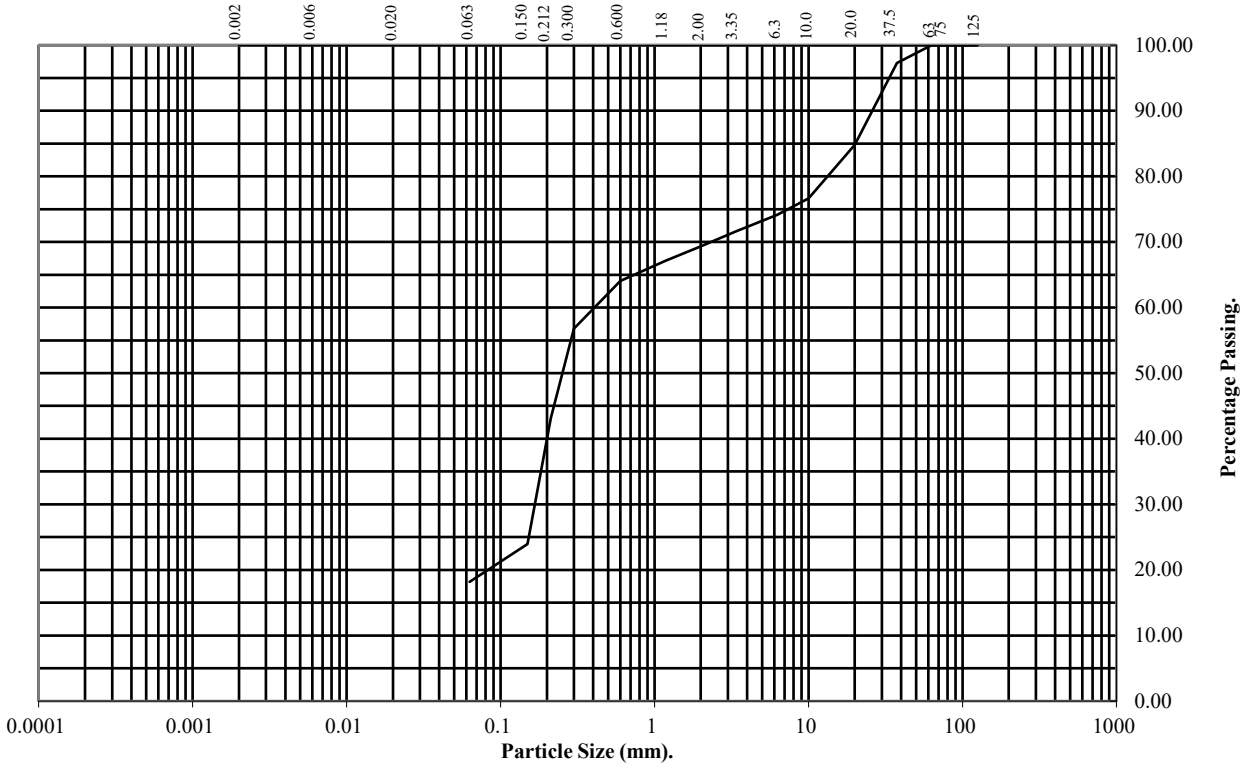
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS40** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **1.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	97
20	85
10	77
6.3	74
3.35	72
2	69
1.18	67
0.6	64
0.3	57
0.212	43
0.15	24
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	51
Silt/Clay	18

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

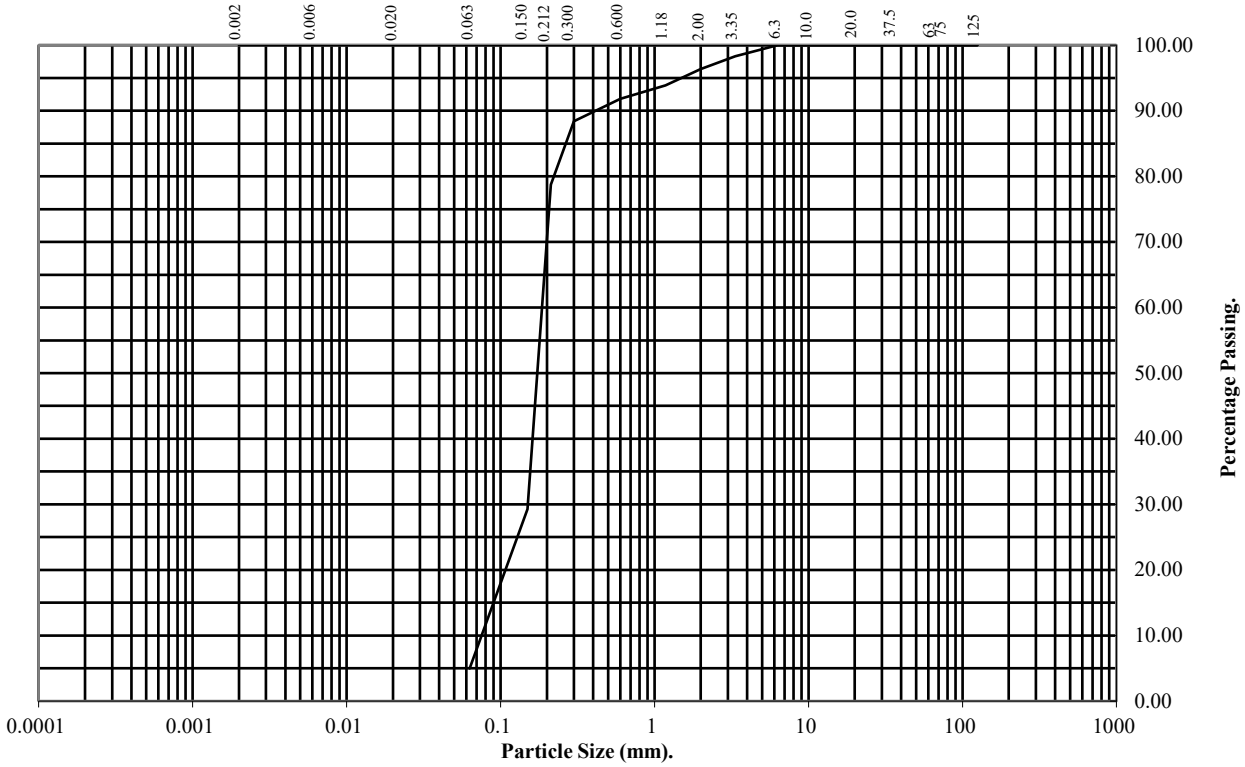
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS40** **Top Depth (m):** **2.50**

Sample Number: **Base Depth(m):** **4.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	96
1.18	94
0.6	92
0.3	88
0.212	79
0.15	29
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	91
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Rogerstown Coastal Flood and Erosion Relief Scheme

Contract No: PSL22/2599

Client Ref: 11087-19-21

PARTICLE SIZE DISTRIBUTION TEST

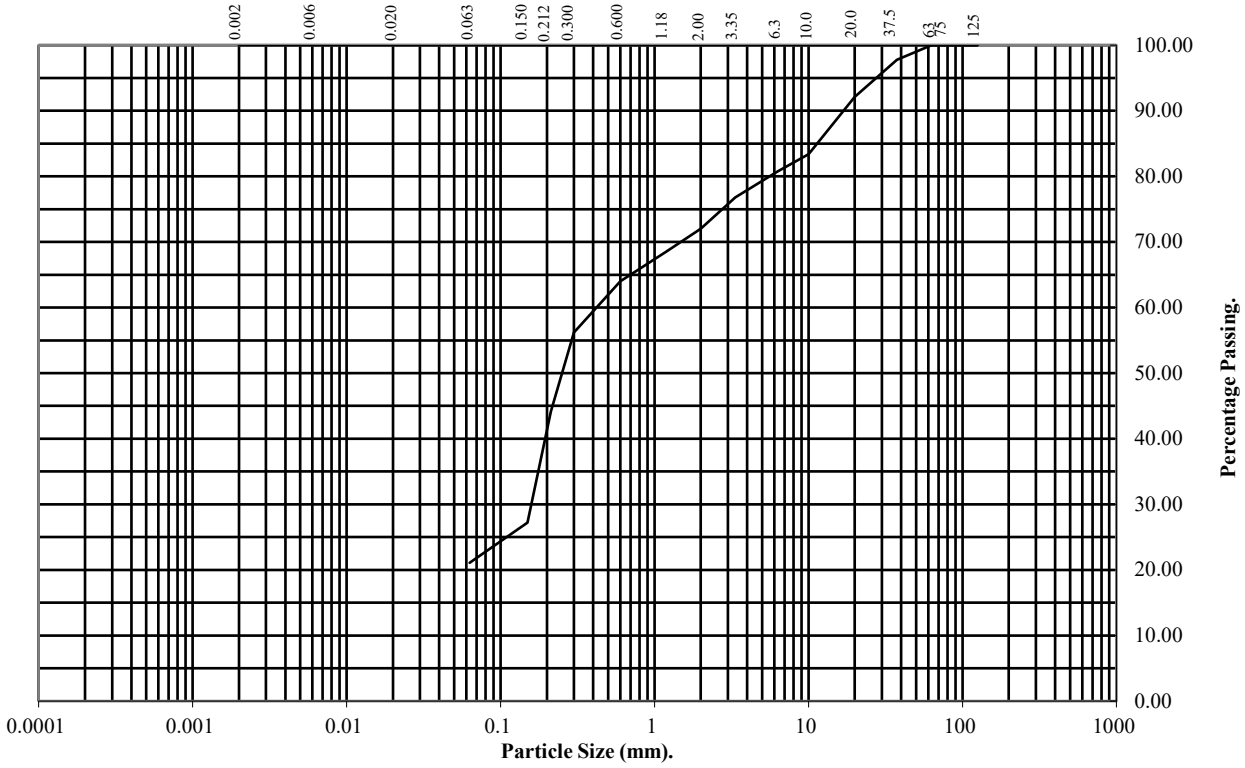
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS41** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **0.60**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	98
20	92
10	83
6.3	81
3.35	77
2	72
1.18	68
0.6	64
0.3	56
0.212	44
0.15	27
0.063	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	51
Silt/Clay	21

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

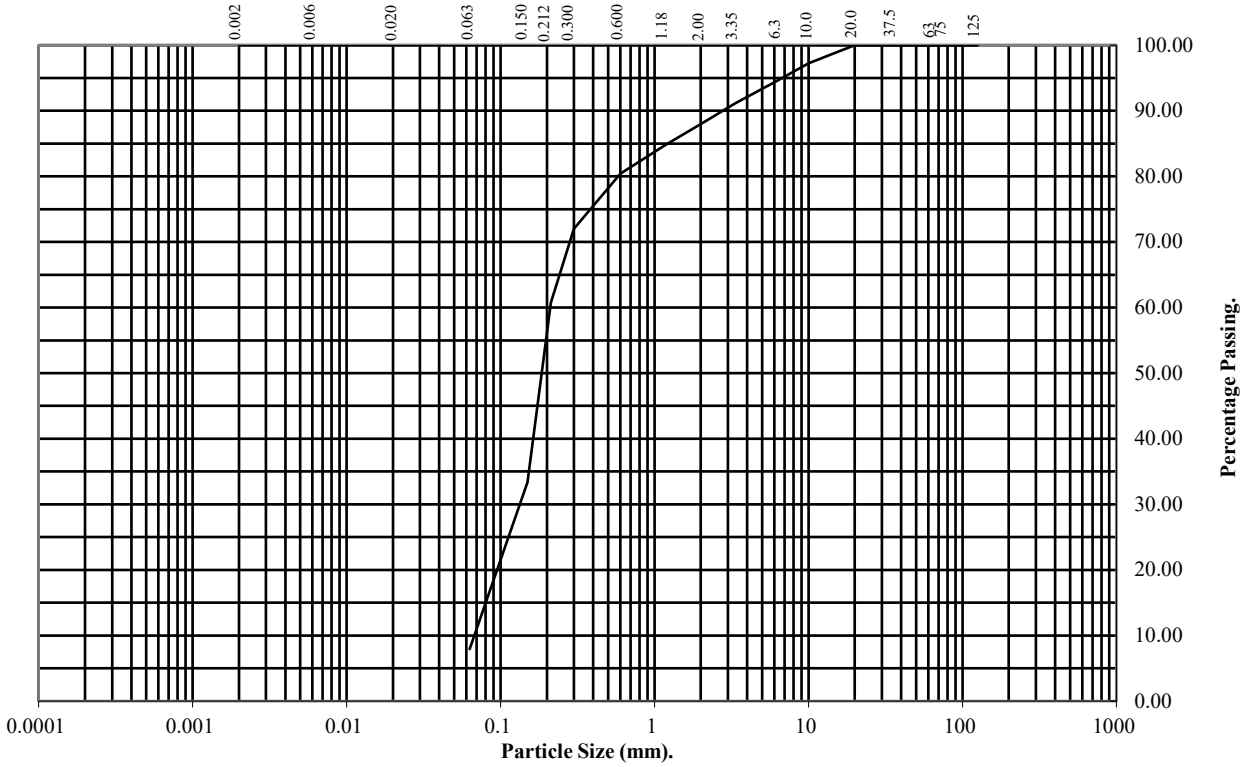
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS41** **Top Depth (m):** **0.95**

Sample Number: **Base Depth(m):** **1.30**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	95
3.35	91
2	88
1.18	85
0.6	80
0.3	72
0.212	61
0.15	33
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	80
Silt/Clay	8

Remarks:

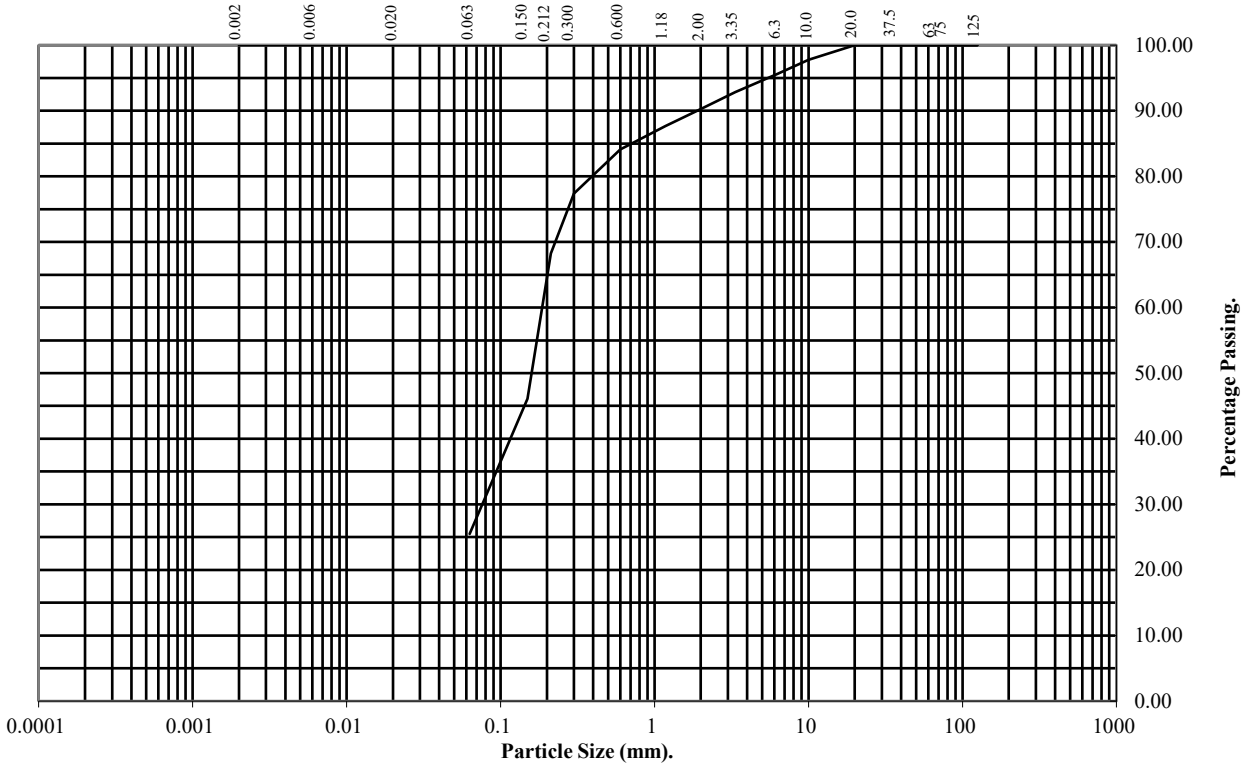
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS41**	**Top Depth (m):**	**3.85**
Sample Number:		**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	96
3.35	93
2	90
1.18	88
0.6	84
0.3	77
0.212	68
0.15	46
0.063	25

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	65
Silt/Clay	25

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

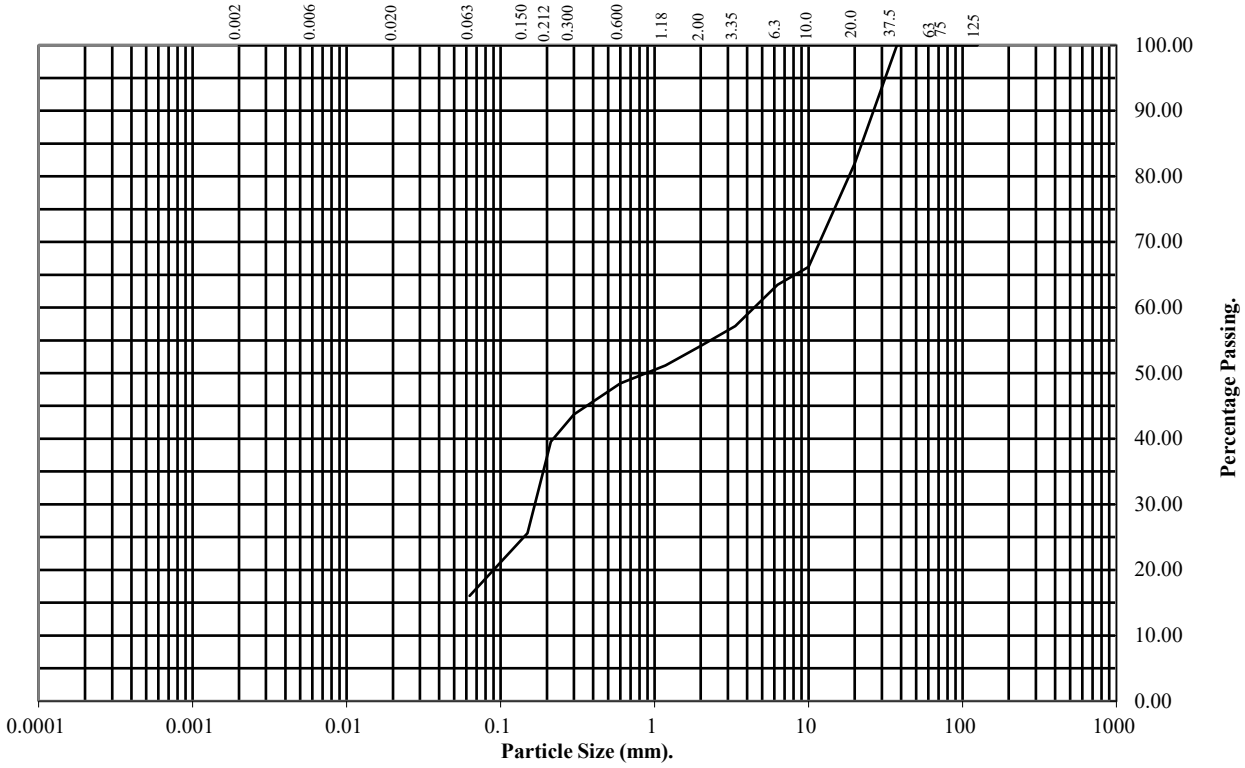
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS42** **Top Depth (m):** **0.00**

Sample Number: **Base Depth(m):** **0.94**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	82
10	66
6.3	63
3.35	57
2	54
1.18	51
0.6	48
0.3	44
0.212	40
0.15	26
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	38
Silt/Clay	16

Remarks:

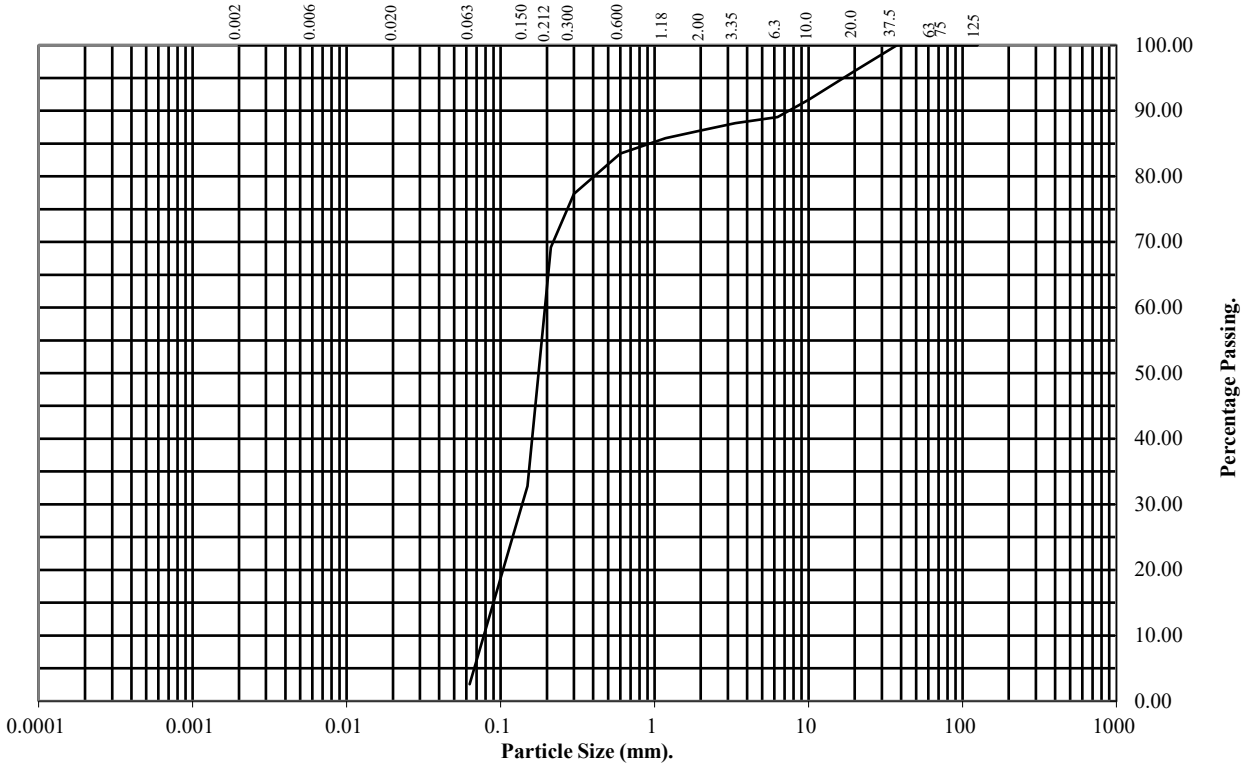
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS42**	**Top Depth (m):**	**1.50**
Sample Number:		**Base Depth(m):**	**2.65**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	92
6.3	89
3.35	88
2	87
1.18	86
0.6	83
0.3	77
0.212	69
0.15	33
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	84
Silt/Clay	3

Remarks:

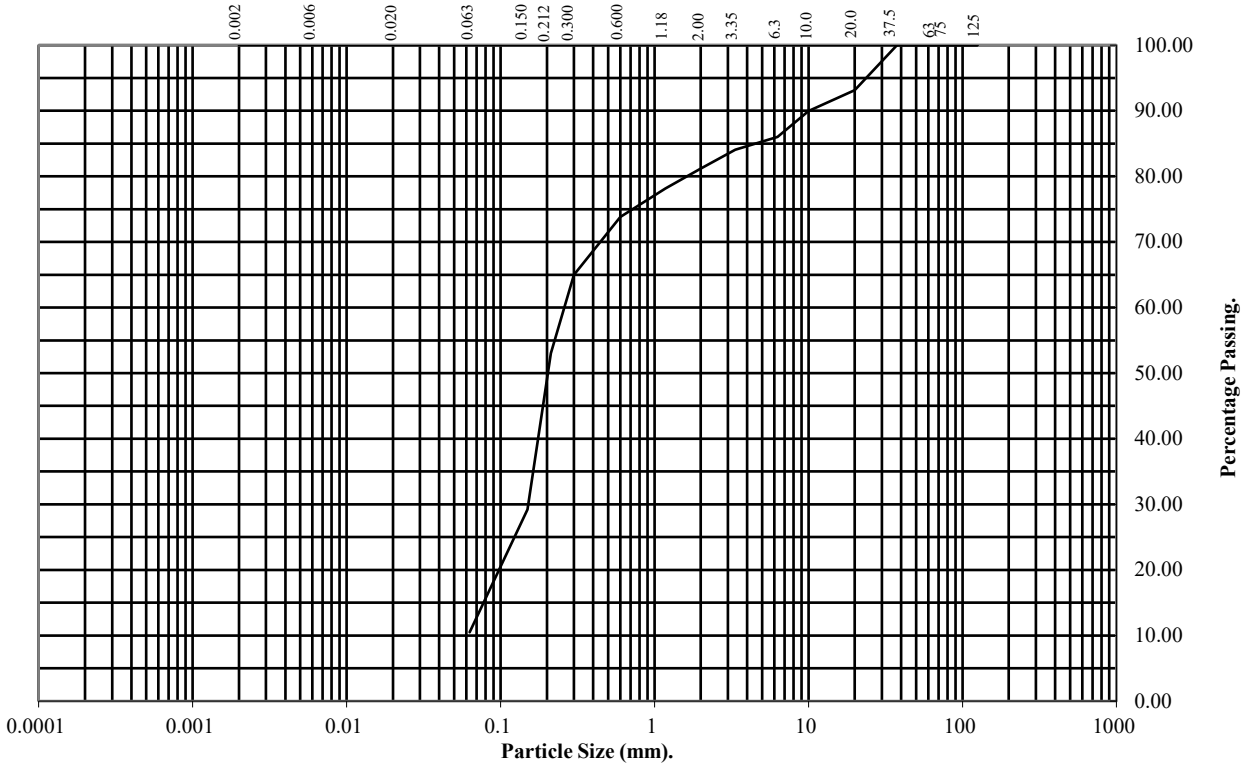
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS43**	**Top Depth (m):**	**0.70**
Sample Number:		**Base Depth(m):**	**1.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	90
6.3	86
3.35	84
2	81
1.18	78
0.6	74
0.3	65
0.212	53
0.15	29
0.063	10

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	71
Silt/Clay	10

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

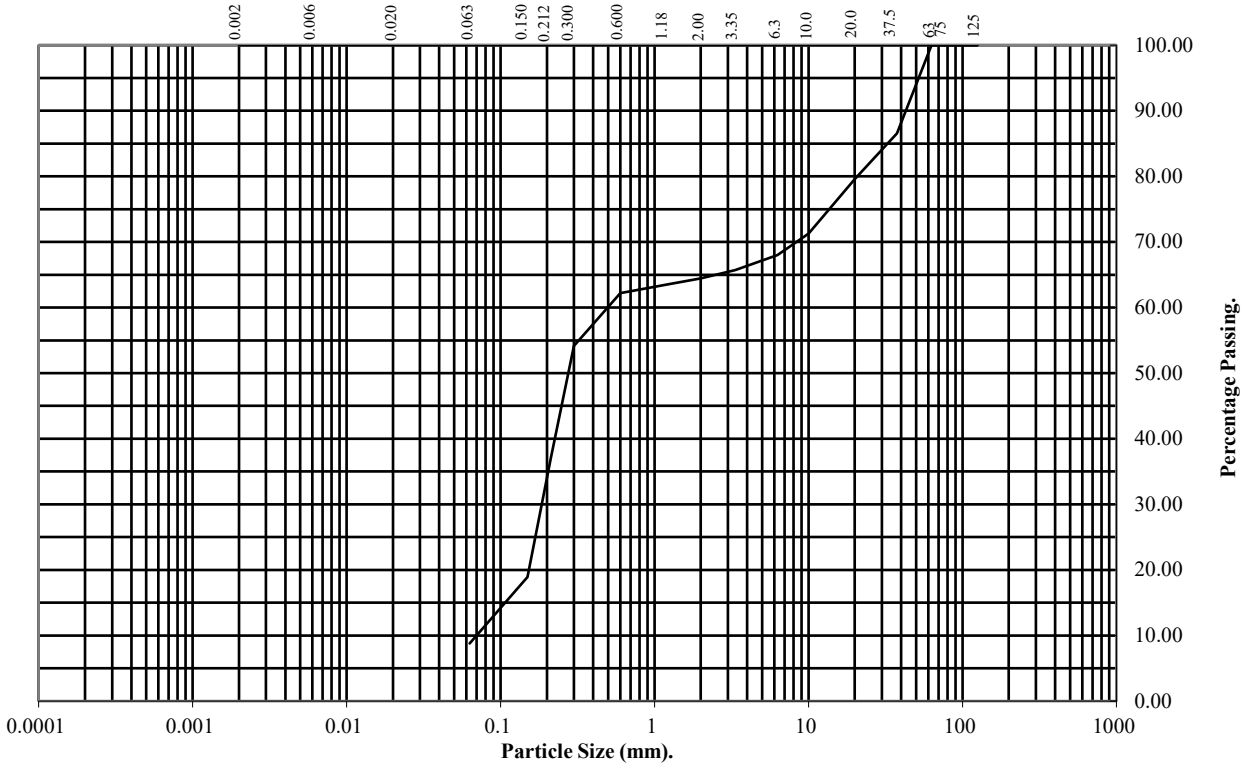
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS43** **Top Depth (m):** **1.50**

Sample Number: **Base Depth(m):** **3.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	80
10	71
6.3	68
3.35	66
2	64
1.18	63
0.6	62
0.3	54
0.212	37
0.15	19
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	36
Sand	55
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

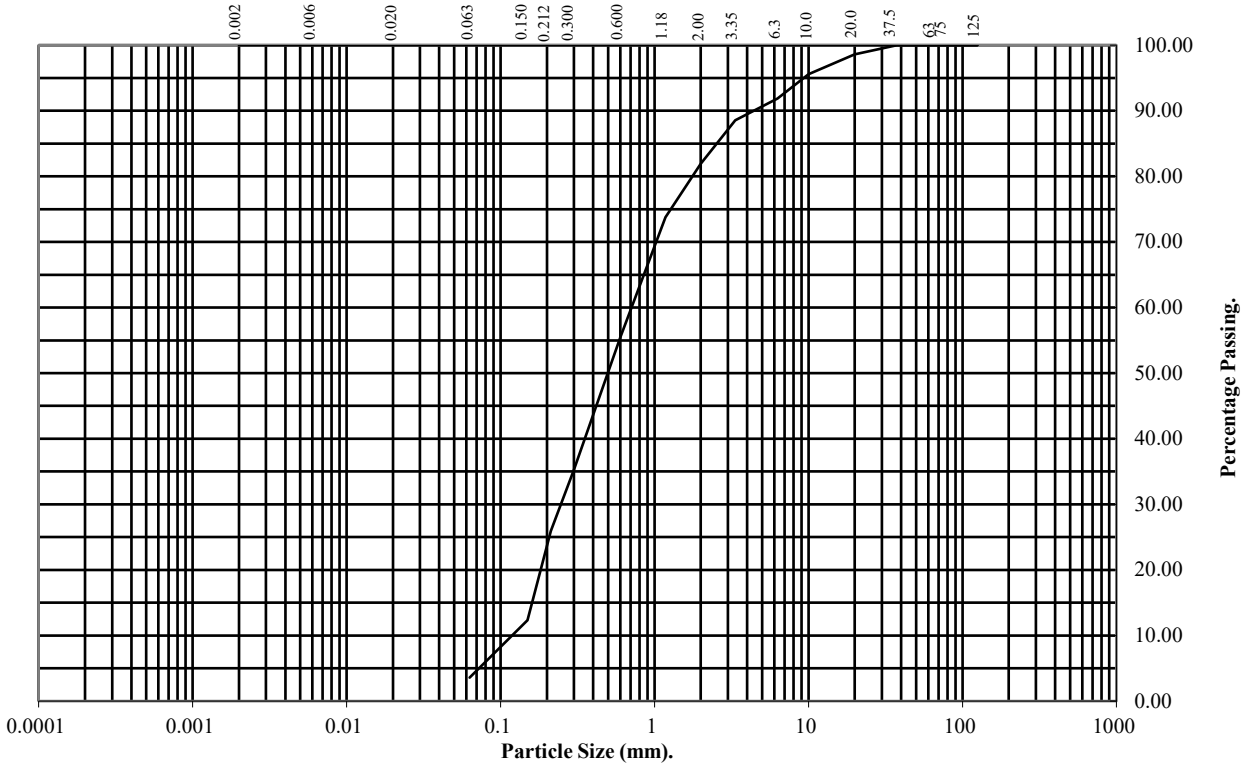
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **WS44** **Top Depth (m):** **0.30**

Sample Number: **Base Depth(m):** **0.60**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	96
6.3	92
3.35	89
2	82
1.18	74
0.6	55
0.3	35
0.212	26
0.15	12
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	78
Silt/Clay	4

Remarks:

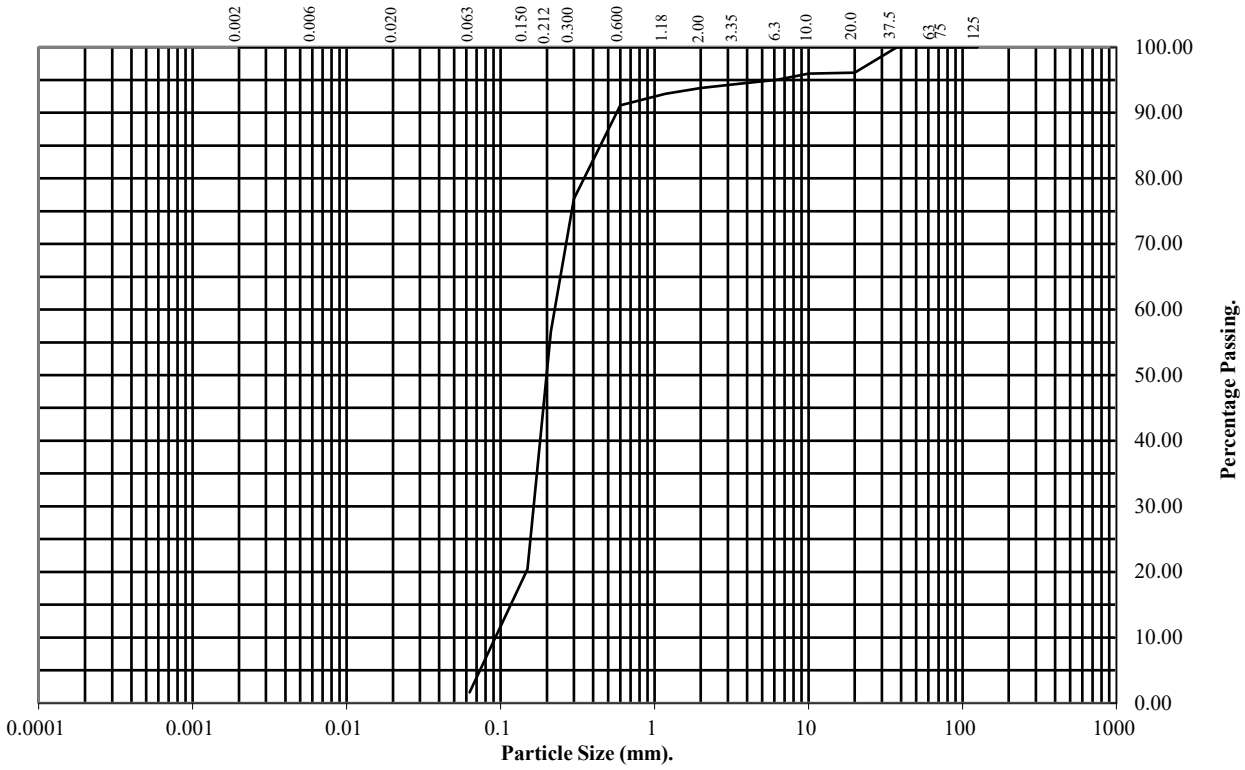
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS44**	**Top Depth (m):**	**1.50**
Sample Number:		**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	96
6.3	95
3.35	94
2	94
1.18	93
0.6	91
0.3	77
0.212	57
0.15	20
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	92
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Mike Sutton
Date :	23rd March, 2022
Your reference :	11087-0921
Our reference :	Test Report 22/3737 Batch 1
Location :	Rogerstown - Seawall
Date samples received :	7th March, 2022
Status :	Final Report
Issue :	1

Six samples were received for analysis on 7th March, 2022 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.

Authorised By:

Bruce Leslie
Project Manager

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton
EMT Job No: 22/3737

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24					LOD/LOR	Units	Method No.
Sample ID	WS41	WS40	WS42	WS46	WS44	WS29							
Depth	0.00-0.60	0.00-0.95	0.00-0.95	0.00-0.70	0.00-1.20	0.00-0.30							
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J							
Sample Date	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022							
Antimony	2	11	5	1	3	3					<1	mg/kg	TM30/PM15
Arsenic #	12.0	14.5	12.4	4.8	10.1	10.8					<0.5	mg/kg	TM30/PM15
Barium #	83	99	69	49	90	151					<1	mg/kg	TM30/PM15
Cadmium #	0.8	2.1	1.7	0.2	0.9	1.1					<0.1	mg/kg	TM30/PM15
Chromium #	50.2	53.2	55.6	42.6	50.3	47.2					<0.5	mg/kg	TM30/PM15
Copper #	35	40	35	35	20	34					<1	mg/kg	TM30/PM15
Lead #	44	119	39	17	47	23					<5	mg/kg	TM30/PM15
Mercury #	0.2	0.2	0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Molybdenum #	3.4	4.3	3.6	1.8	3.1	3.4					<0.1	mg/kg	TM30/PM15
Nickel #	23.4	31.5	38.8	16.6	18.5	27.6					<0.7	mg/kg	TM30/PM15
Selenium #	<1	2	1	<1	<1	1					<1	mg/kg	TM30/PM15
Zinc #	118	234	170	86	456	79					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.07	<0.03	<0.03	0.08	<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	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.59	0.08	0.11	0.05	0.06	<0.03					<0.03	mg/kg	TM4/PM8
Anthracene #	0.08	<0.04	0.05	0.08	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.79	0.33	0.29	0.24	0.19	0.04					<0.03	mg/kg	TM4/PM8
Pyrene #	0.66	0.31	0.28	0.25	0.19	<0.03					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.40	0.25	0.25	0.24	0.16	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #	0.41	0.23	0.24	0.21	0.16	0.02					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.69	0.50	0.51	0.47	0.31	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.35	0.23	0.25	0.27	0.17	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.30	0.23	0.27	0.24	0.15	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.06	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.29	0.22	0.26	0.21	0.20	<0.04					<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
PAH 6 Total #	2.42	1.51	1.58	1.43	1.02	<0.22					<0.22	mg/kg	TM4/PM8
PAH 17 Total	4.69	2.38	2.51	2.34	1.59	<0.64					<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.50	0.36	0.37	0.34	0.22	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.19	0.14	0.14	0.13	0.09	<0.02					<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1					<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	92	94	92	93	96	89					<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	<30	<30	<30	65	145					<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton
EMT Job No: 22/3737

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24					LOD/LOR	Units	Method No.
Sample ID	WS41	WS40	WS42	WS46	WS44	WS29							
Depth	0.00-0.60	0.00-0.95	0.00-0.95	0.00-0.70	0.00-1.20	0.00-0.30							
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J							
Sample Date	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022							
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	<0.2	<0.2	<0.2	<0.2	1.0					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	<4	<4	<4	<4	<4	11					<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	<7	<7	<7	<7	<7	16					<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	<7	<7	<7	<7	65	117					<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	65	145					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	46					<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	41	81					<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2	<0.2	<0.2	<0.2	1.6					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4	<4	<4	<4	49					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	<7	<7	<7	27	310					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	70	<7	<7	190	575					<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	17	<7	<7	15	35					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	87	<26	<26	232	971					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	87	<52	<52	297	1116					<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	55	453					<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	61	<10	<10	135	341					<10	mg/kg	TM5/PM8/PM16
MTBE#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
Benzene#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
Toluene#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
m/p-Xylene#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
o-Xylene#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM36/PM12
PCB 28#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 52#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 101#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 118#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 138#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 153#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 180#	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
Total 7 PCBs#	<35	<35	<35	<35	<35	<35					<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton
EMT Job No: 22/3737

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24					LOD/LOR	Units	Method No.
Sample ID	WS41	WS40	WS42	WS46	WS44	WS29							
Depth	0.00-0.60	0.00-0.95	0.00-0.95	0.00-0.70	0.00-1.20	0.00-0.30							
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J							
Sample Date	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022							
Moisture Content (% Wet Weight)	13.0	13.4	11.2	6.7	14.1	17.0					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Chromium III	50.2	53.2	55.6	42.6	50.3	47.2					<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	1.45	1.34	0.62	1.55	1.68	1.75					<0.02	%	TM21/PM24
pH #	8.23	8.15	8.49	8.66	8.38	7.86					<0.01	pH units	TM73/PM11
Mass of raw test portion	0.108	0.1055	0.1026	0.0974	0.1095	0.1106						kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09						kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton
EMT Job No: 22/3737

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24					LOD/LOR	Units	Method No.
Sample ID	WS41	WS40	WS42	WS46	WS44	WS29							
Depth	0.00-0.60	0.00-0.95	0.00-0.95	0.00-0.70	0.00-1.20	0.00-0.30							
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J							
Sample Date	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022							
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	0.003	<0.002					<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	0.03	<0.02					<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0091	0.0035	0.0031	0.0089	0.0066	0.0051					<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.091	0.035	0.031	0.089	0.066	0.051					<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.008	0.010	0.004	<0.003	0.010	0.012					<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.08	0.10	0.04	<0.03	0.10	0.12					<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005					<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.0071					<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	0.071					<0.015	mg/kg	TM30/PM17
Dissolved Copper #	0.018	<0.007	<0.007	<0.007	<0.007	0.009					<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	0.18	<0.07	<0.07	<0.07	<0.07	0.09					<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	0.008	<0.005					<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	0.08	<0.05					<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.003	0.002	<0.002	<0.002	<0.002	0.006					<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.03	<0.02	<0.02	<0.02	<0.02	0.06					<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	0.003	<0.002	<0.002	<0.002	0.002	<0.002					<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	0.03	<0.02	<0.02	<0.02	<0.02	<0.02					<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003					<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.004	<0.003	<0.003	0.007	0.012	<0.003					<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.04	<0.03	<0.03	0.07	0.12	<0.03					<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	0.00002	<0.00001	<0.00001	<0.00001	0.00001	0.00002					<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002					<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM26/PM0
Fluoride	0.5	0.3	<0.3	0.3	<0.3	0.6					<0.3	mg/l	TM173/PM0
Fluoride	5	<3	<3	<3	<3	6					<3	mg/kg	TM173/PM0
Sulphate as SO4 #	12.7	4.6	2.1	25.8	17.6	0.6					<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	127	46	21	258	176	6					<5	mg/kg	TM38/PM0
Chloride #	5.0	4.1	1.9	159.8	4.9	1.3					<0.3	mg/l	TM38/PM0
Chloride #	50	41	19	1598	49	13					<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	11	4	3	3	5	17					<2	mg/l	TM60/PM0
Dissolved Organic Carbon	110	40	30	30	50	170					<20	mg/kg	TM60/PM0
pH	8.58	8.18	8.18	8.41	8.21	9.12					<0.01	pH units	TM73/PM0
Total Dissolved Solids #	116	86	59	358	125	132					<35	mg/l	TM20/PM0
Total Dissolved Solids #	1160	860	590	3580	1249	1321					<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton
EMT Job No: 22/3737

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24										
Sample ID	WS41	WS40	WS42	WS46	WS44	WS29										
Depth	0.00-0.60	0.00-0.95	0.00-0.95	0.00-0.70	0.00-1.20	0.00-0.30										
COC No / misc																
Containers	V J T	V J T	V J	V J	V J	V J										
Sample Date	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022	04/03/2022										
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil										
Batch Number	1	1	1	1	1	1										
Date of Receipt	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022	07/03/2022										
											Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	1.45	1.34	0.62	1.55	1.68	1.75					3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025					6	-	-	<0.025	mg/kg	TM36/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035					1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	65	145					500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	2.42	1.51	1.58	1.43	1.02	<0.22					-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	4.69	2.38	2.51	2.34	1.59	<0.64					100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	0.091	0.035	0.031	0.089	0.066	0.051					0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.08	0.10	0.04	<0.03	0.10	0.12					20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	0.071					0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	0.18	<0.07	<0.07	<0.07	<0.07	0.09					2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002					0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03	<0.02	<0.02	<0.02	<0.02	0.06					0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	0.03	<0.02	<0.02	<0.02	<0.02	<0.02					0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	0.08	<0.05					0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	0.03	<0.02					0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.04	<0.03	<0.03	0.07	0.12	<0.03					4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1160	860	590	3580	1249	1321					4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	110	40	30	30	50	170					500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	83.4	85.1	87.5	92.9	82.2	81.5					-	-	-	<0.1	%	NONE/PM4
pH #	8.23	8.15	8.49	8.66	8.38	7.86					-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	<3	<3	<3	<3	6					10	150	500	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	127	46	21	258	176	6					1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	50	41	19	1598	49	13					800	15000	25000	<3	mg/kg	TM38/PM0

Client Name: Ground Investigations Ireland

Reference: 11087-0921

Location: Rogerstown - Seawall

Contact: Mike Sutton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/3737	1	WS41	0.00-0.60	1-4	No interpretation possible
22/3737	1	WS40	0.00-0.95	5-8	Possible lubricating oil, possible tarmac/bitumen & possible naturally occurring compounds
22/3737	1	WS42	0.00-0.95	9-12	No interpretation possible
22/3737	1	WS46	0.00-0.70	13-16	No interpretation possible
22/3737	1	WS44	0.00-1.20	17-20	PAH's & Possible trace of lubricating oil
22/3737	1	WS29	0.00-0.30	21-24	PAH's & Possible trace of lubricating oil

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton

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). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/3737	1	WS41	0.00-0.60	4	Kevin Hughes	16/03/2022	**General Description (Bulk Analysis)**	soil
					Kevin Hughes	16/03/2022	**Asbestos Fibres**	NAD
					Kevin Hughes	16/03/2022	**Asbestos ACM**	NAD
					Kevin Hughes	16/03/2022	**Asbestos Type**	NAD
22/3737	1	WS40	0.00-0.95	8	Kevin Hughes	16/03/2022	**General Description (Bulk Analysis)**	soil
					Kevin Hughes	16/03/2022	**Asbestos Fibres**	NAD
					Kevin Hughes	16/03/2022	**Asbestos ACM**	NAD
					Kevin Hughes	16/03/2022	**Asbestos Type**	NAD
22/3737	1	WS42	0.00-0.95	12	Charlotte Taylor	16/03/2022	**General Description (Bulk Analysis)**	soil/stones
					Charlotte Taylor	16/03/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	16/03/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	16/03/2022	**Asbestos Type**	NAD
22/3737	1	WS46	0.00-0.70	16	Kevin Hughes	16/03/2022	**General Description (Bulk Analysis)**	soil
					Kevin Hughes	16/03/2022	**Asbestos Fibres**	NAD
					Kevin Hughes	16/03/2022	**Asbestos ACM**	NAD
					Kevin Hughes	16/03/2022	**Asbestos Type**	NAD
22/3737	1	WS44	0.00-1.20	20	Catherine Coles	16/03/2022	**General Description (Bulk Analysis)**	soil
					Catherine Coles	16/03/2022	**Asbestos Fibres**	NAD
					Catherine Coles	16/03/2022	**Asbestos ACM**	NAD
					Catherine Coles	16/03/2022	**Asbestos Type**	NAD
22/3737	1	WS29	0.00-0.30	24	Andrew Alker	16/03/2022	**General Description (Bulk Analysis)**	soil
					Andrew Alker	16/03/2022	**Asbestos Fibres**	NAD
					Andrew Alker	16/03/2022	**Asbestos ACM**	NAD
					Andrew Alker	16/03/2022	**Asbestos Type**	NAD

Client Name: Ground Investigations Ireland
Reference: 11087-0921
Location: Rogerstown - Seawall
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/3737						

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

EMT Job No.: 22/3737

SOILS and ASH

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. Asbestos samples are retained for 6 months.

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. Limits of detection for analyses carried out on as received samples are not moisture content corrected. 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. Ash samples are dried at 37°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.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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.

STACK EMISSIONS

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 for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

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.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) 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.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology 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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/3737

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 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of 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 8270D v5:2014 method for the solvent extraction and determination of 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 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. 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 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 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. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	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

EMT Job No: 22/3737

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
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	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 Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	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 Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 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
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	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
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes

EMT Job No: 22/3737

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 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. 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 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. 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
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 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.			AR	
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 11465:1993(E) and BS1377-2:1990.			AR	

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Mike Sutton
Date :	13th April, 2022
Your reference :	11087-09-21
Our reference :	Test Report 22/5386 Batch 1
Location :	Rogerstown Seawall
Date samples received :	1st April, 2022
Status :	Final Report
Issue :	1

Four samples were received for analysis on 1st April, 2022 of which 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.

Authorised By:

Liza Klebe
Project Co-ordinator

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-09-21
Location: Rogerstown Seawall
Contact: Mike Sutton
EMT Job No: 22/5386

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	3	4							LOD/LOR	Units	Method No.
Sample ID	WS28	WS06	WS44	WS01									
Depth	0.45-2.00	0.00-0.70	0.00-1.20	0.50-1.00									
COC No / misc													
Containers	T	T	T	T									
Sample Date	29/03/2022	30/03/2022	31/03/2022	01/04/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	01/04/2022	01/04/2022	01/04/2022	01/04/2022									
Chloride #	21	30	46	110							<2	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0469	0.0075	0.0250	0.1090							<0.0015	g/l	TM38/PM20
pH #	8.92	7.50	8.64	8.54							<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 11087-09-21
Location: Rogerstown Seawall
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/5386						

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

EMT Job No.: 22/5386

SOILS and ASH

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. Asbestos samples are retained for 6 months.

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. Limits of detection for analyses carried out on as received samples are not moisture content corrected. 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. Ash samples are dried at 37°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.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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.

STACK EMISSIONS

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 for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

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.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) 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.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology 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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/5386

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
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	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
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. 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

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
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Ireland

Attention :	Mike Sutton
Date :	13th April, 2022
Your reference :	11087-09-21
Our reference :	Test Report 22/5388 Batch 1
Location :	Rogerstown
Date samples received :	1st April, 2022
Status :	Final Report
Issue :	1

Eight samples were received for analysis on 1st April, 2022 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.

Authorised By:

Liza Klebe
Project Co-ordinator

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11087-09-21
Location: Rogerstown
Contact: Mike Sutton
EMT Job No: 22/5388

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	3	4	5	6	7	8			LOD/LOR	Units	Method No.
Sample ID	BH31	BH15	BH45	BH02	BH36	BH33	BH02	BH05					
Depth	3.00	2.00	2.00	2.00	2.00	3.00	1.00	1.00					
COC No / misc													
Containers	T	T	T	T	T	T	T	T					
Sample Date	30/03/2022	30/03/2022	30/03/2022	30/03/2022	30/03/2022	30/03/2022	30/03/2022	30/03/2022					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/04/2022	01/04/2022	01/04/2022	01/04/2022	01/04/2022	01/04/2022	01/04/2022	01/04/2022					
Chloride #	124	65	12	1275	1283	265	262	305			<2	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0280	0.0122	0.0184	0.5100	0.1101	0.0470	0.0861	0.0241			<0.0015	g/l	TM38/PM20
pH #	8.62	8.70	9.18	8.39	8.98	9.15	8.73	8.35			<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 11087-09-21
Location: Rogerstown
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/5388						

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

EMT Job No.: 22/5388

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Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

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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.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) 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.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology 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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/5388

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
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	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
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. 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

APPENDIX 6 – Groundwater Monitoring

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

GROUNDWATER MONITORING

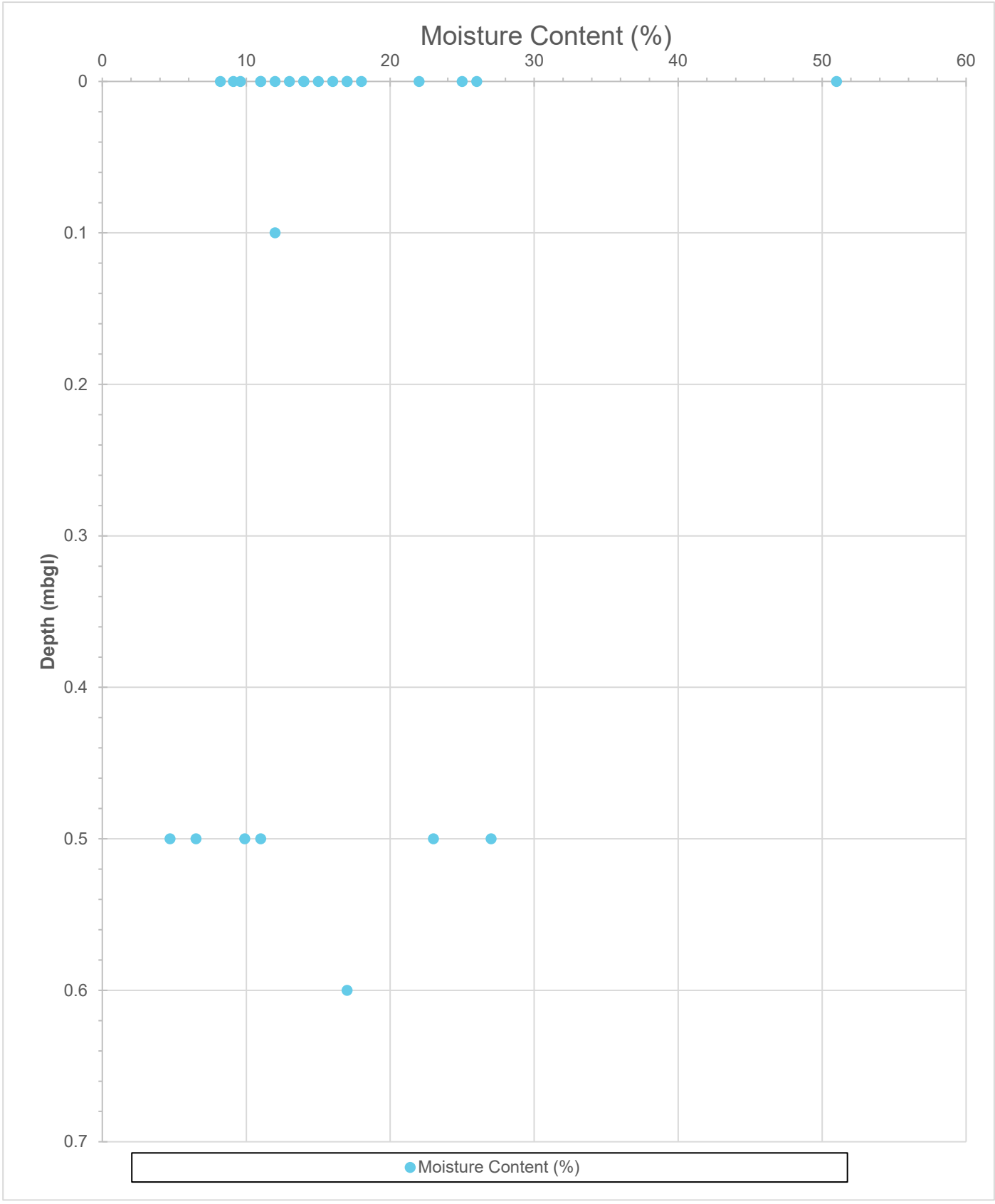
Rogerstown Coastal Flood and Erosion Relief Scheme

BOREHOLE	DATE	TIME	GROUNDWATER (m BGL)	Comments
BH31	08/03/2022	10:48	1.15	
BH33	08/03/2022	10:38	1.60	
BH02	30/05/2022	15:22	1.15	
BH29	30/05/2022	15:44	2.42	
BH31	30/05/2022	14:19	1.06	
BH33	30/05/2022	14:25	1.52	

Appendix C
Laboratory and In-situ Data Plots

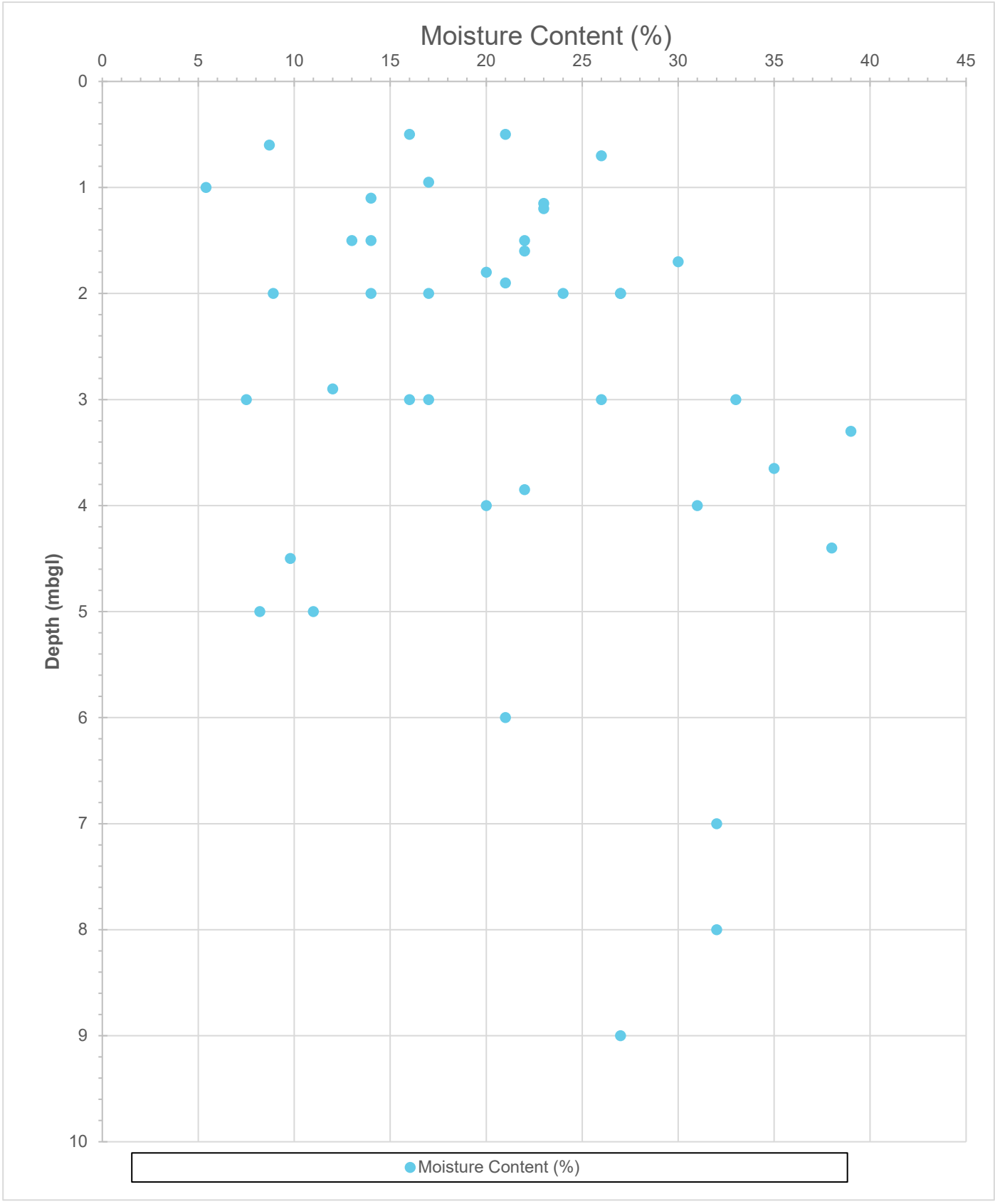
	Location	Ground material	Title
	ENTIRE SCHEME	**MADE GROUND**	**MC Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



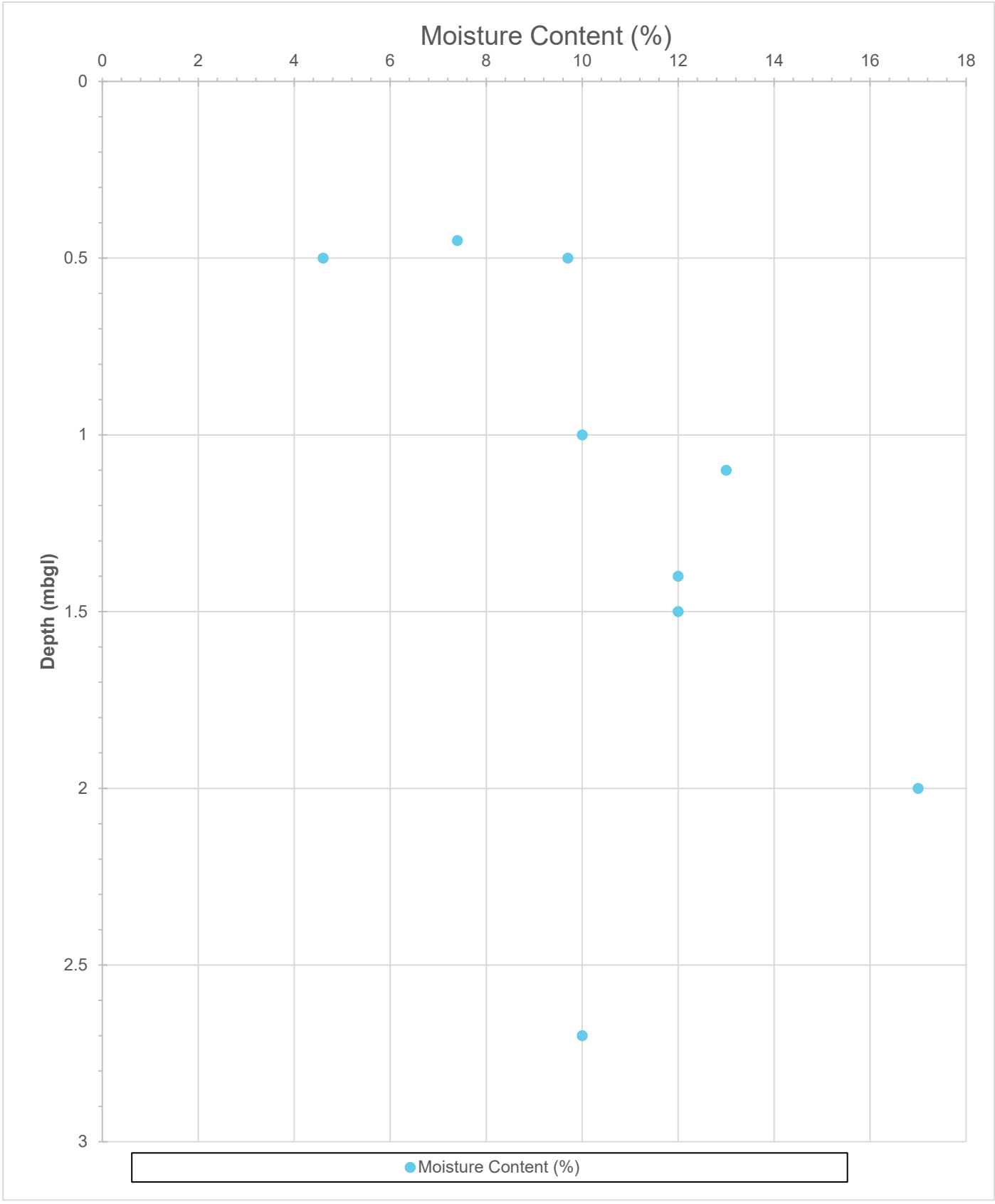
	Location	Ground material	Title
	ENTIRE SCHEME	**ESTUARINE**	**MC Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



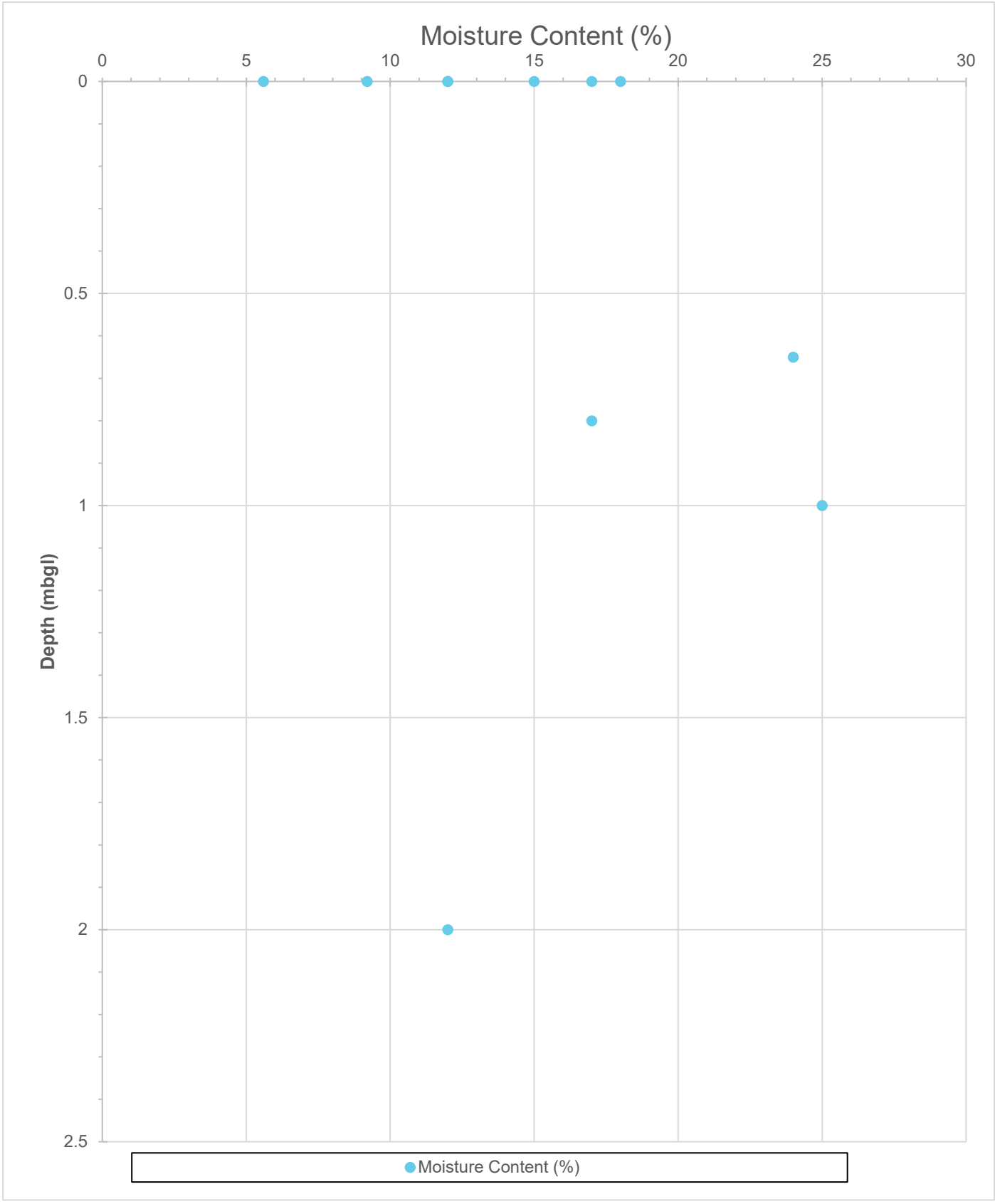
	Location	Ground material	Title
	ENTIRE SCHEME	**WINDBLOWN SAND**	**MC Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



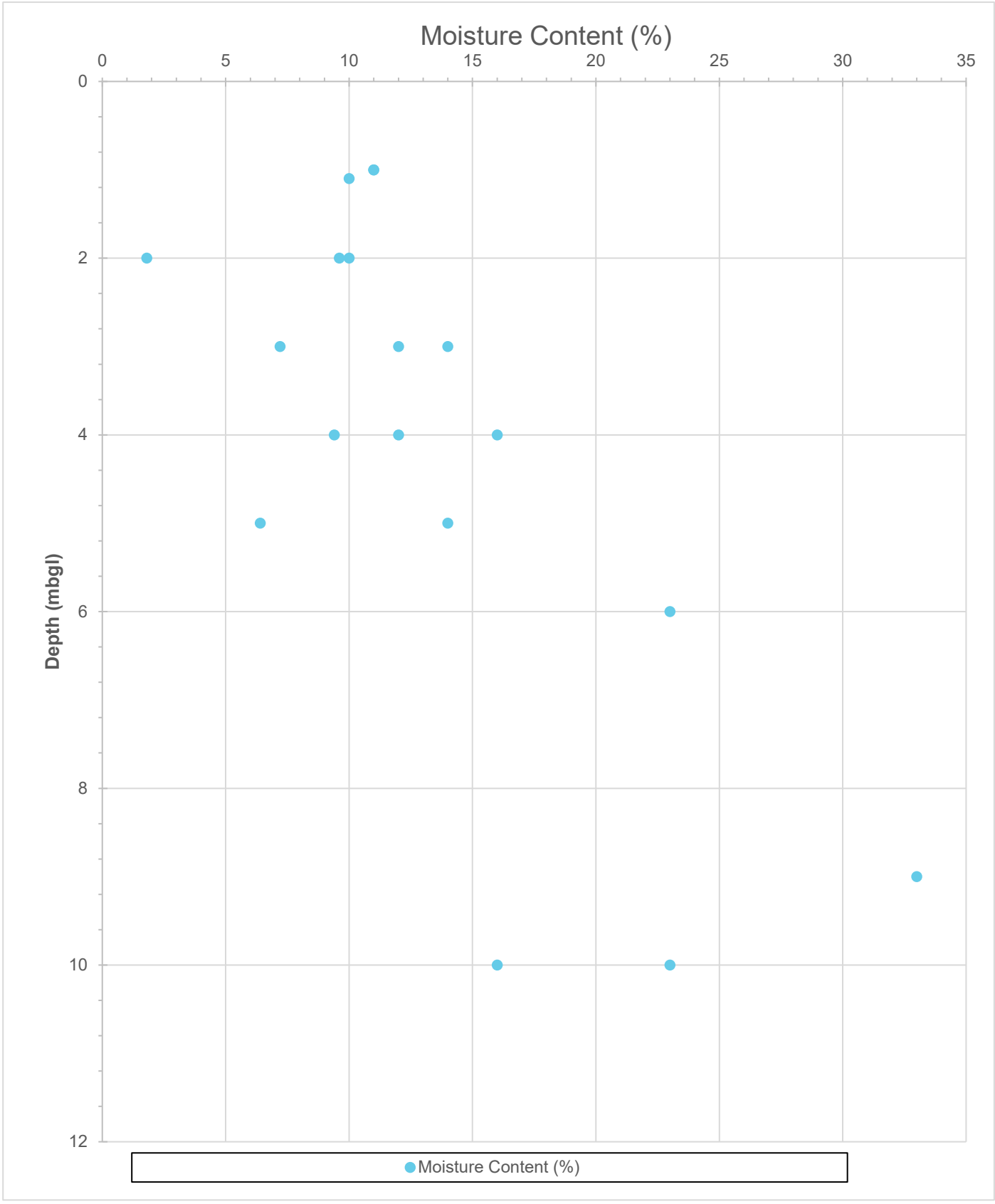
	Location	Ground material	Title
	ENTIRE SCHEME	**MARINE BEACH SAND**	**MC Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**

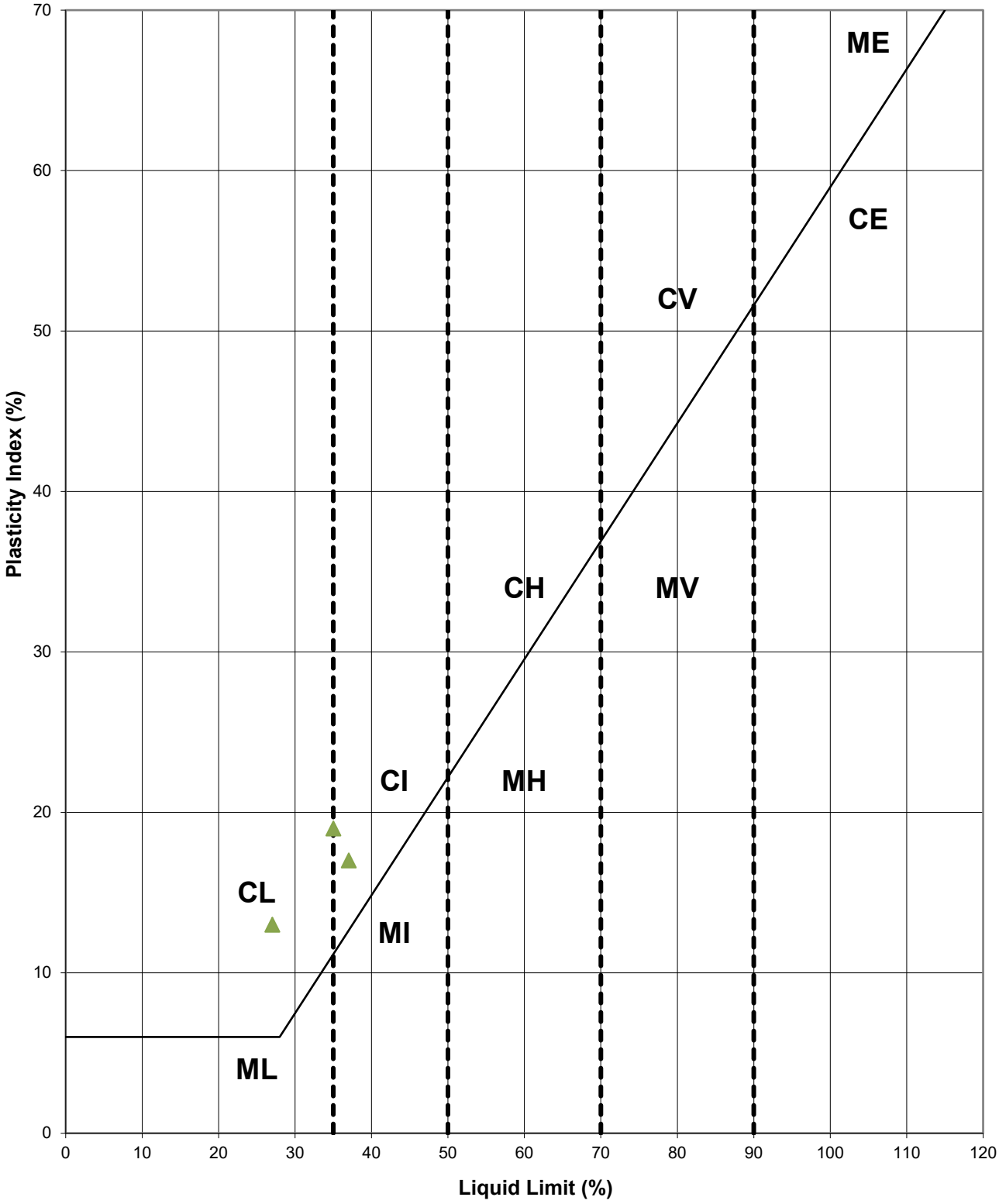


	Location	Ground material	Title
	ENTIRE SCHEME	**GLACIAL TILL**	**MC Vs Depth**

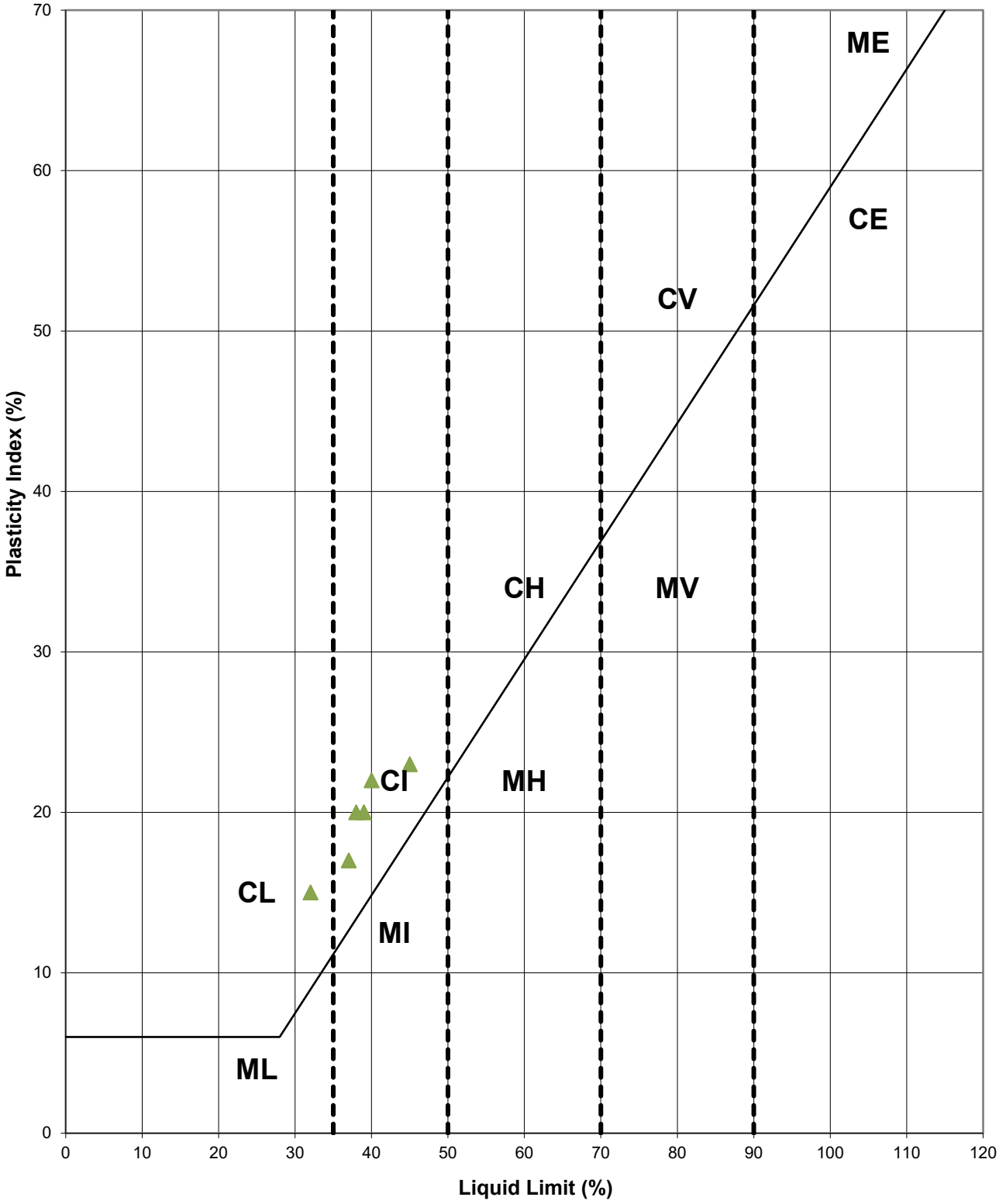
Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



	Location	Ground material	Title
	Entire Scheme	**MADE GROUND**	**Atterberg Limits**
Client	Project:	**Rogerstown FRS**	
	Database File Identifier:	**MGT0597**	
	Database status: **S4**	Database revision: **P01**	Date plot exported: **8/06/2022**

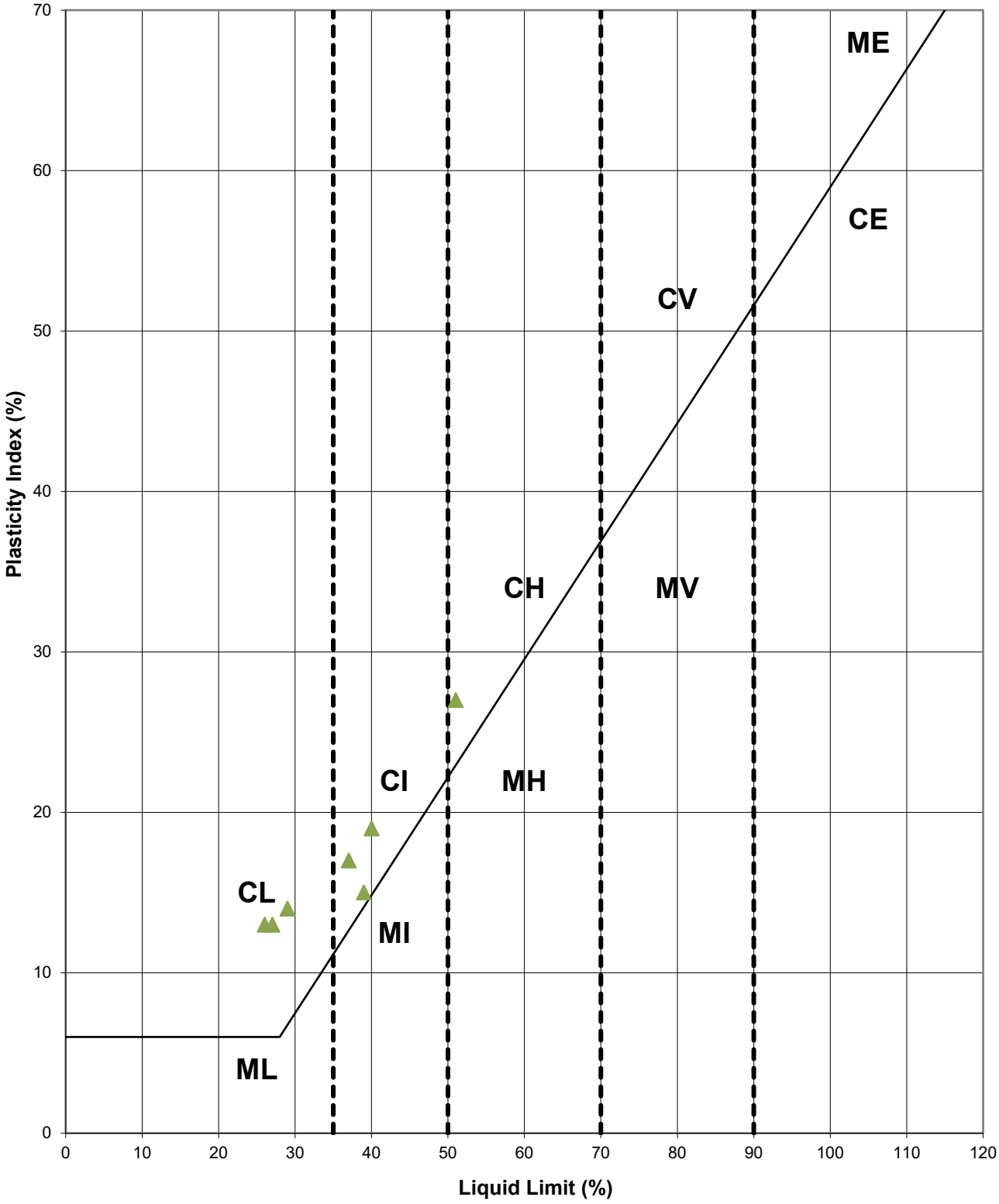


	Location	Ground material	Title
	Entire Scheme	**ESTUARINE**	**Atterberg Limits**
Client	Project:	**Rogerstown FRS**	
	Database File Identifier:	**MGT0597**	
	Database status: **S4**	Database revision: **P01**	Date plot exported: **8/06/2022**



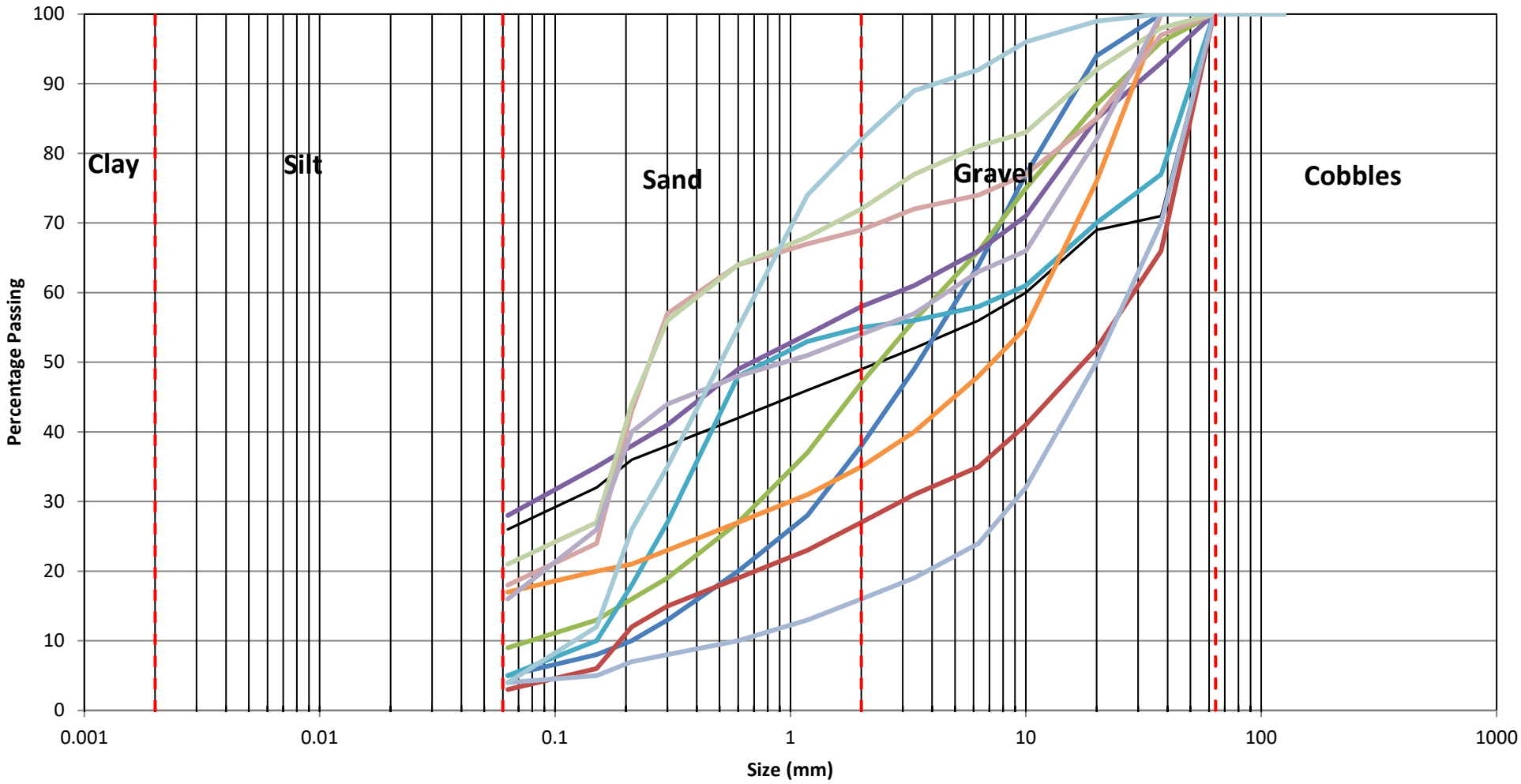
	Location	Ground material	Title
	Entire Scheme	**GLACIAL TILL**	**Atterberg Limits**

Client	Project:	**Rogerstown FRS**			
	Database File Identifier:	**MGT0597**			
	Database status: **S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



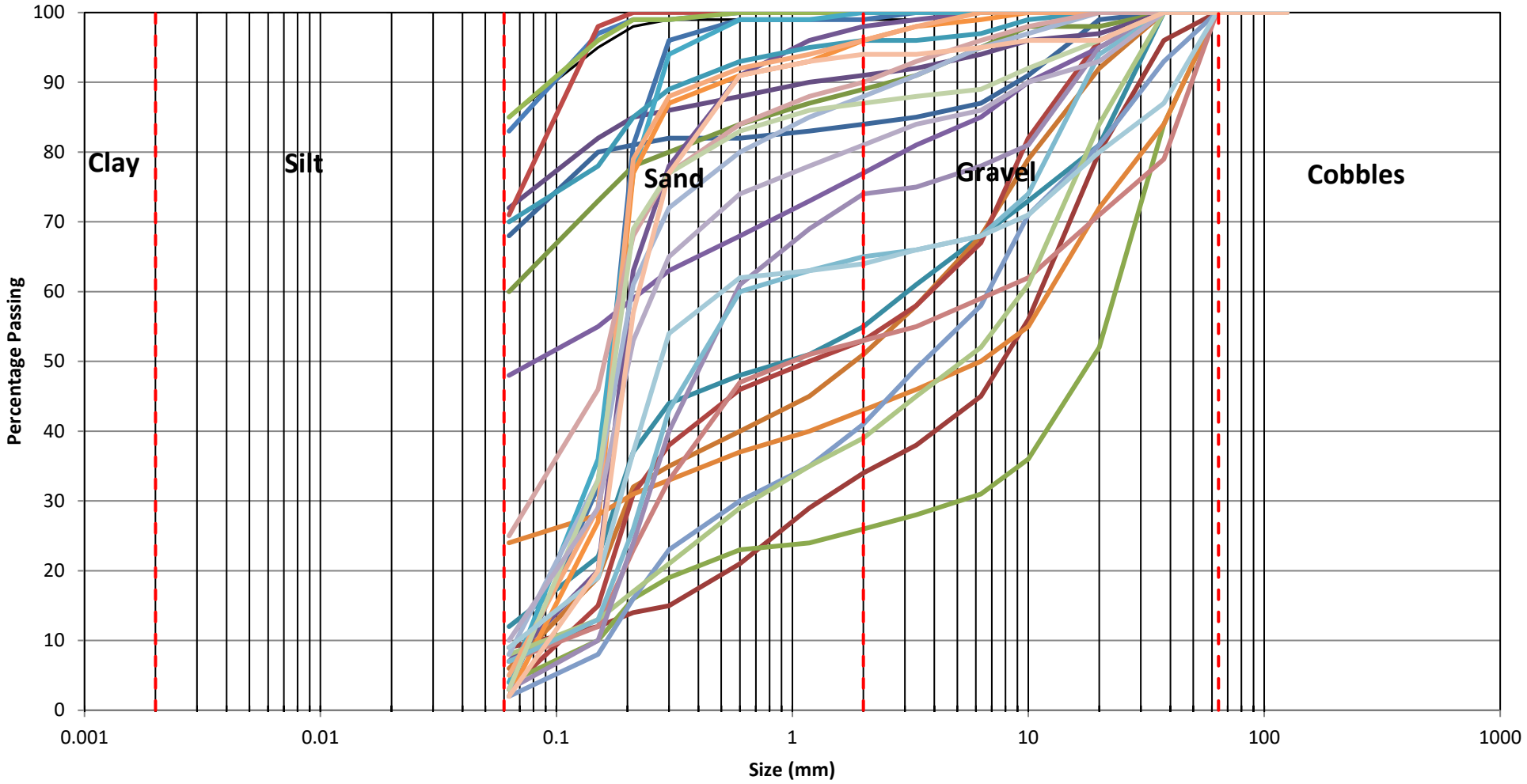
	Location	Ground material	Title
	Entire Scheme	**MADE GROUND**	**Grading Curves**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



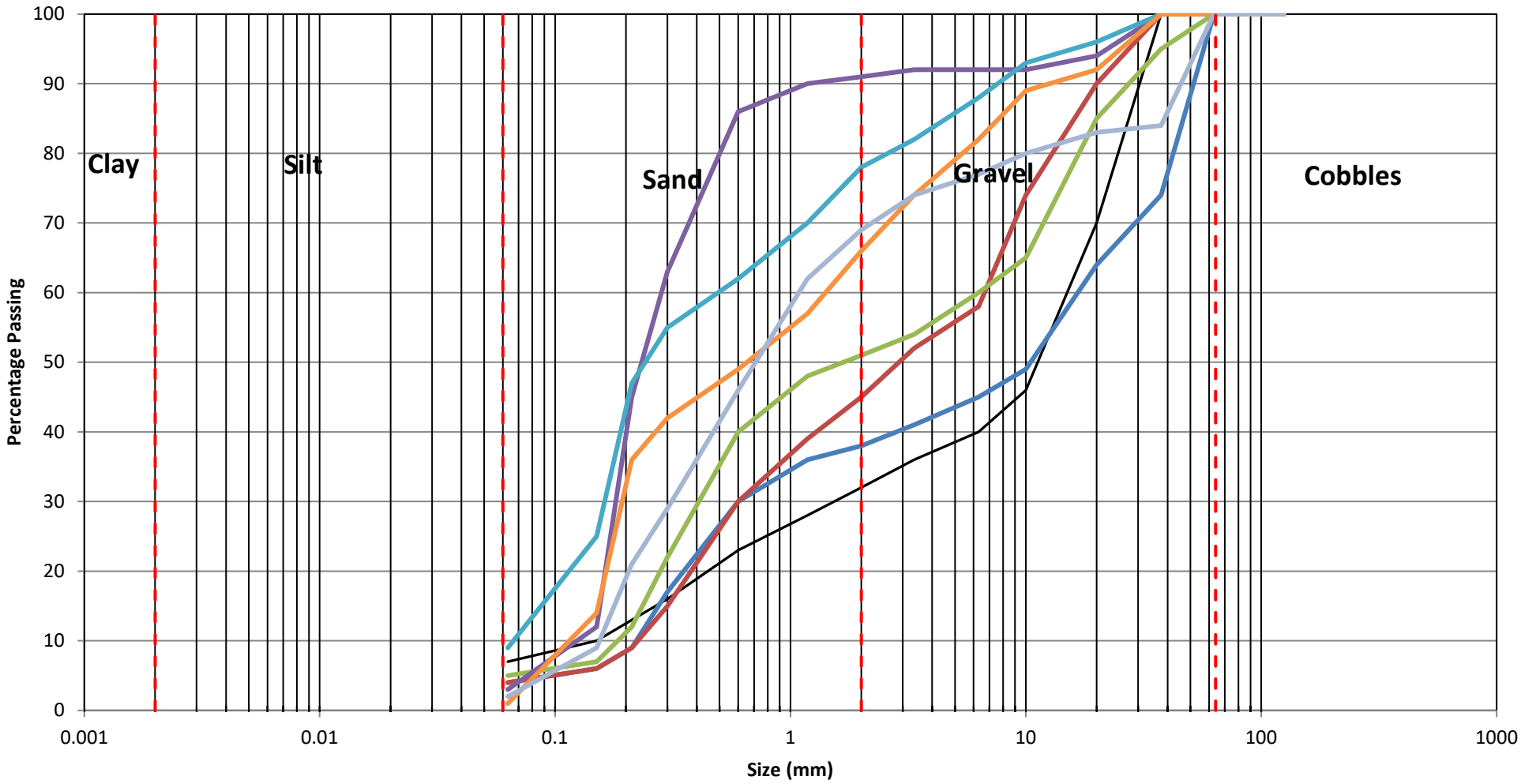
	Location	Ground material	Title
	Entire Scheme	**ESTUARINE**	**Grading Curves**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



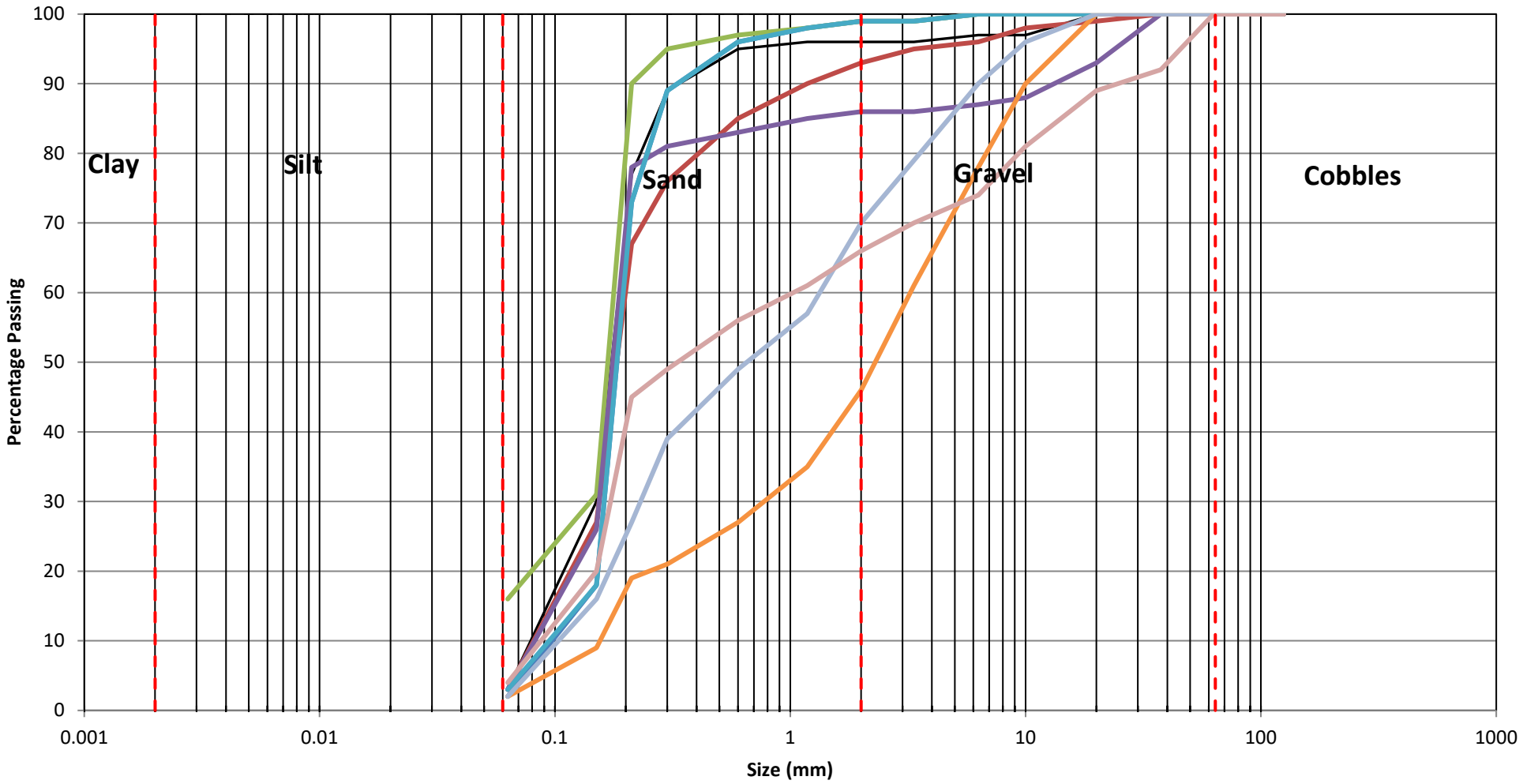
	Location	Ground material	Title
	Entire Scheme	**WINDBLOWN SAND**	**Grading Curves**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



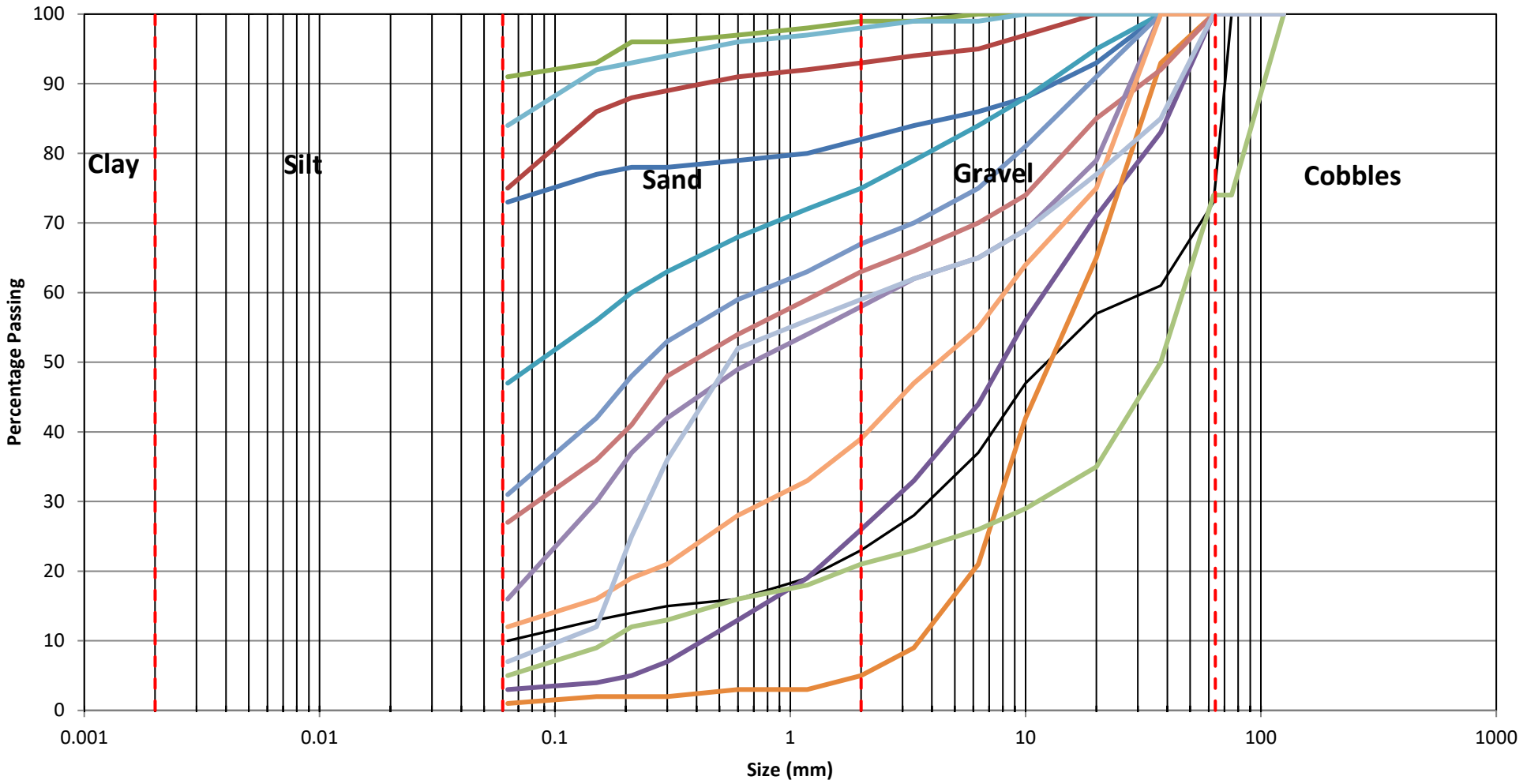
	Location	Ground material	Title
	Entire Scheme	**MARINE BEACH SAND**	**Grading Curves**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



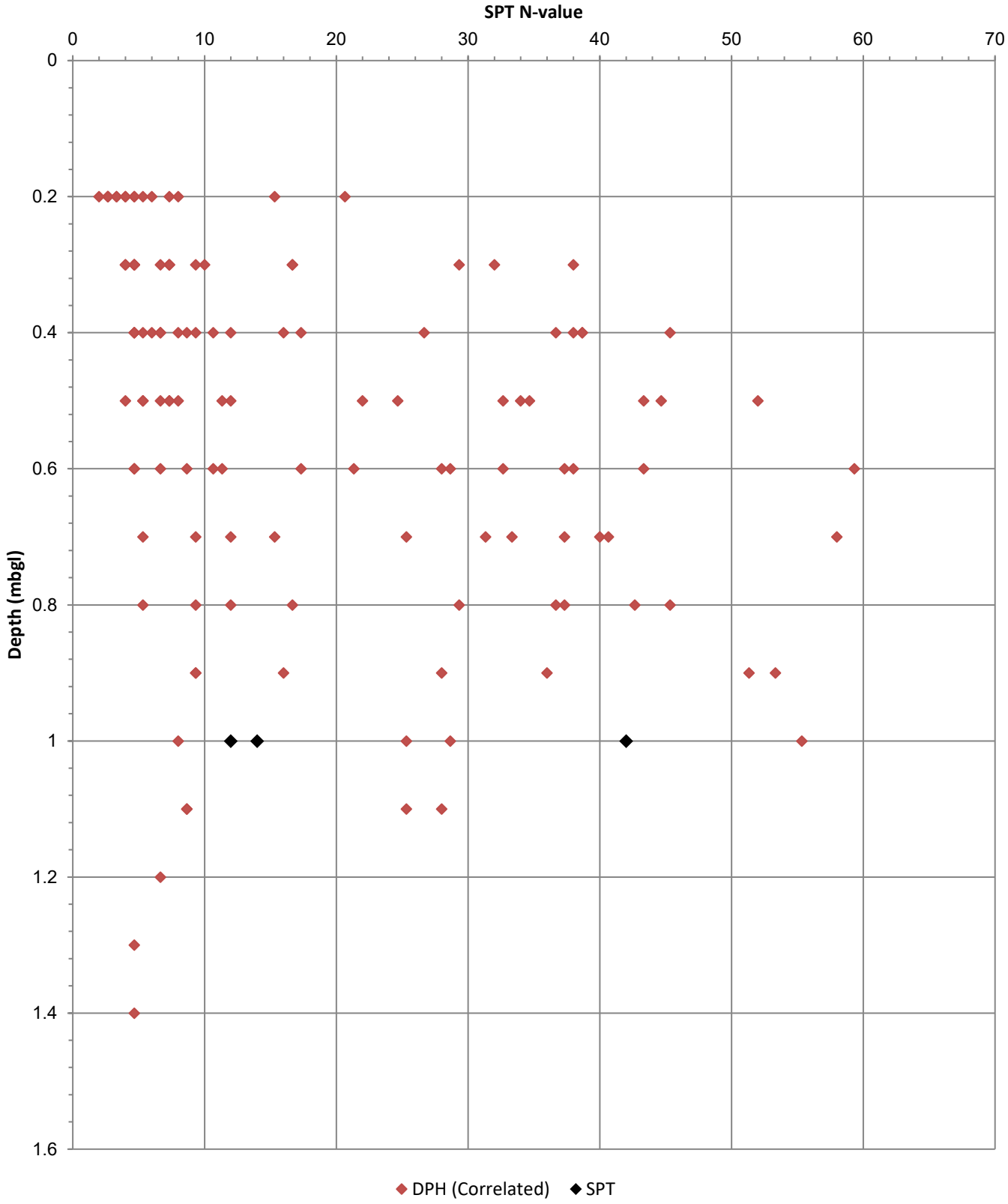
	Location	Ground material	Title
	Entire Scheme	**GLACIAL TILL**	**Grading Curves**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



	Property	Ground material
	SPT N-value	MADE GROUND

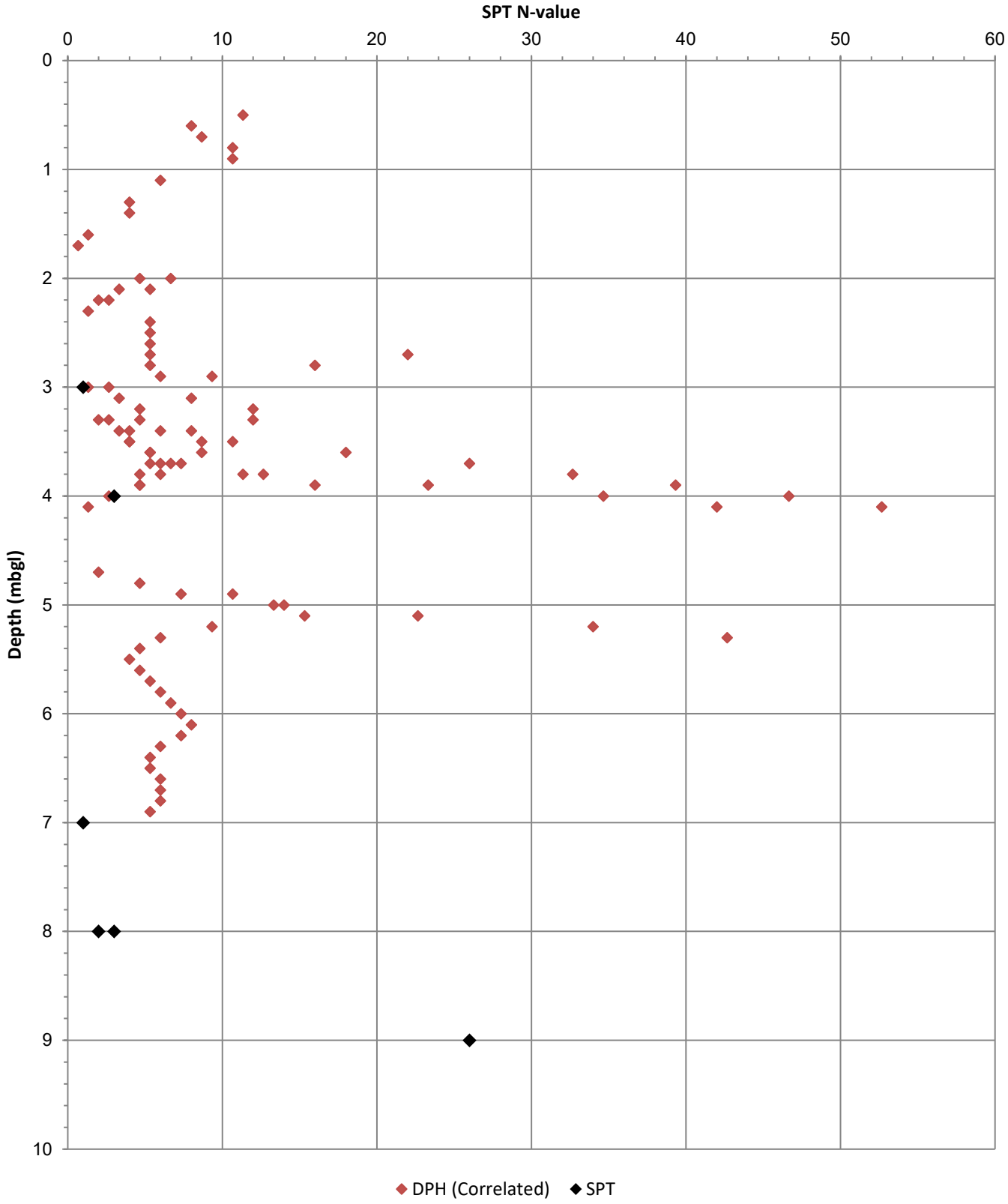
Project ID: **MGT0597**	Project Title: **Rogerstown FRS**
Client:	Location: **ALL AREAS**



Date Reported: **8/06/2022**

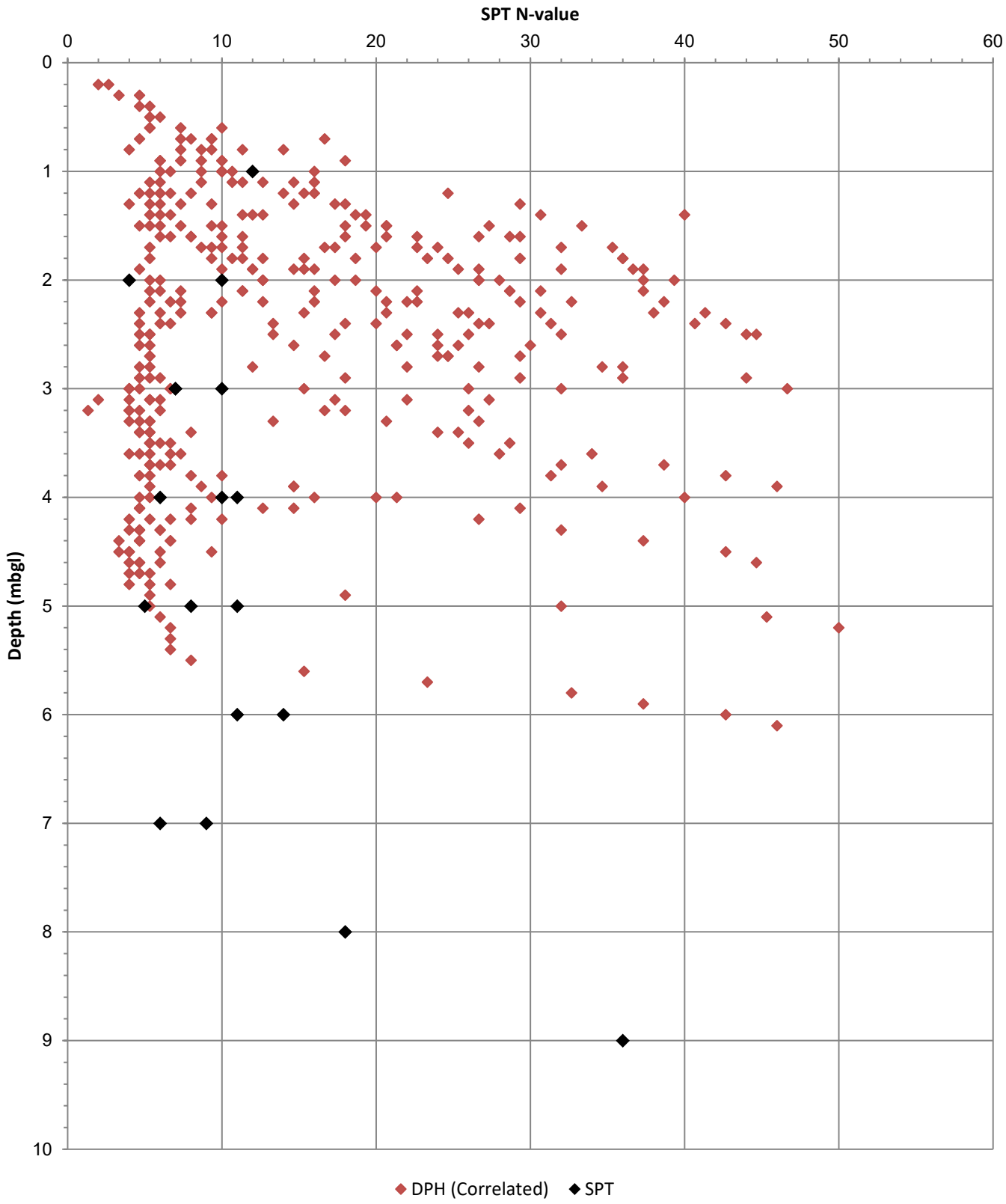
	Property	Ground material
	SPT N-value	ESTUARINE (COHESIVE)

Project ID: **MGT0597**	Project Title: **Rogerstown FRS**
Client:	Location: **ALL AREAS**



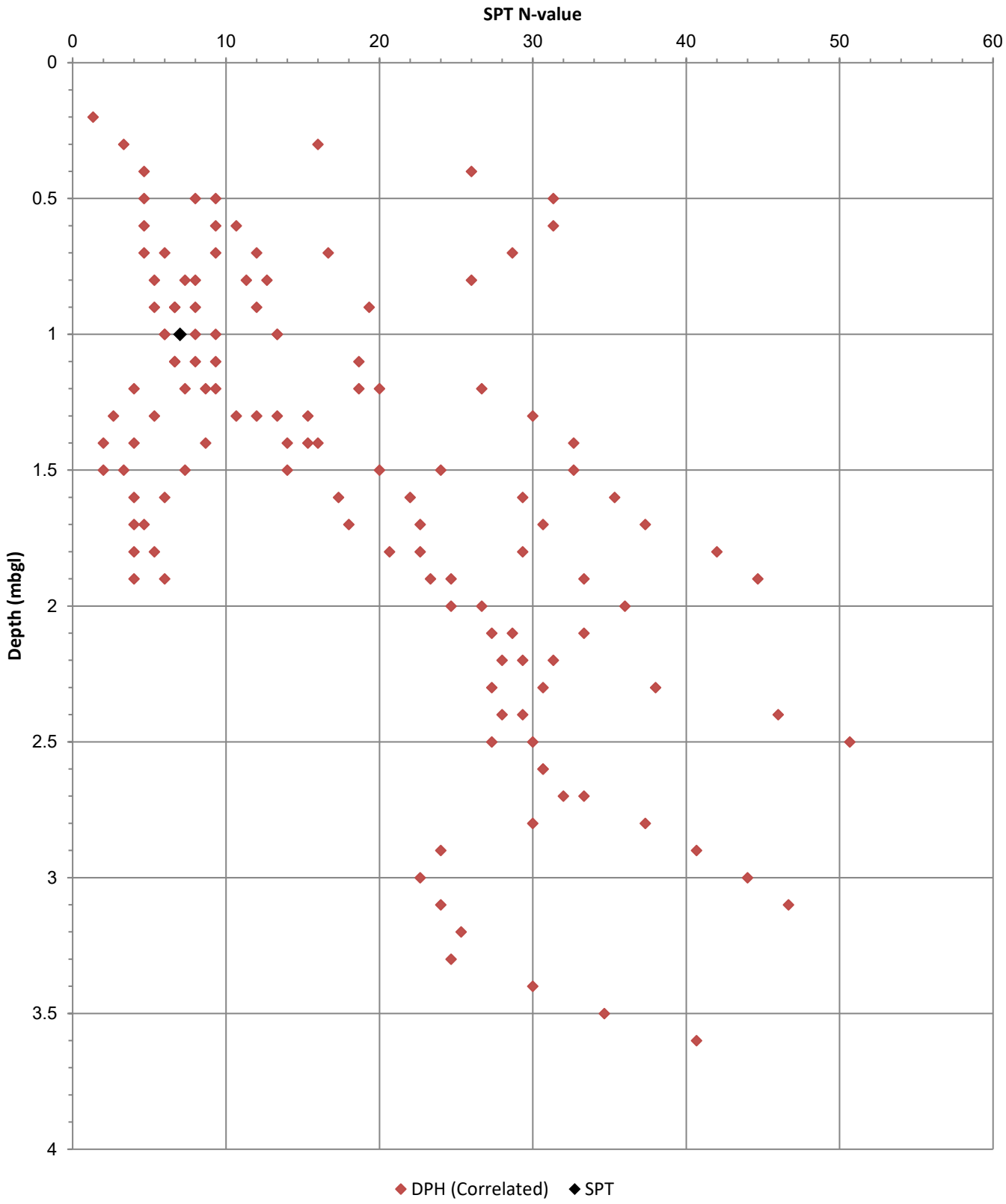
Date Reported: **8/06/2022**

	Property	Ground material
	SPT N-value	ESTUARINE (GRANULAR)
Project ID: **MGT0597**	Project Title: **Rogerstown FRS**	
Client:	Location: **ALL AREAS**	



Date Reported: **8/06/2022**

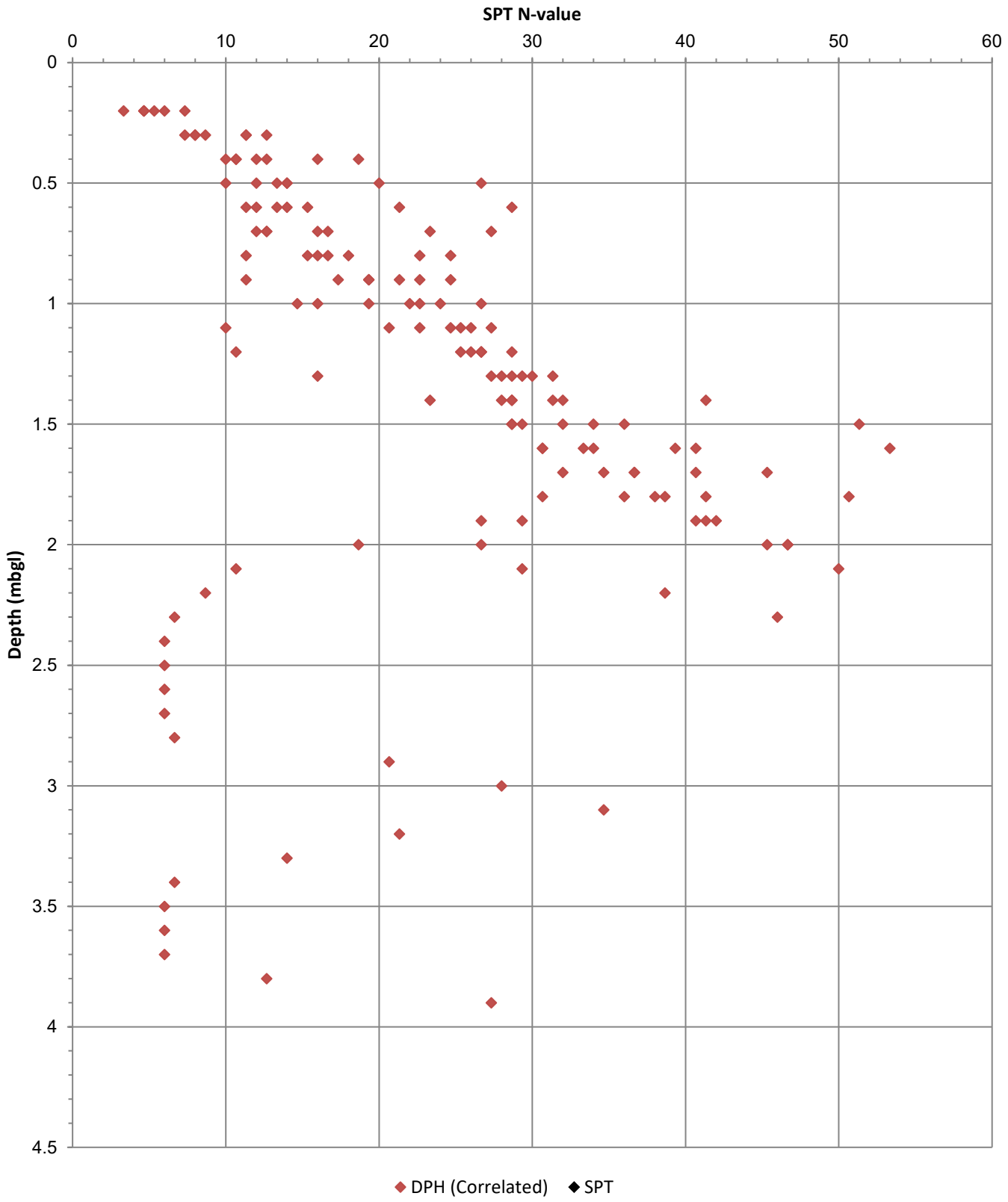
	Property	Ground material
	SPT N-value	WINDBLOWN SAND
Project ID: **MGT0597**	Project Title: **Rogerstown FRS**	
Client:	Location: **ALL AREAS**	



Date Reported: **8/06/2022**

	Property	Ground material
	SPT N-value	MARINE BEACH SAND

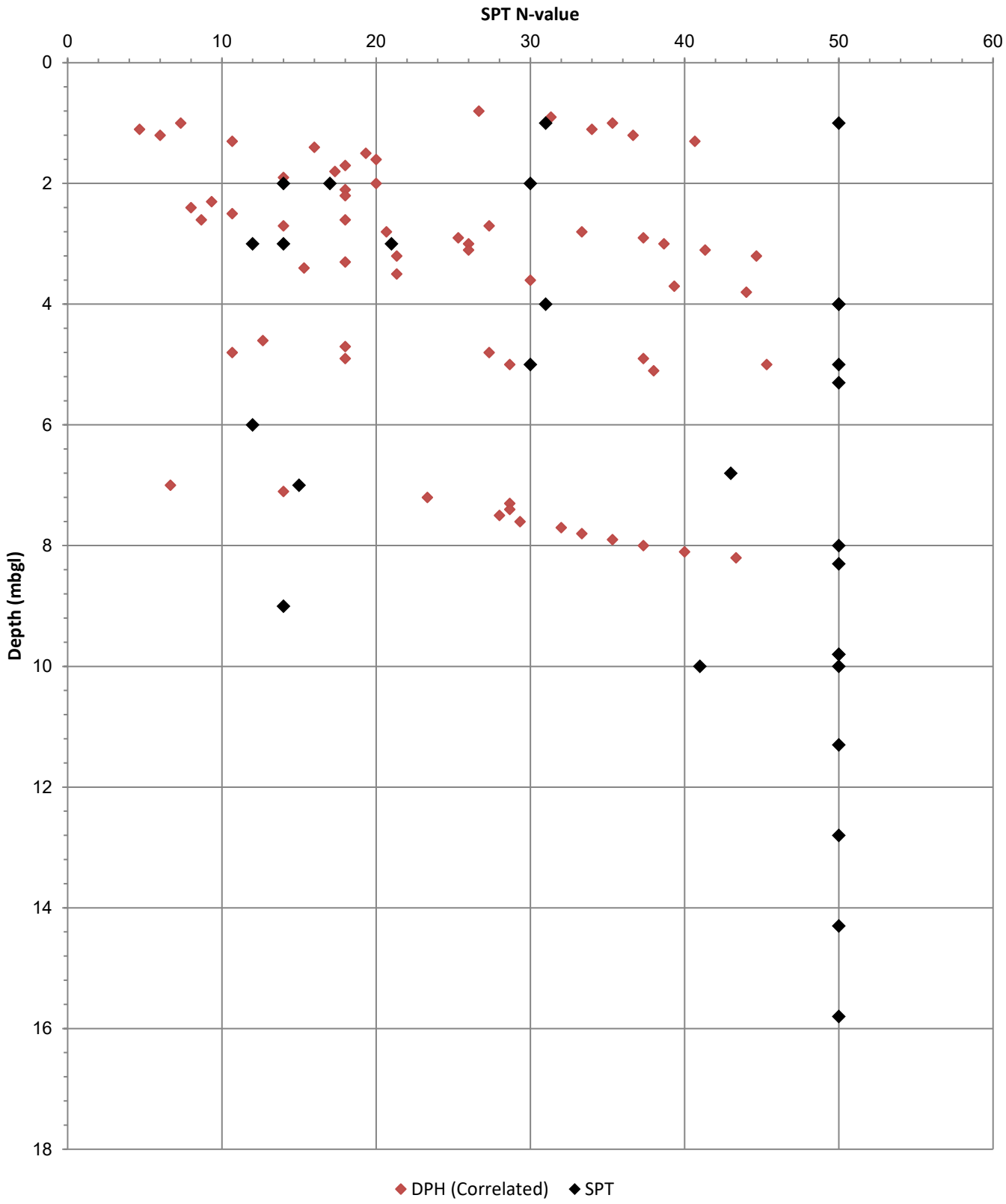
Project ID: **MGT0597**	Project Title: **Rogerstown FRS**
Client:	Location: **ALL AREAS**



Date Reported: **8/06/2022**

	Property	Ground material
	SPT N-value	GLACIAL TILL

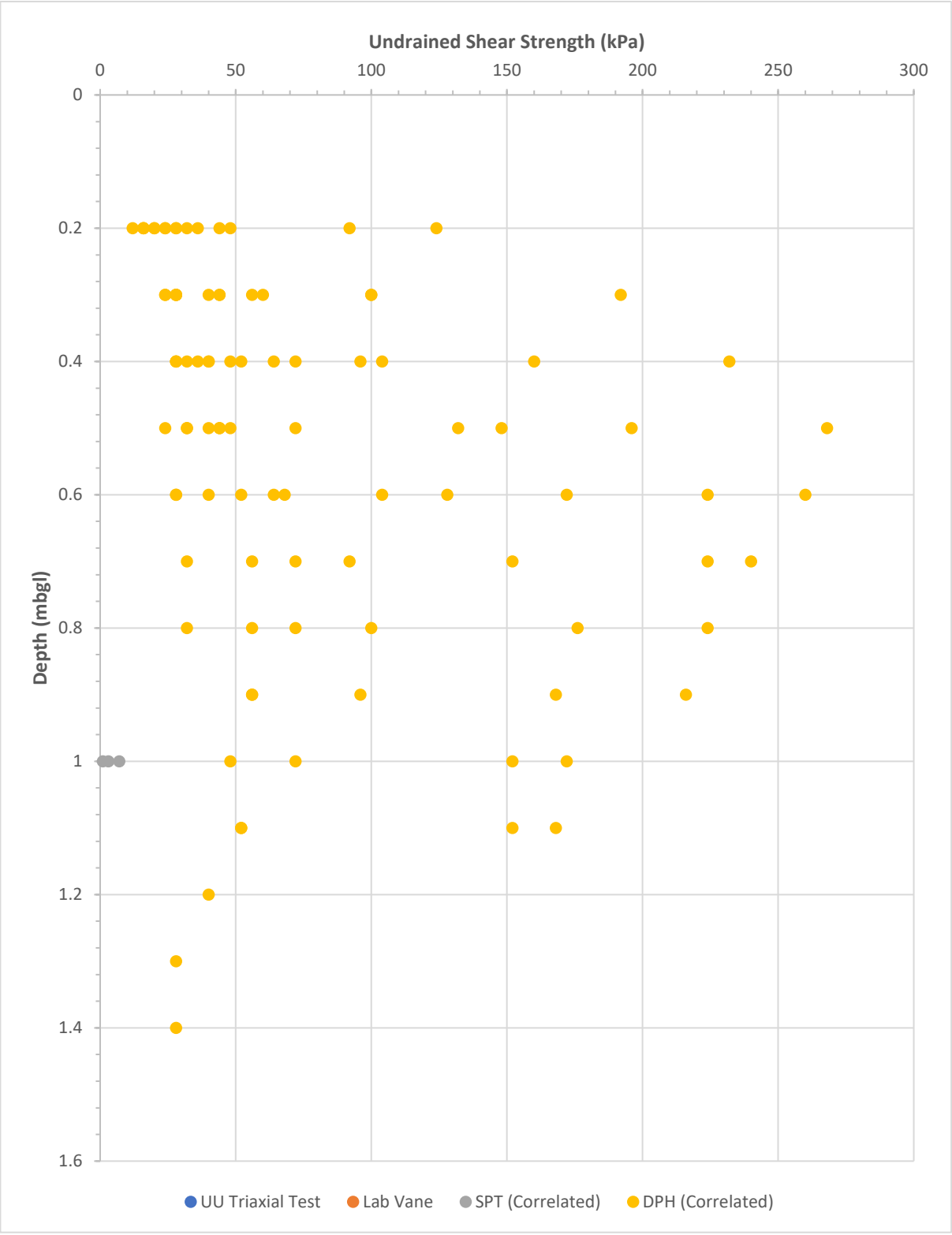
Project ID: **MGT0597**	Project Title: **Rogerstown FRS**
Client:	Location: **ALL AREAS**



Date Reported: **8/06/2022**

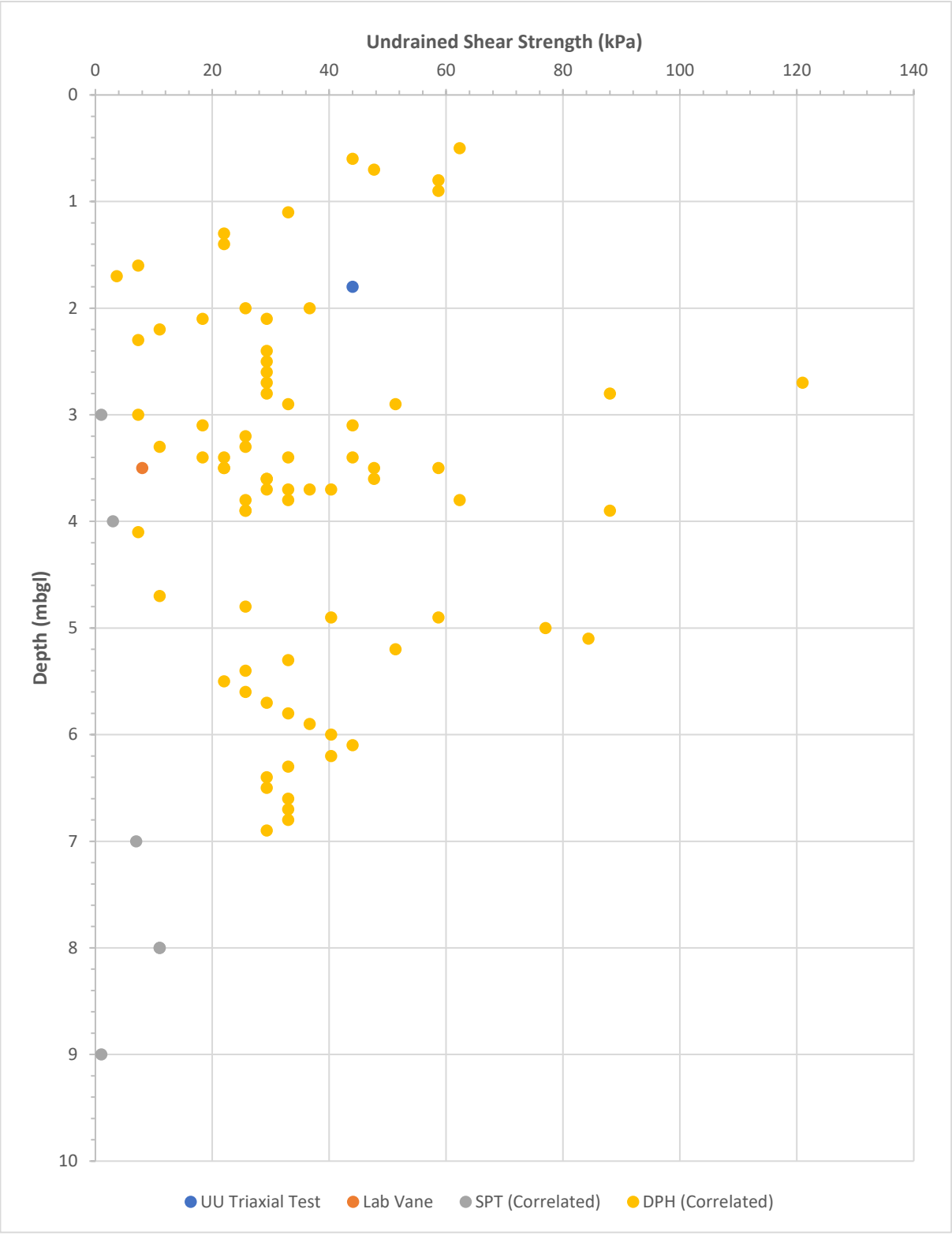
	Location	Ground material	Title
	Entire Scheme	**MADE GROUND**	**Undrained Shear Strength Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



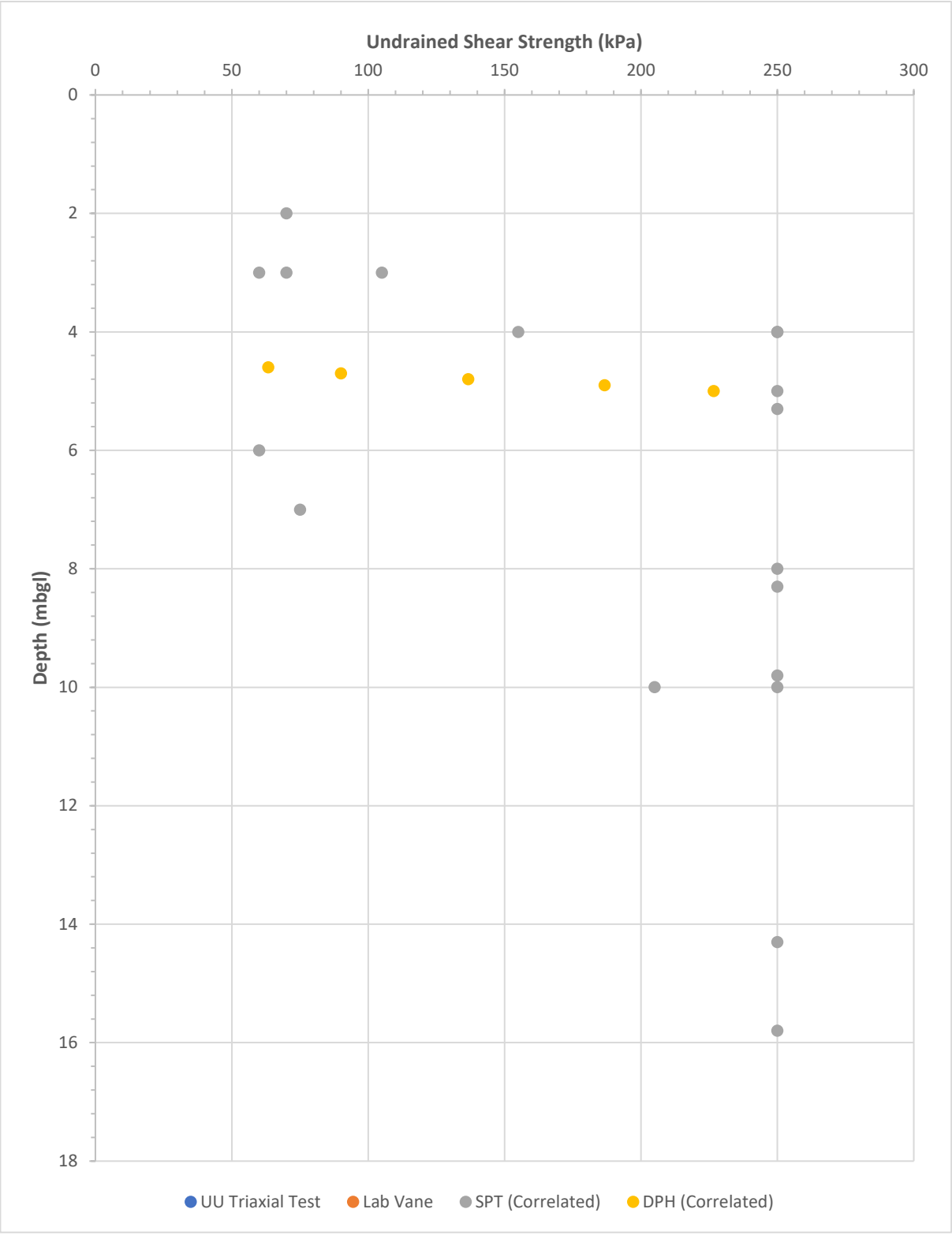
	Location	Ground material	Title
	Entire Scheme	**ESTUARINE**	**Undrained Shear Strength Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



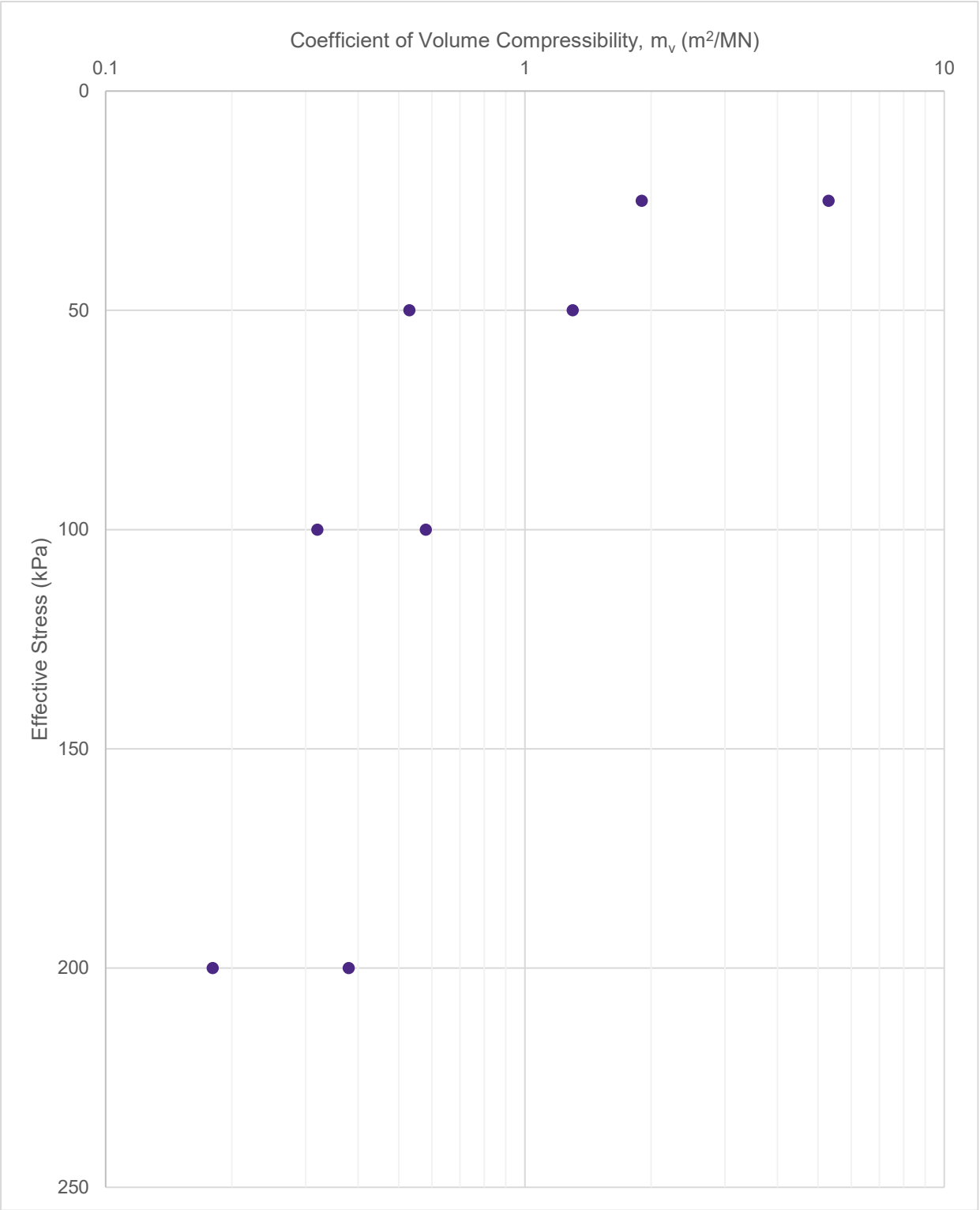
	Location	Ground material	Title
	Entire Scheme	**GLACIAL TILL**	**Undrained Shear Strength Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



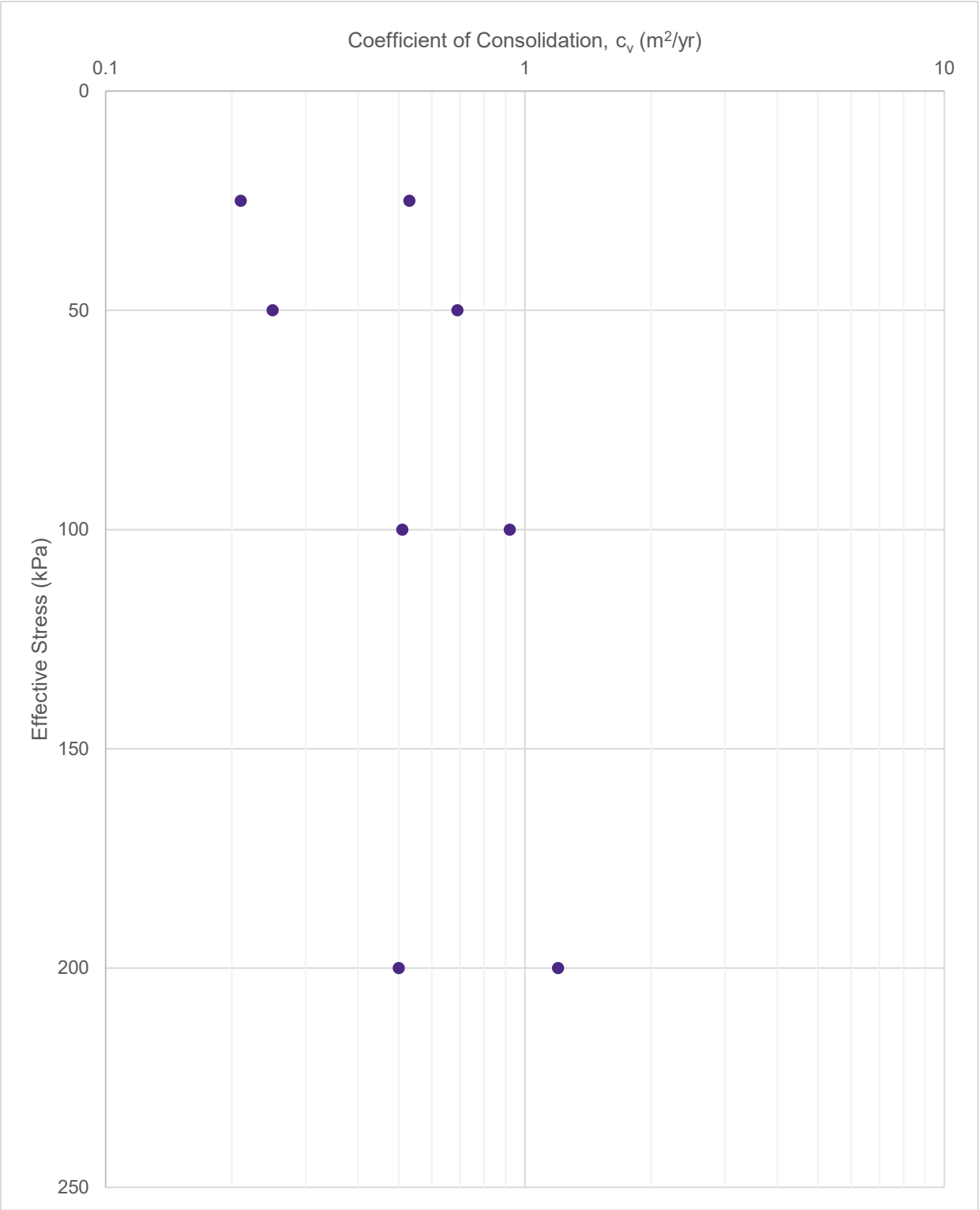
	Location	Ground material	Title
rps	**Entire Scheme**	**ESTUARINE**	**Volume Compressibility Vs Effective Stress**

Client	Project:	**Blaris Road Bridge**				
	Database File Identifier:	**MCT0780**				
	Database status:	**s4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



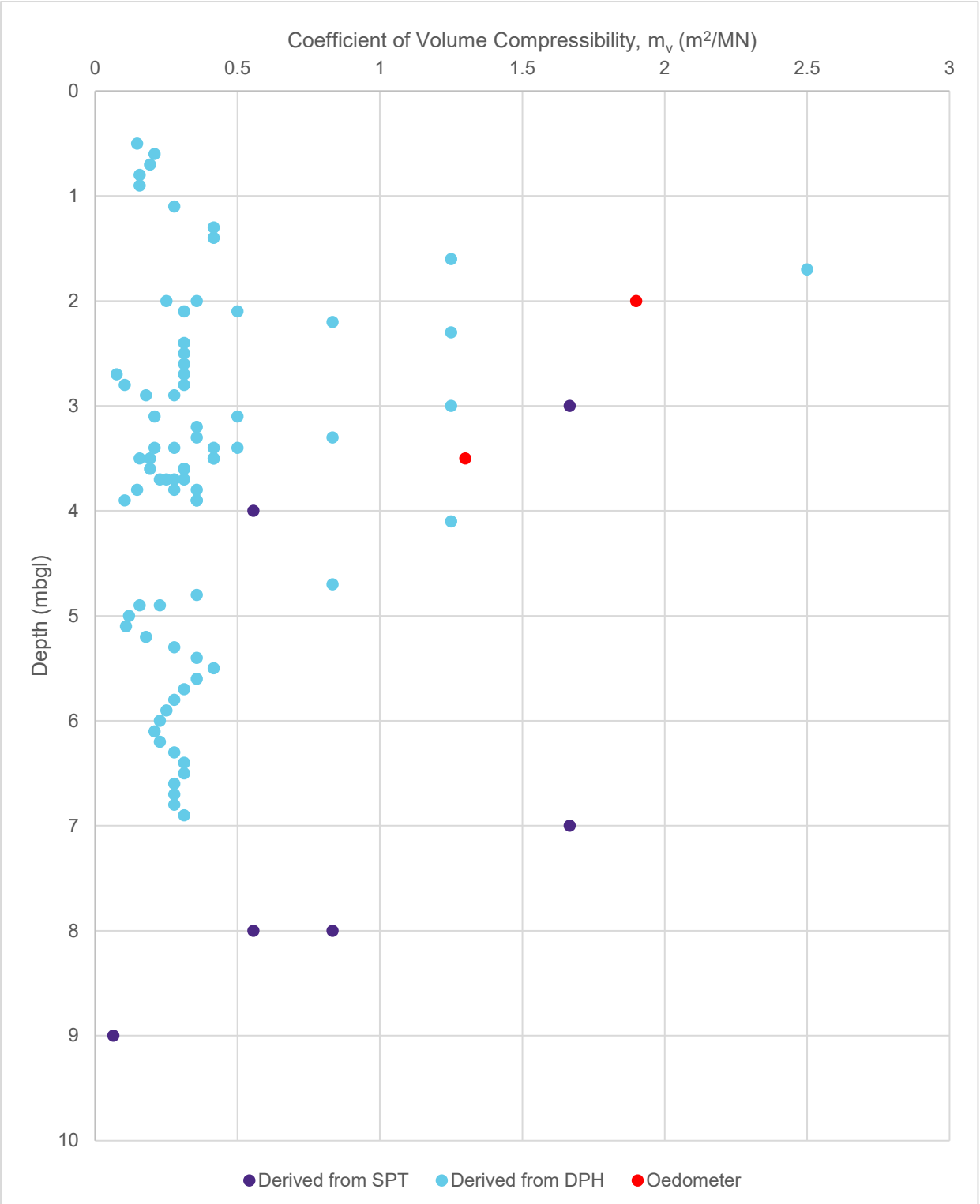
	Location	Ground material	Title
	Entire Scheme	**ESTUARINE**	**Coefficient of Consolidation Vs Effective Stress**

Client	Project:	**Blaris Road Bridge**				
	Database File Identifier:	**MCT0780**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



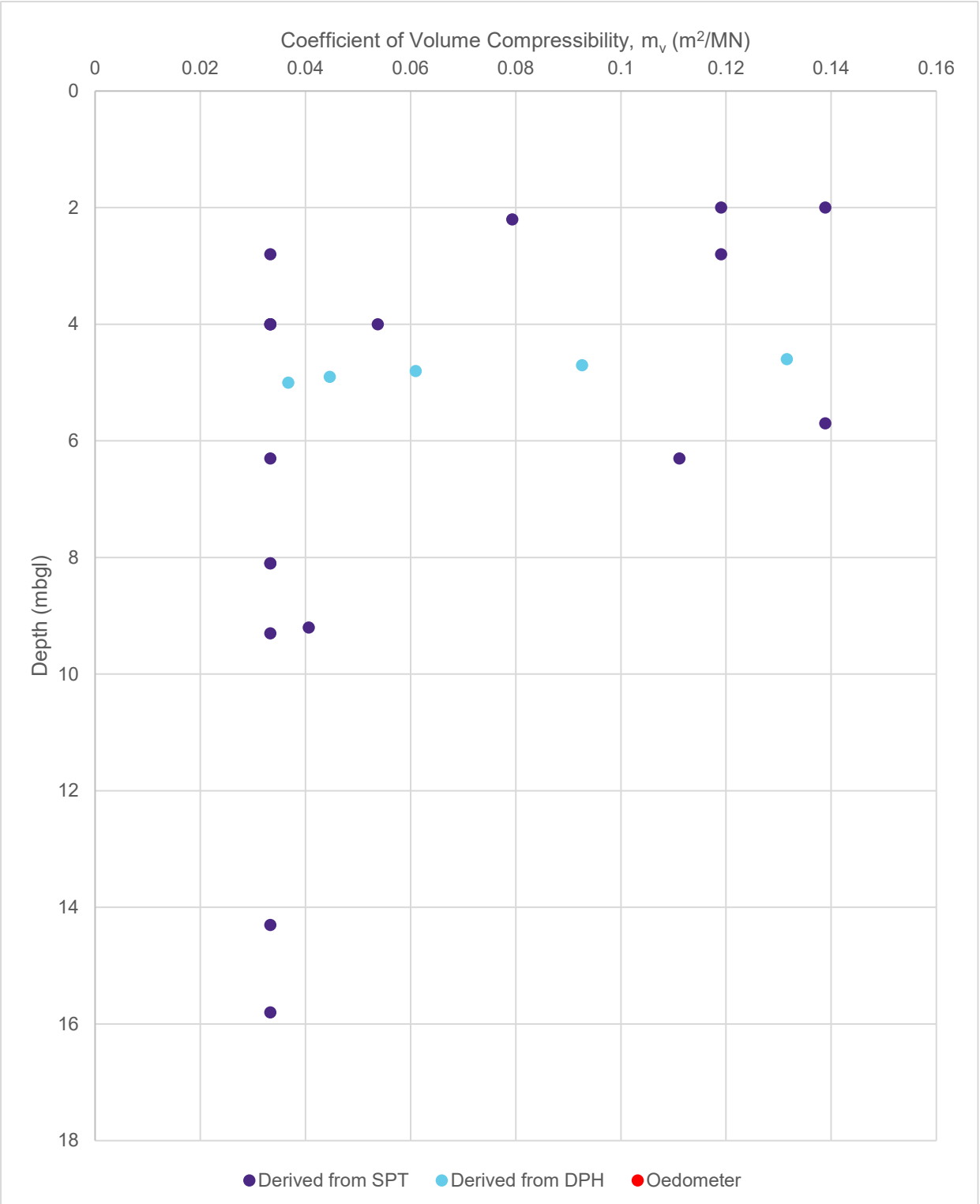
	Location	Ground material	Title
rps	**Entire Scheme**	**ESTUARINE**	**Volume Compressibility Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**

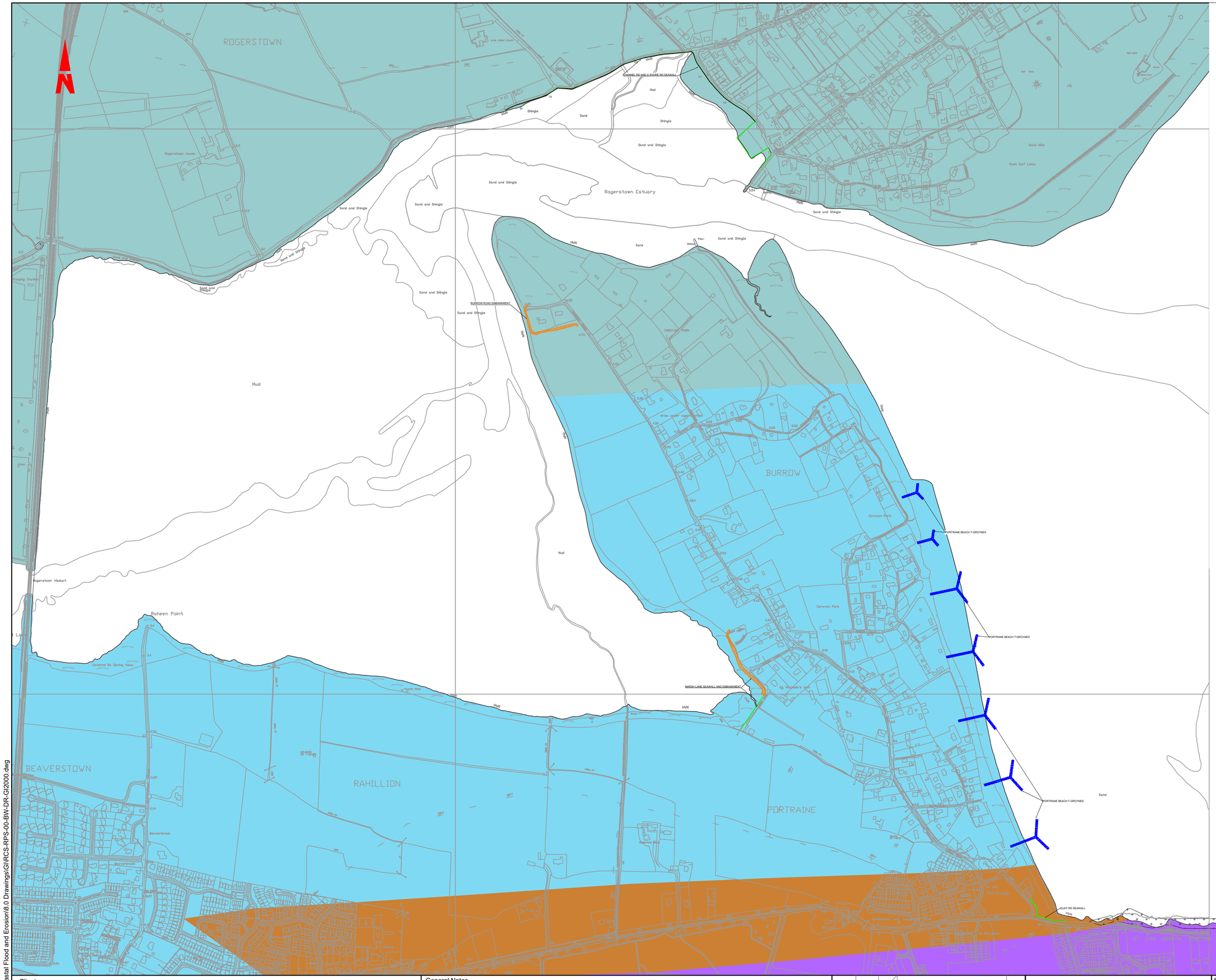


	Location	Ground material	Title
	Entire Scheme	**GLACIAL TILL**	**Volume Compressibility Vs Depth**

Client	Project:	**Rogerstown FRS**				
	Database File Identifier:	**MGT0597**				
	Database status:	**S4**	Database revision:	**P01**	Date plot exported:	**8/06/2022**



Appendix D
Desk Study Figures



LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

BEDROCK GEOLOGY (FROM GSI)

- TOBER COLLEEN FORMATION
- MALAHIDE FORMATION
- DONABATE FORMATION
- PORTRANE VOLCANIC FORMATION
- BEDROCK OUTCROPS

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

(i) Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors from the use of these files, either by human error by the recipient, listing of the un-dimensioned measurements, compatibility with the recipients software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

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(iii) This drawing is the property of RPS, it is a project confidential classified document. It must not be copied used or its contents divulged without prior written consent. The needs and expectations of client and RPS must be considered when working with this drawing.

(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

Model File Identifier	RCS-RPS-00-BW-DR-GI2000
File Identifier	RCS-RPS-00-BW-DR-GI2000
Status	S4
Rev	P01
Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	01 of 12
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	DESK STUDY BEDROCK GEOLOGY - GSI

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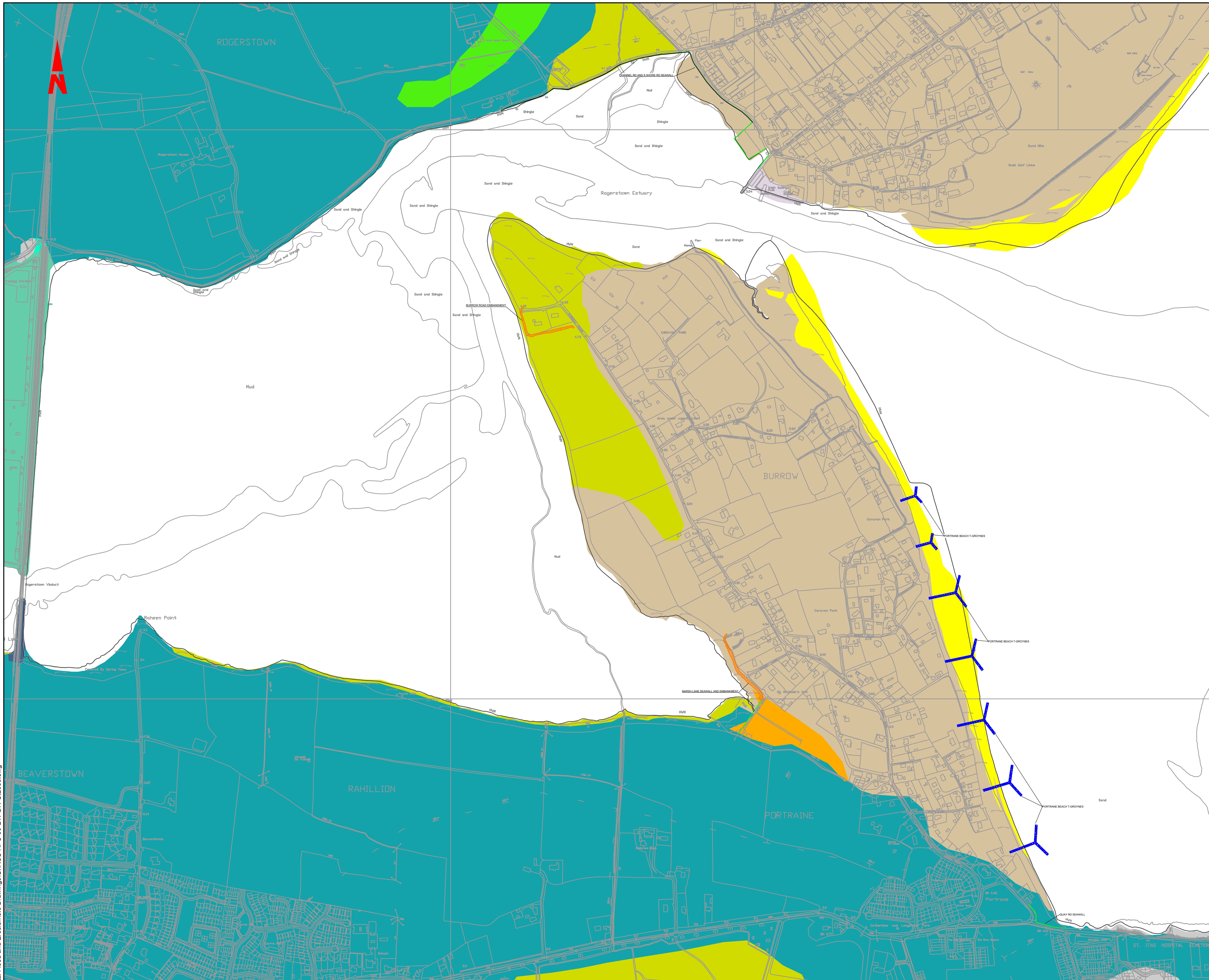

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

SUPERFICIAL GEOLOGY (FROM GSI)

- WINDBLOWN SANDS
- MARINE BEACH SANDS
- ESTURINE DEPOSITS
- IRISH SEA TILL DERIVED FROM LOWER PALAEOZOIC SANDSTONES AND SHALES
- ALLUVIUM
- GRAVELS DERIVED FROM LOWER PALAEOZOIC SANDSTONES AND SHALES
- LANDFILL
- EMBANKMENT
- URBAN
- PIER
- BEDROCK OUTCROP OR SUBCROP

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Scale 1:5,000 @ A1 1:10,000 @ A3

Created on 03 MAY 2022

Sheets 02 of 12

Project ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title DESK STUDY SURFACE GEOLOGY - GSI

Model File Identifier RCS-RPS-00-BW-DR-GI2000

File Identifier RCS-RPS-00-BW-DR-GI2000

Status S4

Rev P01

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LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

CHANNEL RD AND S SHORE RD SEAWALL

BURROW ROAD EMBANKMENT

MARSH LANE SEAWALL AND EMBANKMENT

PORTRANE BEACH T-GROYNES

PORTRANE BEACH T-GROYNES

PORTRANE BEACH T-GROYNES

QUAY RD SEAWALL

ROGERSTOWN

BURROW

RAHILLION

PORTRAINE

BEAVERSTOWN

Rogerstown Estuary

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / DMG	FOR PRELIMINARY DESIGN	CMG

Model File Identifier: RCS-RPS-00-BW-DR-GI2000

Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	03 of 12

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: DESK STUDY
HISTORIC MAP - OSI
HISTORIC 6" - FIRST EDITION - COLOUR

File Identifier	Status	Rev
RCS-RPS-00-BW-DR-GI2000	S4	P01

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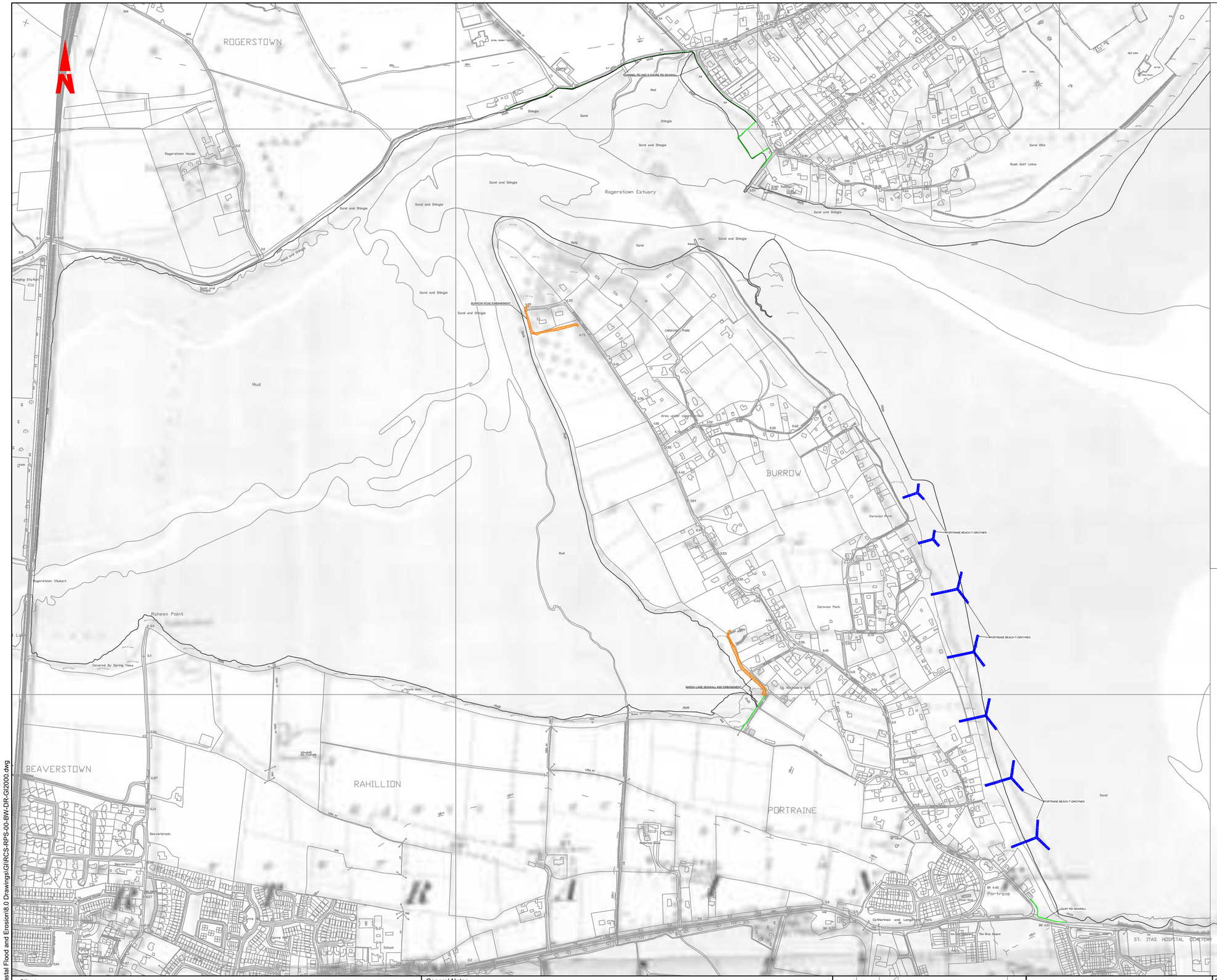

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

(i) Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors from the use of these files, either by human error by the recipient, listing of the un-dimensioned measurements, compatibility with the recipients software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

(ii) DO NOT SCALE, use figured dimensions only.

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn	Chk	Amendment / Issue	App
P01	03.05.22	TC	CMG	FOR PRELIMINARY DESIGN	CMG

rps

Model File Identifier: RCS-RPS-00-BW-DR-GI2000

Scale: 1:5,000 @ A1; 1:10,000 @ A3

Created on: 03 MAY 2022

Sheets: 04 of 12

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: DESK STUDY HISTORIC MAP - OSI HISTORIC 6" LAST EDITION B&W

File Identifier: RCS-RPS-00-BW-DR-GI2000

Status: S4

Rev: P01

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LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

(i) Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors from the use of these files, either by human error by the recipient, listing of the un-dimensioned measurements, compatibility with the recipients software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

(ii) DO NOT SCALE, use figured dimensions only.

(iii) This drawing is the property of RPS, it is a project confidential classified document. It must not be copied used or its contents divulged without prior written consent. The needs and expectations of client and RPS must be considered when working with this drawing.

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn	Chk	Amendment / Issue	App
P01	03.05.22	TC	CMG	FOR PRELIMINARY DESIGN	CMG

rps

Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	05 of 12
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	DESK STUDY HISTORIC AERIALS - OSI AERIAL 1995

Model File Identifier	File Identifier	Status	Rev
RCS-RPS-00-BW-DR-GI2000	RCS-RPS-00-BW-DR-GI2000	S4	P01

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI2000.dwg

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI2000.dwg

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Dsn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Model File Identifier: RCS-RPS-00-BW-DR-GI2000

Scale: 1:5,000 @ A1; 1:10,000 @ A3

Created on: 03 MAY 2022

Sheets: 06 of 12

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: DESK STUDY HISTORIC AERIALS - OSI AERIAL 2000

File Identifier: RCS-RPS-00-BW-DR-GI2000

Status: S4

Rev: P01

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Model File Identifier	RCS-RPS-00-BW-DR-GI2000
Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	07 of 12
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	DESK STUDY HISTORIC AERIALS - OSI AERIAL 2005
File Identifier	RCS-RPS-00-BW-DR-GI2000
Status	S4
Rev	P01

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI2000.dwg

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI2000.dwg

Client

Comhairle Contae Fhine Gall
Fingal County Council

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	08 of 12
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	DESK STUDY HISTORIC AERIALS - OSI AERIAL 2005 - 2012
Model File Identifier	RCS-RPS-00-BW-DR-GI2000
File Identifier	RCS-RPS-00-BW-DR-GI2000
Status	S4
Rev	P01

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

T:\MGT\0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GIS\RCS-RPS-00-BW-DR-GI2000.dwg

Client

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Fingal County Council

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Model File Identifier: RCS-RPS-00-BW-DR-GI2000

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Created on: 03 MAY 2022

Sheets: 09 of 12

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: DESK STUDY HISTORIC AERIALS - OSI AERIAL 2011 - 2013

File Identifier: RCS-RPS-00-BW-DR-GI2000

Status: S4

Rev: P01

LEGEND

PROPOSED

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

Client

Comhairle Contae Fhine Gall
Fingal County Council

General Notes

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	03.05.22	TC / CMG	FOR PRELIMINARY DESIGN	CMG

rps

Scale	1:5,000 @ A1 1:10,000 @ A3
Created on	03 MAY 2022
Sheets	10 of 12
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	DESK STUDY HISTORIC AERIALS - OSI AERIAL 2013 - 2018
Model File Identifier	RCS-RPS-00-BW-DR-GI2000
File Identifier	RCS-RPS-00-BW-DR-GI2000
Status	S4
Rev	P01

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Appendix E
Site Walkover Photos

P1: S Shore Rd (Burrow) - Looking across at Rogerstown Pier from S Shore Rd (25/05/2022)

P2: S Shore Rd (Burrow) - Launching area at edge of S Shore Rd (25/05/2022)

P3: S Shore Rd (Burrow) - South-western edge of yacht storage park (25/05/2022)

P4: S Shore Rd (Burrow) - Western edge of yacht storage park (25/05/2022)

P5: S Shore Rd (Burrow) - Coastal boundary of green adjacent to yacht storage park (25/05/2022)

P6: S Shore Rd (Burrow) - S Shore Rd from northern edge of yacht storage park showing existing stone wall (25/05/2022)

P7: S Shore Rd (Burrow) - S Shore Rd and existing stone wall (25/05/2022)

P8: S Shore Rd (Burrow) - Area below corner of S Shore Rd and Channel Rd (25/05/2022)

P9: S Shore Rd (Burrow) - Coast in front of Channel Rd at corner with S Shore Rd (25/05/2022)

P10: S Shore Rd (Burrow) - Bluff at edge of green adjacent to corner of Channel Rd and S Shore Rd (25/05/2022)

P11: Channel Rd (Burrow) - Existing stone wall along Channel Rd from corner with S Shore Rd (25/05/2022)

P12: Channel Rd (Burrow) - Easting half of channel Rd (25/05/2022)

P13: Channel Rd (Burrow) - Drainage hole in edge of existing stone wall (25/05/2022)

P14: Channel Rd (Burrow) - Existing stone wall along Channel Rd (25/05/2022)

P15: Channel Rd (Burrow) - Existing stone wall along Channel Rd (25/05/2022)

P16: Channel Rd (Burrow) - Area behind bridge along Channel Rd (25/05/2022)

P17: Channel Rd (Burrow) - Boundary between existing stone wall and newer concrete wall (25/05/2022)

P18: Channel Rd (Burrow) - Edge of western section of Channel Rd (25/05/2022)

P19: Channel Rd (Burrow) - Edge of western section of Channel Rd (25/05/2022)

P20: Channel Rd (Burrow) - Edge of western section of Channel Rd (25/05/2022)

P21: Channel Rd (Burrow) - Dislodged rip rap along edge of Channel Rd (25/05/2022)

P22: Channel Rd (Burrow) - Western extent of Channel Rd (25/05/2022)

P23: Channel Rd (Burrow) - Coastal area to west of Channel Rd (25/05/2022)

P24: Channel Rd (Burrow) - Coastal area to west of Channel Rd (25/05/2022)

P25: Burrow Rd (Rush) - Coastal area in front of Burrow Rd area (25/05/2022)

P26: Burrow Rd (Rush) - Bluff forming edge of Burrow Rd area (25/05/2022)

P27: Burrow Rd (Rush) - Bluff forming edge of Burrow Rd area (25/05/2022)

P28: Burrow Rd (Rush) - Bluff forming edge of Burrow Rd area from top (25/05/2022)

P29: Burrow Rd (Rush) - Southern boundary of Burrow Rd area (25/05/2022)

P30: Burrow Rd (Rush) - Coastal area to the south of the Burrow Rd area (25/05/2022)

P31: Burrow Rd (Rush) - Northern boundary of Burrow Rd area (25/05/2022)

P32: Burrow Rd (Rush) - Northern boundary of Burrow Rd area from road (25/05/2022)

P33: Burrow Rd (Rush) - Southern boundary with existing embankment from Burrow Rd (4/11/2022)

P34: Marsh Lane (Rush) - Marsh Lane looking west (25/05/2022)

P35: Marsh Lane (Rush) - Marsh Lane looking east (25/05/2022)

P36: Marsh Lane (Rush) - Stream and marsh area in front of Marsh Lane (25/05/2022)

P37: Marsh Lane (Rush) - Marsh Lane looking west (25/05/2022)

P38: Marsh Lane (Rush) - Marsh area in front of Marsh Lane (25/05/2022)

P39: Marsh Lane (Rush) - Marsh Lane looking north (25/05/2022)

P40: Marsh Lane (Rush) - Marsh Lane looking north (25/05/2022)

P41: Marsh Lane (Rush) - Existing area to north of Marsh Lane area (25/05/2022)

P42: Marsh Lane (Rush) - Existing area to north of Marsh Lane area (25/05/2022)

P43: Marsh Lane (Rush) - Existing area to north of Marsh Lane area (25/05/2022)

P44: Marsh Lane (Rush) - Existing area to north of Marsh Lane area (25/05/2022)

P45: Marsh Lane (Rush) - Existing area to north of Marsh Lane area (25/05/2022)

P46: Marsh Lane (Rush) - Existing area to north of Marsh Lane area looking back towards Marsh Lane (25/05/2022)

P47: Quay Rd (Rush) - Corner of Burrow Rd and Quay Rd above Portrane beach (4/11/2022)

P48: Quay Rd (Rush) - Coastal bluff at corner of Burrow Rd and Quay Rd (25/05/2022)

P49: Quay Rd (Rush) - Rip rap below coastal bluff at corner of Burrow Rd and Quay Rd (25/05/2022)

P50: Quay Rd (Rush) - Coastal bluff at corner of Burrow Rd and Quay Rd (25/05/2022)

P51: Portrane Beach (Rush) - Coastal bluff at southern end of Portrane beach (25/05/2022)

P52: Portrane Beach (Rush) - Looking north from southern end of Portrane beach (25/05/2022)

P53: Portrane Beach (Rush) - Coastal bluff at southern end of Portrane beach (25/05/2022)

P54: Portrane Beach (Rush) - Looking north from southern end of Portrane beach (25/05/2022)

P55: Portrane Beach (Rush) - Looking north from southern end of Portrane beach with sheet piles in place (25/05/2022)

P56: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P57: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P58: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P59: Portrane Beach (Rush) - Temporary protection of coastal sand bluff at edge of Portrane beach (25/05/2022)

P60: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P61: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P62: Portrane Beach (Rush) - Temporary protection of coastal sand bluff at edge of Portrane beach (25/05/2022)

P63: Portrane Beach (Rush) - Beach in front of bluff (25/05/2022)

P64: Portrane Beach (Rush) - Temporary protection of coastal sand bluff at edge of Portrane beach (25/05/2022)

P65: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach with recent erosion (25/05/2022)

P66: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach with recent erosion (25/05/2022)

P67: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach with recent erosion (25/05/2022)

P68: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach (25/05/2022)

P69: Portrane Beach (Rush) - Coastal sand bluff at edge of Portrane beach at northern end (25/05/2022)

P70: Portrane Beach (Rush) - Rubble dumped along edge of northern edge of Portrane beach (25/05/2022)

P71: Portrane Beach (Rush) - Northern extent of Portrane beach area of interest (25/05/2022)

P72: Portrane Beach (Rush) - Looking south from northern extent of Portrane beach area of interest (25/05/2022)

Appendix F
Conceptual Site Model

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI3000.dwg

Client

Comhairle Contae Fhine Gall
Fingal County Council

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	01.06.22	TC / CMG	FOR INCLUSION IN GIR	CMG

Scale	1000 @ A1 2000 @ A3
Created on	MAY 22
Sheets	00 of 07
Project	ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT
Title	CONCEPTUAL SITE MODEL PLAN AND PROFILE

Model File Identifier	File Identifier	Status	Rev
RCS-RPS-00-BW-DR-GI3000	RCS-RPS-00-BW-DR-GI3000	S4	P01

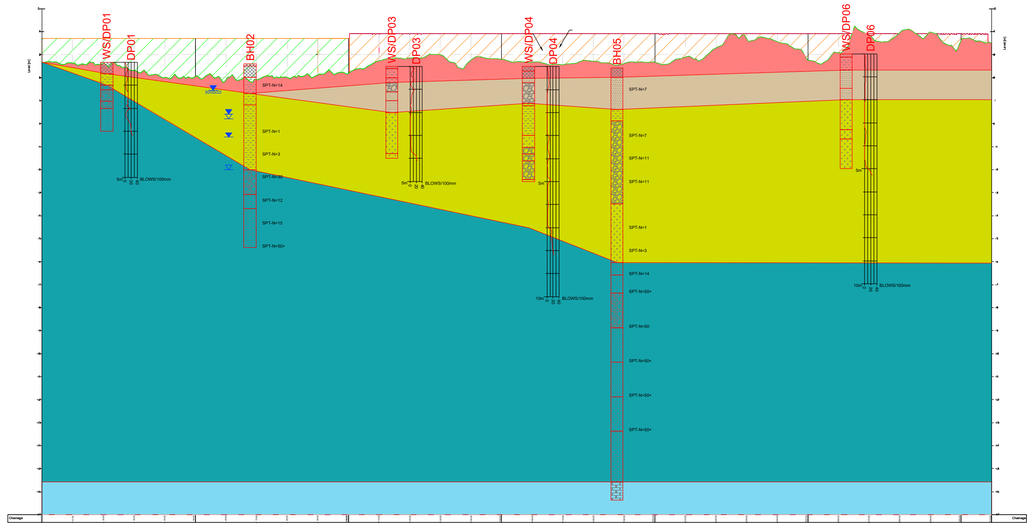
LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

Client

Comhairle Contae Fhine Gall
Fingal County Council

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	01.06.22	TC-CMG	FOR INCLUSION IN GIR	CMG

Model File Identifier: RCS-RPS-00-BW-DR-GI3000

Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 01 of 07

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: CONCEPTUAL SITE MODEL PLAN AND PROFILE

File Identifier: RCS-RPS-00-BW-DR-GI3000

Status: S4

Rev: P01

T:\MGT0597 - Rogerstown Coastal Flood and Erosion\8.0 Drawings\GI\RCS-RPS-00-BW-DR-GI3000.dwg

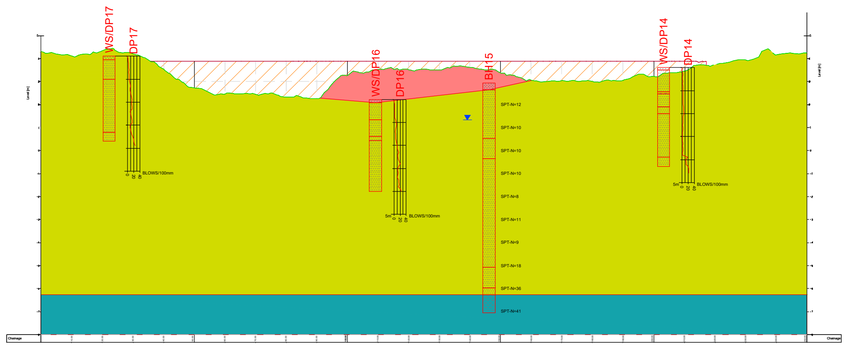
LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

Client: Comhairle Contae Fhine Gall / Fingal County Council

General Notes

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Rev	Date	Drn / Chk	Amendment / Issue	App
P01	01.06.22	TC / GMG	FOR INCLUSION IN GIR	CMG

Model File Identifier: RCS-RPS-00-BW-DR-GI3000

Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 02 of 07

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: CONCEPTUAL SITE MODEL PLAN AND PROFILE

File Identifier: RCS-RPS-00-BW-DR-GI3000

Status: S4

Rev: P01

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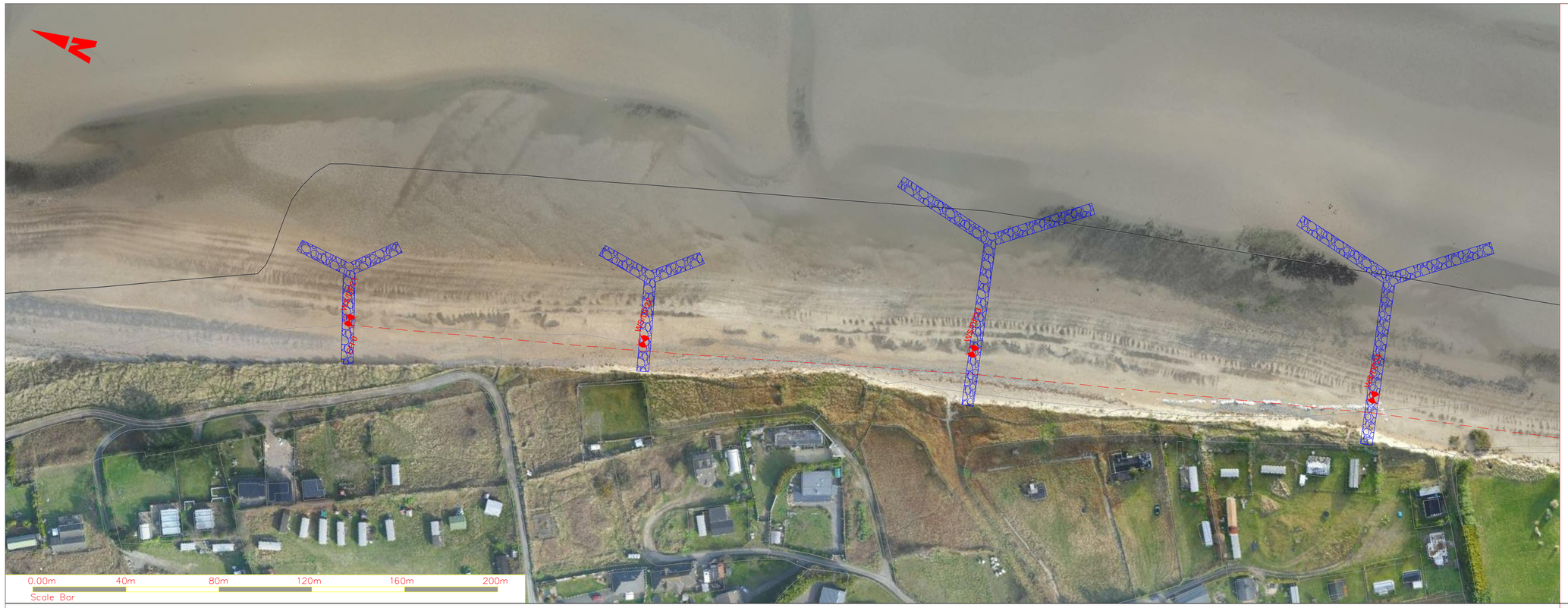


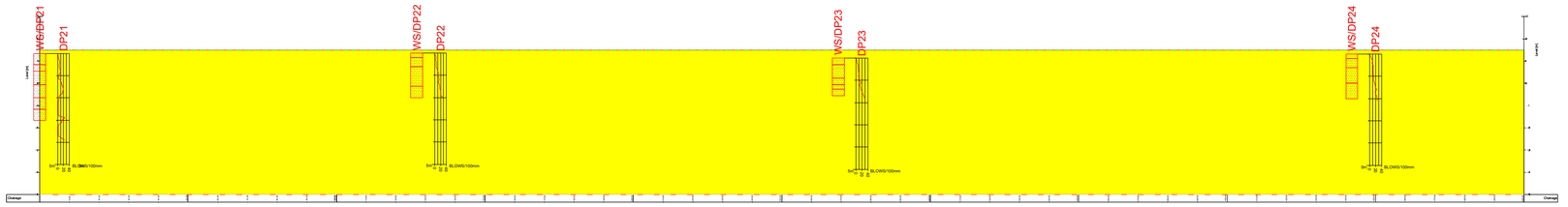
LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

Client

Comhairle Contae Fhine Gall
Fingal County Council

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P01	01.06.22	TC / GMG	FOR INCLUSION IN GIR	CMG

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Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 03 of 07

Project: ROGERSTOWN OUTER ESTUARY (PORTRANE - RUSH) COASTAL DEFENCE PROJECT

Title: CONCEPTUAL SITE MODEL PLAN AND PROFILE

File Identifier: RCS-RPS-00-BW-DR-GI3000

Status: S4

Rev: P01

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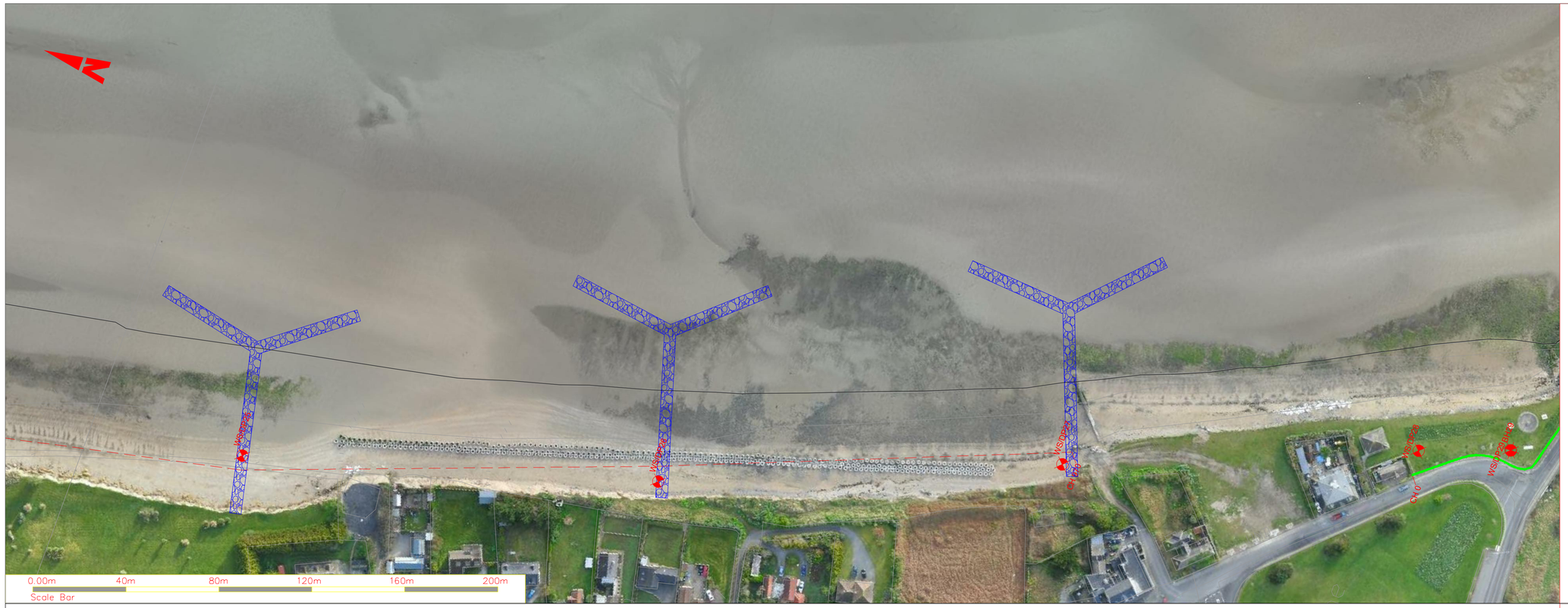


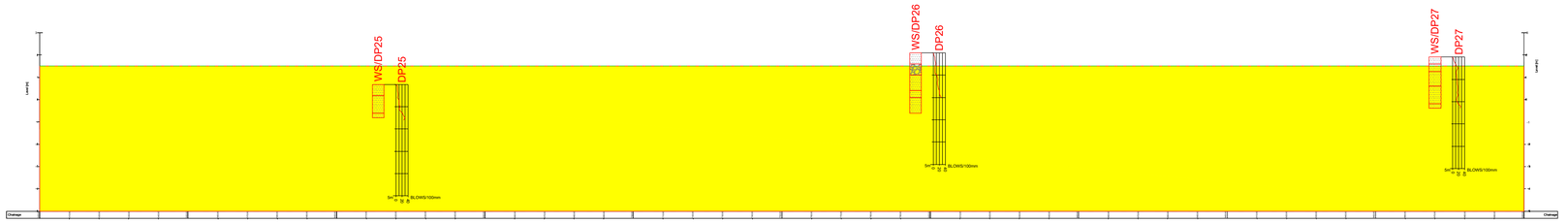
LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS
- PROPOSED T-GROYNE

GROUND INVESTIGATIONS

- BHXX — CABLE PERCUSSIVE BOREHOLE POSSIBLY WITH ROTARY FOLLOW ON
- WSXX — WINDOW SAMPLER WITH DYNAMIC PROBE



LEGEND

PROPOSED WORKS

- PROPOSED FLOOD DEFENCE WALLS
- PROPOSED FLOOD DEFENCE EMBANKMENTS

SOIL TYPE

- MADE GROUND
- TOPSOIL
- SILT
- CLAY
- SAND
- GRAVEL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK

GEOLOGICAL UNIT

- MADE GROUND (SURFACE)
- WINDBLOWN SAND (SURFACE)
- MARINE BEACH SAND (SURFACE)
- ESUTRINE DEPOSITS (SURFACE)
- IRISH SEA TILL (SURFACE)
- TOBER COLLEEN FORMATION (BEDROCK)
- DONABATE FORMATION (BEDROCK)
- MALAHIDE FORMAITON (BEDROCK)

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Client: Comhairle Contae Fhine Gall / Fingal County Council

General Notes

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn / Chk	Amendment / Issue	App
P01	01.06.22	TC / GMG	FOR INCLUSION IN GIR	CMG

Model File Identifier: RCS-RPS-00-BW-DR-GI3000

Scale: 1000 @ A1, 2000 @ A3

Created on: MAY 22

Sheets: 04 of 07

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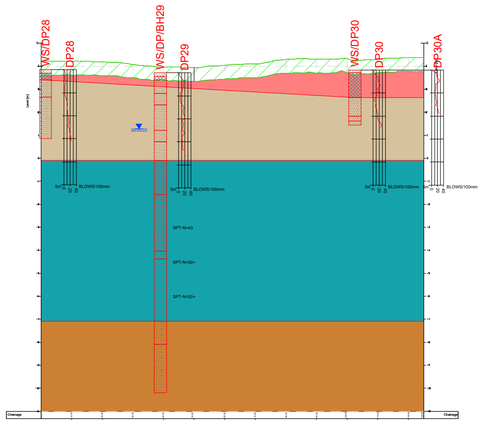

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Comhairle Contae Fhine Gall
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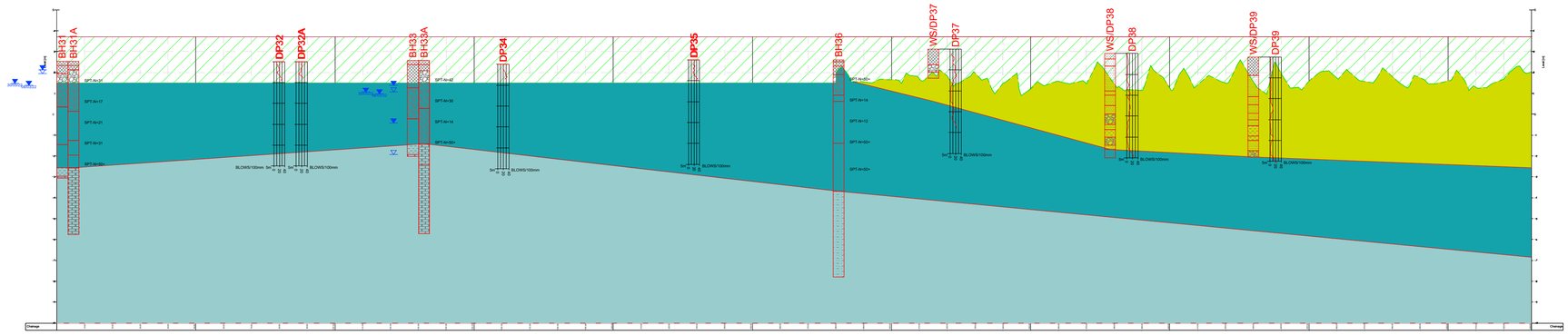

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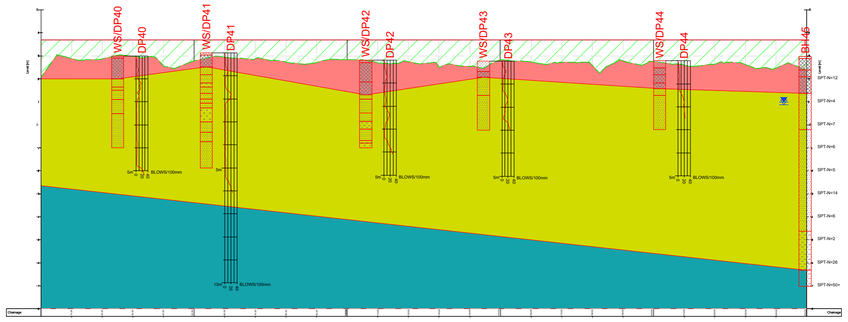

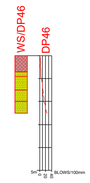

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