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1 INTRODUCTION

1.1 SCOPE OF WORKS

In March 2009 RPS Consulting Engineers commissioned Priority Drilling PLC on behalf of their Client Bantry Bay Harbour Commissioners to carry out a marine ground investigation at Bantry Inner Harbour Co Cork. The purpose of the geotechnical ground investigation was to obtain sufficient geotechnical information in order to assess the suitability of the harbour for further development.

The investigation which was specified by RPS Consulting Engineers initially comprised of fifteen (15) number cable percussion boreholes thirteen (13) number rotary cored boreholes sixteen (16) number dynamic probes bathymetric surveying all associated sampling laboratory work marine sediment analysis and actual reporting as detailed in the contract specification and bill of quantities. The final scope of works as completed is detailed in Section 1.1. The field work was carried out between July and August 2009.

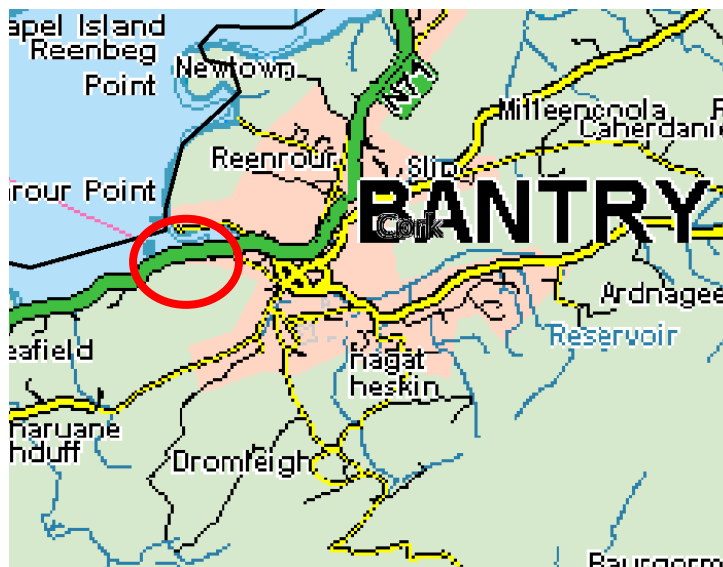
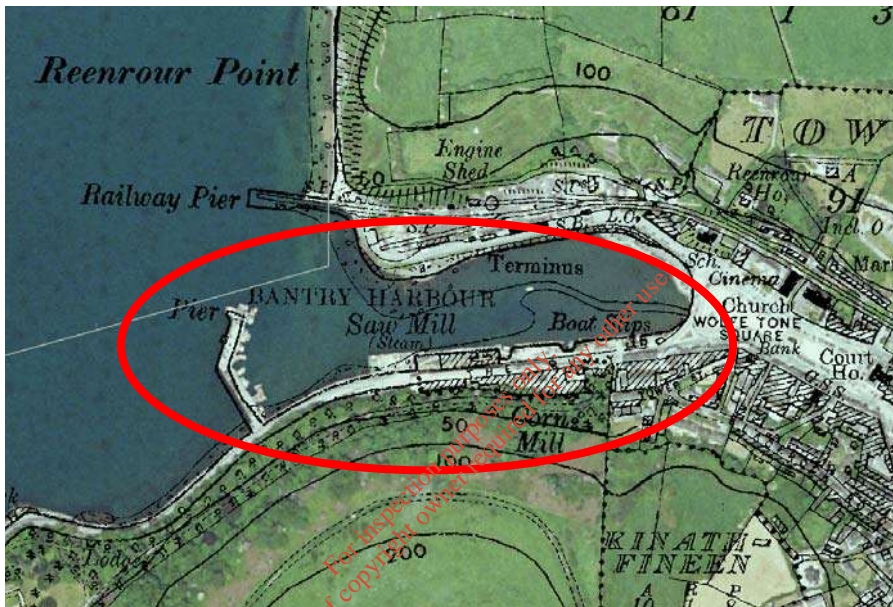
1.2 REPORTING

This report PC9030_Rp000000 presents the actual records of the field work and laboratory testing with respect to the ground investigation contract undertaken for the Bantry Inner Harbour. A separate bathymetric survey and sub-bottom profiling of the bedrock was undertaken as outlined in report P000000 August 2009 presented in **APPENDIX B**.

THE SITE

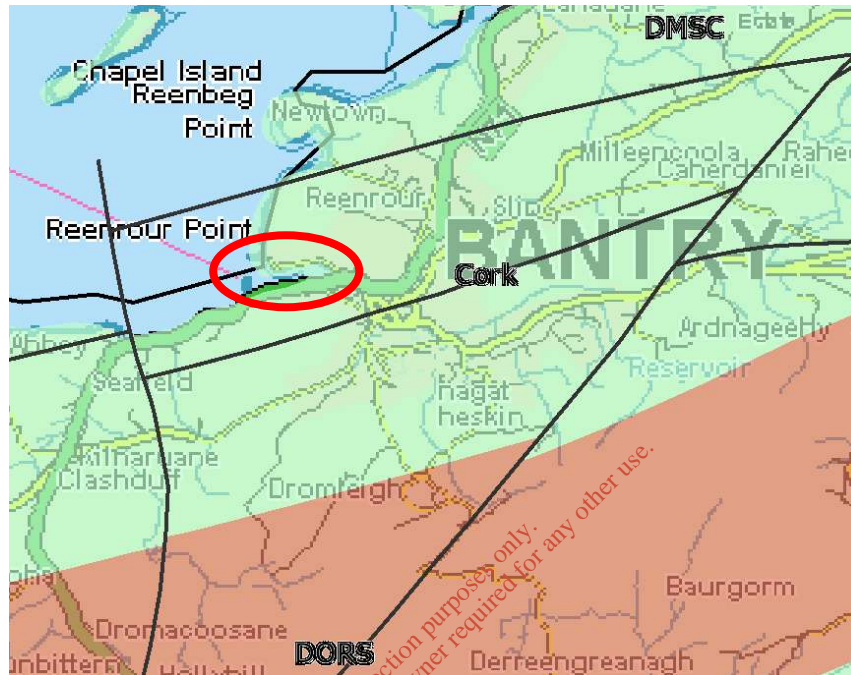
SITE LOCATION DESCRIPTION

The site is within Bantry Inner Harbour, Co. Cork, located between the existing Pier on the N. Cork to Killarney Road and the Railway Pier on the Harbour Road. The site is tidal with water depths varying from 0m MSL to -0.5m to Chart Datum. A significant portion of the site is subject to periodic wetting and drying governed by tidal levels.



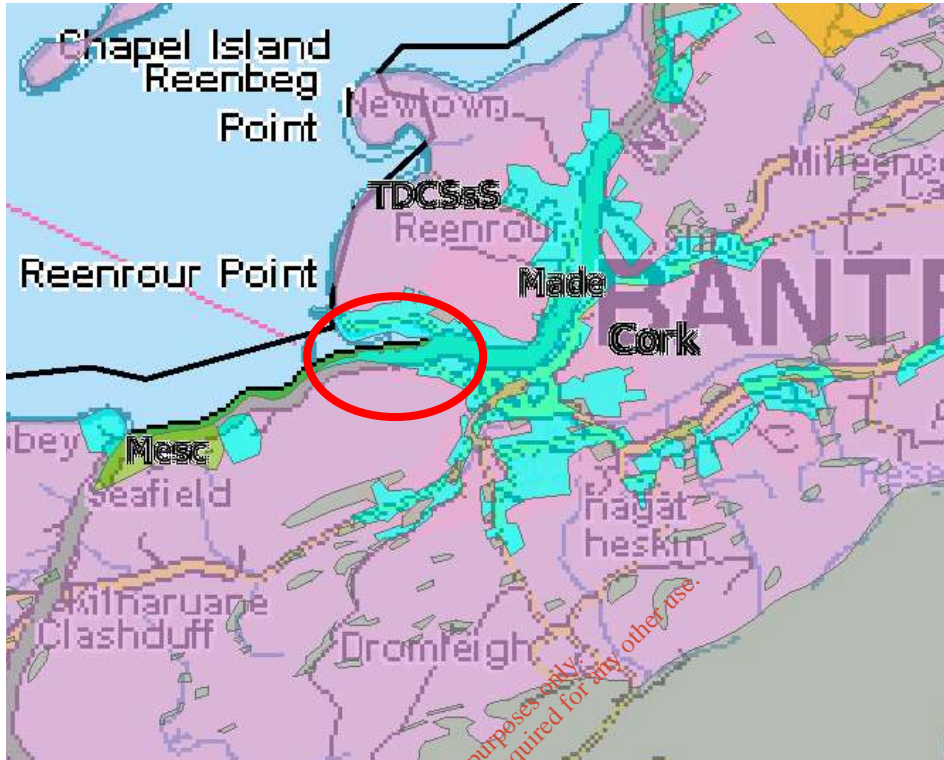
SITE EOLO

The Geological Survey of Ireland mapping Sheet indicated that the geology of the area was characterised by the Reenagough Member (KNrg) described as massive and (f)aser bedded SANDSTONE



A SI S C

Overburden deposits were expected to consist of made ground and marine estuarine silts and clays (Mesc) as indicated by subsoil mapping (Teagasc)



A S RBD T

FIELD WORK

GENERAL

The field work was carried out in general accordance with BS 5930 Code of Practice for Site Investigation and Part 2 of BS 5930 Method of Tests for Soil for Civil Engineering Purposes. Details of the equipment and plant used are presented below. The plant was operated from a jack up barge. A number of locations were accessible at low tide and were undertaken on land.

Operation	Equipment	Notes	Access	Comments
Cable percussion Boring	Hand	100mm	N/A	Standard Penetration Test values and bulk samples obtained
Rotary Boring	DeltaBase	Symmetrex 100mm open hole Double lined core barrel 100mm nominal core dia	Compressed air-mist	Standard Penetration Test values and core obtained
Dynamic Probes	Archday Competitor CPS	100mm	N/A	Super heavy 100kg drop weight

The exploration locations were selected by RPS and set out from existing features and the co-ordinates provided.

The locations were subsequently surveyed using Trimble GPS equipment to the National Grid system of co-ordinates with elevations recorded to Chart datum. These locations are shown on the Exploration Location Plan drawing ref PC-SI- presented in

APPENDIX E

EXPLORATOR HOLES

The exploratory holes as completed during the ground investigation are listed in the following table

SUMMARY OF EXPLORATOR HOLES

Type	Quantity	Depth Range	Remarks
Cable Tool Boreholes	1 No	0m to 10m	B1 and B2
Cable Tool and Rotary Cored Boreholes	1 No	0m to 10m	B3, B4, B5, B6, B7, B8, B9, B10, B11 and B12
Dynamic Probes	1 No	0m to 10m	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11 and P12

The exploration records are presented in **APPENDIX A** and **APPENDIX D** and should be read in conjunction with the included key sheet. The records provide descriptions based on engineer's/geologist's descriptions of the material encountered in accordance with BS 5930 together with any observations made during the investigation.

GROUNDWATER MONITORING

Groundwater was recorded when encountered during boring. Groundwater levels were monitored over a period of 10 minutes noting any changes that have may occurred.

IN SITU TESTING

Standard Penetration Test (N) values were carried out in boreholes at 1m to 2m spacing. The results are presented in the exploration records **APPENDIX A** and summarised below.

Dynamic probing was undertaken recording the blows per 100mm penetration. A CP (S) super heavy rig was used.

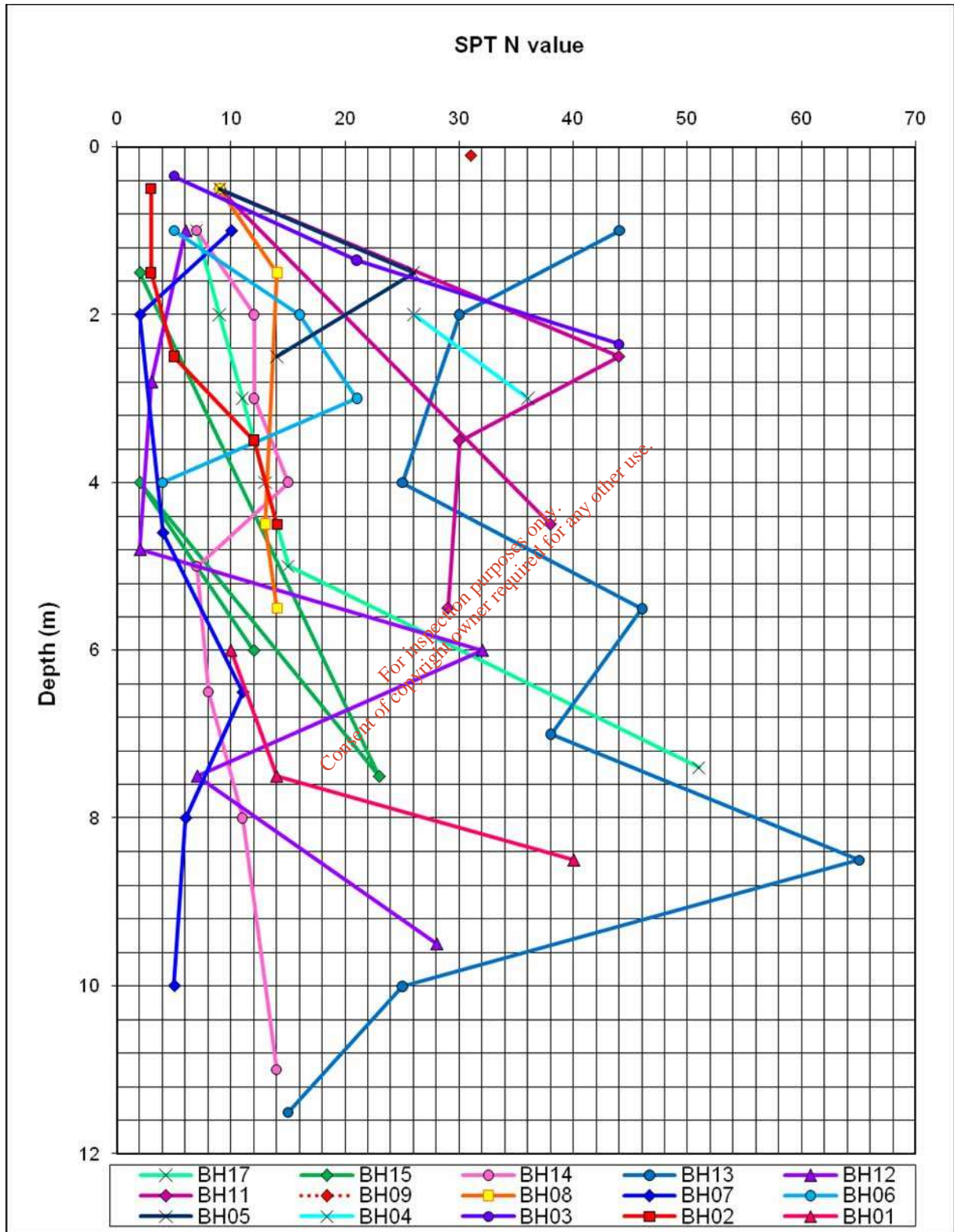
Grab samples were taken of the harbour marine sediment for environmental assessment and analysis.

SUMMARY OF IN SITU TESTING

TEST	STATUS	REMARKS
Standard Penetration Test (N) values	No	N ranging from 0 to 10 0 No SPT (C) and 0 No SPT (S)
Bathymetric & Sub-bottom Profile Survey	-	Report re: P
Grab Samples	No	Taken at 1m depth below bed level
Dynamic Probing	No	0m to 0m bsl Blow range from 0000mm to 0000mm

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The distribution of SPT N values with depth below sea bed is presented below



LABORATOR TESTING

All samples and core were transported to Priority Geotechnical's laboratory in Middleton, Co. Cork, examined and logged in accordance with BS 5930:2002 Testing as scheduled by Priority Geotechnical and approved by the Engineer. Testing as carried out by PGL in accordance with BS 5930:2002 Methods of test for soils for civil engineering purposes and the ISRM suggested methods for rock characterisation testing and monitoring. Triaxial testing and oedometer consolidation testing was undertaken by GEO Laboratory Testing Services (UK) Ltd in accordance with the relevant BS 5930:2002.

Specialist environmental analysis was undertaken on the marine sediment at UK Environmental Agency National Laboratory Service. The data is presented in **APPENDIX C**.

A summary of tests are detailed below and presented in **APPENDIX C**.

SOIL TESTING

SUMMARY OF LABORATOR TESTING UNDERTAKEN ON OVERBURDEN SOILS

SOIL		
TEST	NO.	REMARKS
Natural Moisture Content	1	Range 15% to 25%
Atterberg Limit	1	Liquid Limit 25% to 35% Plastic Limit 15% to 25% including NP non plastic soils Plasticity Index 10% to 15%
Grading analysis	1	No hydrometer analysis was undertaken
Loss on Ignition	1	15% to 25%
Organic Content	1	15% to 25%
Undrained Triaxial Compression	1	C 10 kPa to 20 kPa every soil to firm
Shear Box	1	C 10 kPa to 20 kPa ϕ 15° to 25°
Triaxial Compression - CU	1	C 10 kPa to 20 kPa ϕ 15° to 25°
Oedometer consolidation	1	-
Marine Sediment Analysis	-	client's Specification outlines scope of analysis

ROC TESTING

SUMMARY OF LABORATORY TESTING UNDERTAKEN ON ROC

ROC		
T	N	R
Point Load Index		MPa to MPa
Unconfined Uniaxial Compressive Strength UCS		MPa to MPa

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□ □ ROUND CONDITIONS

The site □as characterised by marine□estuarine deposits o□slightly sandy CLAY□SILT□ slightly sandy slightly gra□elly organic SILT□silty gra□elly SAND□clayey sandy GRA□□L□silty sandy GRA□□L and sandy GRA□□L to depths o□□□□m belo□ sea bed level □bsl□

P□AT □as encountered at B□□□ at a depth o□□□□m bsl to □□□m bsl□

Based on the Standard Penetration Test □SPT□N □alues□the cohesive soils □ere o□variable strength and described as □ery soft to □ery sti□□ha□ing N □alues ranging □om □ to □□□The granular deposits □ere described as □ery loose to dense□□ith N □alues □□ to □□□

MU□STON□ □as encountered at depths o□□□□m bsl to □□□□m bsl□and □as described as being □eak to moderately strong□ha□ing an Unconfined Compressive Strength o□□□□MPa and Point Load Indices o□□□□MPa to □□□□MPa□

Interbedded MU□STON□ and SAND□STON□ □as encountered at depths o□□□□m bsl to □□□□m bsl□ and □as described as being moderately □eak to strong□ ha□ing an Unconfined Compressive Strength o□□□□MPa and Point Load Indices o□□□□MPa to □□□□MPa□

Interbedded MU□STON□ and LIM□STON□ □as encountered at depths o□□□□□m bsl to □□□□□m bsl□ and □as described as being moderately □eak to □ery strong□ Unconfined Compressive Strengths o□□□□□MPa to □□□□□MPa and Point Load Indices o□□□□□MPa to □□□□□MPa□

SILTSTON□ □as encountered at depths o□□□□□m bsl to □□□□□m bsl□and □as described as being □eak to strong□ha□ing an Unconfined Compressive Strength o□□□□□MPa and Point Load Indices o□□□□□MPa to □□□□□MPa□

Interbedded SILTSTON□ AN□ SAND□STON□ □as encountered at depths o□□□□□m bsl to □□□□□m bsl□and □as described as being moderately □eak to □ery strong□ha□ing Unconfined Compressive Strengths o□□□□□MPa to □□□□□MPa and Point Load Indices o□□□□□MPa to □□□□□MPa□

LIM□STON□ □as encountered at depths o□□□□□m bsl to □□□□□m bsl□and □as described as being moderately strong to strong□ha□ing Unconfined Compressive Strengths o□□□□□MPa to □□□□□MPa and Point Load Indices o□□□□□MPa to □□□□□MPa□

At B... the MU...STON... was non-intact and highly weathered in the upper ...haing Rock ...uality ...esignation...R... ranging from ... to ... At B... the interbedded MU...STON... and SAN...STON... had a R... o... At B... and B... the interbedded MU...STON... and LIM...STON... had a R... o... to ... At B... the SILTSTON... was non-intact and highly weathered in the upper ...haing a R... o... to ... At B... B... B... B... and B... the interbedded SILTSTON... and SAN...STON... had a R... o... to ... At B... the interbedded SILTSTON... SAN...STON... and Mudstone had a R... o... to ...

SUMMARY OF ROUND CONDITIONS

S... E...	R... D...	L...
Slightly sandy slightly gravelly CLAY	...m to ...m	B... B... B... B... B... B...B...B... and B...
Slightly sandy slightly gravelly SILT	...m to ...m	B... B... B... B... B... B...B... and B...
Slightly sandy slightly gravelly organic SILT	...m to ...m	B... B... B... B... B... B... and B...
Silty very gravelly SAND	...m to ...m	B...B...B...B... and B...
Clayey sandy GRAVEL	...m to ...m	B... and B...
Slightly silty SAND AN... GRAVEL	...m	B...
Silty very sandy GRAVEL	...m to ...m	B... B... B... B... B... B...B...B...B... and B...
Sandy GRAVEL	...m to ...m	B...B...B... and B...
P...AT	...m	B...
COBBLES	...m to ...m	B...B... and B...
MU...STON...	...m to ...m	B...B...B...B...B... and B...
MU...STON... and SAN...STON...	...m to ...m	B... and B...
MU...STON... and LIM...STON...	...m	B...

Stratum Encountered	Range of Depths (m)	Locations
SILTSTON	0.00m to 0.00m	B0000 B0000 B0000 B0000 B0000 and B0000
SILTSTON and SANDSTON	0.00m to 0.00m	B0000 B0000 B0000 B0000 and B0000
SILTSTON SANDSTON and MUDSTON	0.00m	B0000
LIMESTON	0.00m to 0.00m	B0000 B0000 B0000 and B0000

Geological longitudinal sections (drawing reference PC0000-LS-A and PC0000-LS-00 to PC0000-LS-000) have been produced and are presented in **APPENDIX E** to further describe the ground conditions and should be reviewed in conjunction with the sub-bottom profiling drawings presented in **APPENDIX B**

5.1 GROUNDWATER

Groundwater was encountered during rotary coring at B0000. Groundwater details are provided and presented graphically on the logs presented in **APPENDIX A** and summarised as follows:

Location	Groundwater level, m bgl	Groundwater details
B0000	0.00	-

TECHNICAL REPORT

Under the scope of reporting it was required to determine the magnitude of settlements expected. It is proposed to place 1.5m of rockfill at an imposed loading of 100kPa. Based on the oedometer consolidation test data the following settlements have been calculated.

$$\Delta h = h \times \Delta e / e_0$$

where h is the thickness of the strata

e is the initial voids ratio and

Δe is the change in voids ratio

Location		Borehole	Borehole	Borehole	Borehole	Borehole
e_0						
h	m					
h	m					
e_{100}	at 100kPa					
Δe	%					
t	m					
Δt	mm					
TOTAL Δt mm						
C_α	m/yr					
t_{dr}	m					
t_{90}	yr					

t_{dr} is the drainage height. Here GRAVEL layer underlies the strata the strata thickness and drainage height has been halved.

I		B	B	B	B	B	B
e _o							
	m						
	m						
e _{max}	at kPa						
Δe	%						
t	m						
Δt	mm						
TOTAL Δt mm							
C _α	m ² /yr						
t _{dr}	m						
t ₉₀	yr						

I		B	B	B	B
e _o					
	m				
	m				
e _{max}	at kPa				
Δe	%				
t	m				
Δt	mm				
TOTAL Δt mm					
C _α	m ² /yr				
t _{dr}	m				
t ₉₀	yr				

It can be seen that primary settlement can be expected to range from mm to mm. This does not include or settlement of the loose GRA deposits or settlement associated with these layers is expected to be minimal. Settlement of the loose silty SAN is expected to be of the order mm.

The time for consolidation is expected to be varied.

Settlement of silty SAN mm B

Representative geological long sections (PC0000LS00A, PC0000LS0000, PC0000LS0000 and PC0000LS0000) through the site have been produced based on the information at the exploratory holes. The exploratory locations constitute points of known ground conditions. The ground conditions between these known points have been interpreted and may be subject to variation. The long-sections are presented in **APPENDIX E** and represent an interpretation of the data obtained. These geological cross sections should be read in conjunction with the sub-bottom survey **APPENDIX B** and the borehole logs **APPENDIX A**.

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SUMMARY

- The site was characterised by very soft to very stiff slightly sandy slightly CLAY SILT very loose to dense silty very gravelly SAND and clayey silty very sandy GRAVEL to depths of 0.0000m below existing sea bed level bsl
- Weak to moderately strong MUDSTONE moderately weak to strong interbedded MUDSTONE and SANDSTONE moderately weak to very strong interbedded MUDSTONE and LIMESTONE weak to strong SILTSTONE moderately weak to very strong interbedded SILTSTONE and SANDSTONE and moderately strong to strong LIMESTONE were encountered from depths of 0.0000m to 0.0000m bsl
- Groundwater was encountered at a level of 0.0000m bsl
- A bathymetric and sub-bottom profiling survey was undertaken. The interpretation of the data is presented in **APPENDIX B**
- Laboratory testing was undertaken to characterise the soil and rock encountered
- Settlement under the proposed 0.00m of fill is expected to be between 000mm and 0000mm and varied across the site. The time for 000 consolidation was highly variable with significant time associated with some of the organic sediment up to 00 years
- Marine sediment analysis was undertaken. The data is presented in **APPENDIX C**
- A bathymetric survey was completed as part of the works and outlines the rock profile. Geological longitudinal sections have been produced from the borehole data to further characterise the site

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APPENDIX A

EXPLORATOR BORE RECORDS

Key to Exploration Bore Records

Key

Cable Tool Boreholes

B#### and B####

Cable Tool and Rotary Cored Boreholes

B####B####B####B####
B####B####B####B####
B####B####B####B####
B####B#### and B####

Dynamic Probes CP IS

P#### P#### P#### P####
P#### P#### P#### P####
P#### P#### P#### P####
P#### P#### P#### and
P####

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KEY TO SYMBOLS ON EXPLORATORY HOLE RECORDS

All linear dimensions are in metres or millimetres

DESCRIPTIONS

** Drillers Description
Friable Easily crumbled



SAMPLES

U() Undisturbed 102mm diameter sample, () denotes number of blows to drive sampler
 U ()F, U ()P F - not recovered, P - partially recovered
 U38 Undisturbed 38mm diameter sample
 P(F), (P) Piston sample, F - not recovered, P - partially recovered
 B Bulk sample - disturbed
 D Jar Sample - disturbed
 W Water Sample
 CBR California Bearing Ratio mould sample
 CS Chemical Sample for Contamination Analysis
 SPTLS Standard Penetration Test S lump sample from split sampler.

CORE RECOVERY AND ROCK QUALITY

TCR Total Core Recovery (% of Core Run)
 SCR Solid Core Recovery (length of core having at least one full diameter as % of core run)
 RQD Rock Quality Designation (length of solid core greater than 100mm as % of core run)
 Where there is insufficient space for the TCR, SCR and RQD, the results may be found in the remarks column.
 If Fracture Spacing in mm (Minimum/Average/Maximum) NI - non intact, NR - no recovery
 AZCL Assumed Zone of Core Loss

GROUNDWATER

 Groundwater strike
 Groundwater level after standing period
 Date/Water Date of shift (day/month)/Depth to water at end of previous shift shown above the date and depth to water at beginning of shift given below the date

INSITU TESTING

S Standard Penetration Test - split barrel sampler
 C Standard Penetration Test - solid 60° cone
 SW Self Weight Penetration
 IVp, HVp (R) In Situ Vane Test - Hand Vane Test (R) demonstrates remoulded strength
 K(F), (C), (R), (P) Permeability Test
 HP Hand Penetrometer Test

MEASURED PROPERTIES

N Standard Penetration Test - blows required to drive 300mm after seating drive
 x/y Denotes x blows for y mm within the Standard Penetration Test
 x*/y Denotes x blows for y mm within the seating drive
 c_u Undrained Shear Strength (kN/m^2)
 CBR California Bearing Ratio

ROTARY DRILLING SIZES

Index Letter	Nominal Diameter (mm)	
	Borehole	Core
N	75	54
H	99	76
P	120	92
S	146	113



Symbols used on Exploratory Hole Records

Key

Project Name: Bantry Bay Inner [] Harbour	Project No.: PC [] [] [] []	Co-ords: [] [] [] [] - [] [] [] [] N	Hole Type: Cable [] Rotary []
Client: Bantry Bay [] Harbour Commissioners	Dates: [] [] [] [] - [] [] [] []	Level: - [] [] [] m AO []	Scale: [] [] []

Well Backfill	Water Strikes	Samples		In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results	Results					
		[] [] - [] []	B						Very loose dark blue/black silty grey gravelly SAND with many shell fragments	
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	S							
		[] [] [] []	B						Very loose slightly silty very sandy GRAVEL with many shell fragments Sand is fine to coarse Gravel is fine to medium subrounded	
		[] [] [] []	U							
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	B						Loose sandy GRAVEL with lenses of grey clay and many shell fragments Sand is fine to coarse Gravel is fine to medium subrounded	
		[] [] [] []	CPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	B						Medium dense slightly silty very sandy GRAVEL with many shell fragments Sand is fine to coarse Gravel is fine to medium subrounded	
		[] [] [] []	CPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	B						Medium dense sandy GRAVEL with some shell fragments Sand is fine to coarse Gravel is fine to coarse subangular to subrounded	
		[] [] [] []	CPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	B						Sandy GRAVEL with lenses of grey clay and many shell fragments Sand is fine to coarse Gravel is fine to medium subrounded	
		[] [] [] []	CPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	B						Very dense slightly silty very sandy GRAVEL with some shell fragments Sand is fine to coarse Gravel is fine to medium subangular	
		[] [] [] []	CPT	[] [] [] [] [] [] [] [] or [] mm						
		[] [] [] []	CPT	[] [] [] [] [] [] [] [] or [] mm					Chiselled from [] m to [] m for [] hours	
									Very strong dark grey thinly laminated SILTSTONE fine-grained SANDSTONE and carbonate MUDSTONE with occasional fossils and calcite veins weathering Slightly weathered Localised oxide staining on fracture surfaces Clay in filling of fractures up to [] mm thick Fractures extremely closely spaced predominantly non-intact Fractures dip [] to [] degrees with planar smooth surfaces [] m - [] m No recovery [] m - [] m Fracture index - NI []	

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Groundwater: Struck [] Rose to [] Ater [] Sealed [] Comment []	Hole Information: Dole [] Depth [] Casing [] Diameter [] Casing Depth [] [] m [] m [] m [] m [] m	Chiselling: Depths [] m Time [] h [] m [] s Tool [] [] to [] [] [] Chisel																								
Remarks: Depth of water [] m Cable percussion terminated at [] m due to obstruction Borehole terminated at required depth []	Shift Data:																									
Equipment Methods: [] and [] [] [] [] [] Base [] [] Compressed air-mist flush []	<table border="1"> <tr> <th>Groundwater</th> <th>Shift</th> <th>dd/mm/yyyy</th> <th>Casing depth</th> <th>Remarks</th> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] m</td> <td>Start of Borehole</td> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] m</td> <td>End of shift</td> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] m</td> <td>Start of shift</td> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] m</td> <td>End of Borehole</td> </tr> </table>	Groundwater	Shift	dd/mm/yyyy	Casing depth	Remarks	-	[] [] [] []	[] [] [] []	[] m	Start of Borehole	-	[] [] [] []	[] [] [] []	[] m	End of shift	-	[] [] [] []	[] [] [] []	[] m	Start of shift	-	[] [] [] []	[] [] [] []	[] m	End of Borehole
Groundwater	Shift	dd/mm/yyyy	Casing depth	Remarks																						
-	[] [] [] []	[] [] [] []	[] m	Start of Borehole																						
-	[] [] [] []	[] [] [] []	[] m	End of shift																						
-	[] [] [] []	[] [] [] []	[] m	Start of shift																						
-	[] [] [] []	[] [] [] []	[] m	End of Borehole																						



Priority Geotechnical
Tel 0000 000000
Fax 0000 000000
www.prioritygeotechnical.ie

Drilled By
G AK
Logged By
MC SC

Borehole No
BH02
Sheet 00

Project Name: Bantry Bay Inner Harbour	Project No.: PC0000	Co-ords: 000000 - 000000N	Hole Type: Cable Rotary
Client: Bantry Bay Harbour Commissioners	Dates: 00000000 - 00000000	Level: -0000 m AO	Scale: 0000

Well Backfill	Water Strikes	Rotary Coring						Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R	Fractures	Fracture spacing					
		0000-0000	00	00	00					Very strong, dark grey, thinly laminated SILTSTONE fine-grained SANDSTONE and carbonate MUDSTONE with occasional fossils and calcite veins weathering slightly feathered. Localised oxide staining on fracture surfaces. Clay infilling of fractures up to 00mm thick. Fractures extremely closely spaced. Predominantly non-intact. Fractures dip 00 to 00 degrees with planar smooth surfaces. 0000m - 0000m fracture index - NI		
		0000-0000	00	00	00					0000m - 0000m fracture index - NI		
		0000-0000	00	00	00					0000m - 0000m fracture index - NI		
		0000-0000	00	00	00					0000m - 0000m fracture index - NI		
							0000	-0000	0000	End of Borehole at 0000m		

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Groundwater: Struck: <input type="checkbox"/> Rose to: <input type="checkbox"/> Water: <input type="checkbox"/> Sealed: <input type="checkbox"/> Comment: <input type="text"/>	Hole Information: Hole Depth: 0000m / 0000m Casing Diameter: 0000mm / 0000mm Casing Depth: 0000m / 0000m	Chiselling: Depths: 0000m to 0000m Time: 00:00 to 00:00 Tool: Chisel																														
Remarks: Depth of water: 0000m. Cable percussion terminated at 0000m due to obstruction. Borehole terminated at required depth.	Shift Data:																															
Equipment Methods: Hand 0000 DeltaBase 0000 Compressed air-mist flush <input type="checkbox"/>	<table border="1"> <thead> <tr> <th>Groundwater</th> <th>Shift</th> <th>Start</th> <th>End</th> <th>Casing depth</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>00000000</td> <td>0000m</td> <td>0000m</td> <td>0000m</td> <td>Start of Borehole</td> </tr> <tr> <td>-</td> <td>00000000</td> <td>0000m</td> <td>0000m</td> <td>0000m</td> <td>End of shift</td> </tr> <tr> <td>-</td> <td>00000000</td> <td>0000m</td> <td>0000m</td> <td>0000m</td> <td>Start of shift</td> </tr> <tr> <td>-</td> <td>00000000</td> <td>0000m</td> <td>0000m</td> <td>0000m</td> <td>End of Borehole</td> </tr> </tbody> </table>	Groundwater	Shift	Start	End	Casing depth	Remarks	-	00000000	0000m	0000m	0000m	Start of Borehole	-	00000000	0000m	0000m	0000m	End of shift	-	00000000	0000m	0000m	0000m	Start of shift	-	00000000	0000m	0000m	0000m	End of Borehole	
Groundwater	Shift	Start	End	Casing depth	Remarks																											
-	00000000	0000m	0000m	0000m	Start of Borehole																											
-	00000000	0000m	0000m	0000m	End of shift																											
-	00000000	0000m	0000m	0000m	Start of shift																											
-	00000000	0000m	0000m	0000m	End of Borehole																											

Project Name: Bantry Bay Inner Harbour	Project No.: PC: 0000	Co-ords: 000000 - 000000N	Hole Type: Cable Rotary
Client: Bantry Bay Harbour Commissioners	Dates: 00000000	Level: -0000m AO	Scale: 0000

Well Backfill	Water Strikes	Samples		In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth (m)	Type	Results	Results					
		0000-0000	B SPT	N 0000000000					Loose black silty very sandy GRAVEL with occasional shells. Sand is fine to coarse. Gravel is fine to coarse angular to subangular.	
		0000-0000	S B SPTLS				-0000	0000	Stiff black slightly sandy slightly organic SILT with many small shell fragments. Sand is fine.	
		0000-0000	U SPT	blots recovery N 0000000000					Dense brown grey slightly silty SAND AN GRAVEL with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded. Cobbles are 00mm x 00mm.	
		0000-0000	B SPTLS				-0000	0000		
		0000-0000	CPT	N 0000000000						
		0000-0000	B				-0000	0000	Strong grey SILTSTON	
		0000-0000	B CPT	0000 or 00mm			-0000	0000	Weak dark grey thinly laminated SILTSTON and fine-grained SANDSTON weathering. Slightly weathered. Localised oxide staining and clay infilling of fractures up to 00mm thick. Fractures extremely closely spaced. Non-intact fractures dip 00 to 00 degrees with planar rough surfaces.	
		0000-0000							0000m - 0000m fracture index - NI	
		0000-0000					-0000	0000	Driller described CLAY	
		0000-0000					-0000	0000	Weak dark grey thinly laminated SILTSTON and fine-grained SANDSTON weathering. Slightly weathered. Localised oxide staining and clay infilling of fractures up to 00mm thick. Fractures extremely closely spaced. Non-intact fractures dip 00 to 00 degrees with planar rough surfaces.	

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Groundwater: Struck: 0000m Rose to: 0000m After: 0000m Sealed: 0000m Comment: 0000	Hole Information: Hole Depth: 0000m Casing Diameter: 0000mm Casing Depth: 0000m	Chiselling: Depths: 0000m to 0000m Time: 00:00 Tool: Chisel
--	---	---

Remarks: Depth of water 0000m. Cable percussion terminated at 0000m due to obstruction. Borehole terminated at required depth.	Shift Data: Groundwater: - Shift: 00:00mm/yyyy Casing depth: 0000m Remarks: Start of Borehole 0000m, End of Borehole 0000m
--	---

Equipment Methods: Handheld DeltaBase Compressed air-mist flush



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G [] AK []

Logged By
AM [] SC []

Borehole No

BH03

Sheet [] of []

Project Name:

Bantry Bay Inner [] Harbour

Project No.:

PC []-[]-[]-[]

Co-ords: []-[]-[] - []-[]-[]N

Hole Type:

Cable [] Rotary []

Client: Bantry Bay [] Harbour Commissioners

Dates:

[]-[]-[]-[]-[]-[]-[]-[]

Level: -[]-[]-[] m AO []

Scale:

[]-[]-[]

Well Backfill	Water Strikes	Rotary Coring				Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	Recess structures					
[]-[]-[]	[]	[]	[]	[]	[]	[]	[]	Remaining detail []-[]-[] - []-[]-[] - []-[]-[] fracture index - Nil End of Borehole at [] m	[]	

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Groundwater: Struck [] Rose to [] Water Sealed [] Comment []				Hole Information: Hole Depth Casing Diameter Casing Depth [] m [] mm [] m			Chiselling: Depths [] m Time []:[]:[] Tool [] to [] Chisel []		
Remarks: Depth of water [] m Cable percussion terminated at [] m due to obstruction [] Borehole terminated at required depth []				Shift Data: Groundwater - Shift []-[]-[]-[]-[] Casing depth [] m [] m Start of Borehole [] m End of Borehole [] m					
Equipment Methods: Sand [] Delta Base [] Compressed air-mist flush []									

Project Name:
Bantry Bay Inner [] Harbour []

Project No.:
PC [] [] [] []

Co-ords: [] [] [] [] - [] [] [] [] N

Hole Type:
Cable [] Rotary []

Client: Bantry Bay [] Harbour Commissioners

Dates:
[] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale:
[] [] []

Well Backfill	Water Strikes	Samples			In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results	Results						
		[] - []	B							Very soft dark grey/black slightly gravelly sandy organic SILT with occasional shell plant and sea weed fragments [] m - [] m Organic odour noted	
		[]	S								
		[] - []	B								
		[] - []	U								
		[]	SPT	N [] [] [] [] [] [] [] []							
		[] - []	SPTLS								
		[]									
		[] - []	B							Stiff light brown grey CLAY	
		[] - []	U								
		[]	SPT	N [] [] [] [] [] [] [] []							
		[] - []	SPTLS								
		[]									
		[] - []	B							Stiff brown grey thinly laminated slightly gravelly slightly sandy CLAY Laminations are [] mm thick	
		[] - []	U								
		[]	SPT	N [] [] [] [] [] [] [] []							
		[] - []	SPTLS								
		[]									
		[] - []	B							Hard grey mottled orange slightly sandy gravelly CLAY Sand is fine to coarse Gravel is fine to medium angular mudstone	
		[]	SPT	[] [] [] or [] mm or [] mm							
		[] - []	SPTLS								
		[]									
		[] - []	B							Moderately weak to moderately strong dark grey laminated SILTSTON and fine-grained SANDSTON with occasional fossils and lenses of carbonate mudstone weathering Slightly feathered to moderately feathered Clay smearing and infilling of fractures up to [] mm thick fractures extremely closely to closely spaced fractures dip [] to [] degrees with planar smooth and stepped rough surfaces [] m - [] m Fracture index - NI [] m - [] m Non-intact [] m - [] m Fracture index - NI [] m - [] m Fracture index - NI [] m - [] m Fracture index - NI	
		[]	CPT	[] or [] mm							
		[]									

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<p>Groundwater: Struck [] Rose to [] Water [] Sealed [] Comment []</p>	<p>Hole Information: Borehole Depth [] m Casing Diameter [] mm Casing Depth [] m [] m [] mm [] m [] mm</p>	<p>Chiselling: Depths [] m Time [] h [] m [] s Tool [] Chisel []</p>
--	--	---

<p>Remarks: Depth of water [] m Cable percussion terminated at [] m due to obstruction Borehole terminated at required depth []</p>	<p>Shift Data: Groundwater [] Shift [] dd/mm/yyyy Casing depth [] m Start of Borehole [] m End of Borehole [] m</p>
---	---

Equipment Methods: [] and [] [] DeltaBase [] Compressed air-mist flush []



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Borehole No

BH04

Sheet [] of []

Project Name:

Bantry Bay Inner [] Harbour

Project No.

PC [] [] [] []

Co-ords: [] [] [] [] - [] [] [] [] N

Hole Type

Cable Rotary

Client: Bantry Bay [] Harbour Commissioners

Dates:

[] [] [] [] [] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale

[] [] []

Well Backfill	Water Strikes	Rotary Coring					Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R []	Fractures					
									Remaining detail [] m - [] m [] m - [] m fracture index - NI		
									[] m - [] m fracture index - NI		
									End of Borehole at [] m		

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Groundwater:

Struck [] Rose to [] Water [] Sealed [] Comment []

Hole Information:

Hole Depth [] m Casing Diameter [] mm Casing Depth [] m
 [] m [] mm [] m

Chiselling:

Depths [] m Time [] h [] m [] s Tool Chisel

Remarks: Depth of water [] m Cable percussion terminated at [] m due to obstruction [] Borehole terminated at required depth []

Shift Data: Groundwater [] Shift [] dd/mm/yyyy Casing depth [] m Start of Borehole [] m End of Borehole [] m

Equipment Methods: [] ando [] [] DeltaBase [] Compressed air-mist flush []



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00 MC

Borehole No
BH05
Sheet 0000

Project Name: Bantry Bay Inner Harbour	Project No.: PC0000	Co-ords: 000000 - 000000N	Hole Type: Cable Rotary
Client: Bantry Bay Harbour Commissioners	Dates: 00000000	Level: -0000 m AO	Scale: 0000

Well Backfill	Water Strikes	Samples			In Situ Testing			Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results	TCR	SCR	R					
		0000-0000	B								Grey slightly gravelly SILT Gravel is fine to medium subangular to subrounded	
		0000 0000 0000-0000	SPT S B	N000 0000000000			0000	-0000	0000		firm grey slightly gravelly slightly sandy SILT Sand is fine to coarse Gravel is fine to medium subangular	
		0000						-0000	0000		firm to stiff grey mottled brown slightly gravelly slightly sandy SILT Gravel is fine to medium subangular to subrounded	
		0000 0000-0000 0000-0000	SPT B SPTLS	N000 0000000000			0000				CL becomes firm at 0000m	
		0000 0000-0000 0000	SPT SPTLS B	N000 0000000000			0000	-0000	0000		Very dense grey COBBLES with much gravel Gravel is fine to medium angular Cobbles are subrounded 0000mm dia limestone	
		0000 0000-0000	SPT B	000 00000000 or 00mm			0000				Sandy GRAVEL Sand is coarse Gravel is fine to coarse angular	
		0000-0000 0000	SPTLS CPT	000 or 00mm			0000	-0000 0000 -0000	0000		Open hole boring no recovery	
		0000-0000					0000				Weak to strong black fossiliferous SILTSTONE with quartz and calcite veins and crystals of pyrite weathering Slightly weathered Occasional clay smearing along fracture surfaces fractures Closely spaced dipping to 00 degrees with planar smooth surfaces 000m - 000m fracture index - 00 000m - 000m Partially calcareous 000m - 000m fracture index - 000 000m - 000m Partially calcareous 000m - 000m fracture index - 00 000m - 000m fracture index - 00 000m - 000m fracture index - NI 000m - 0000m Predominantly non-intact	

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Continued next sheet

Groundwater: Struck Rose to Ater Sealed Comment	Hole Information: Dole Depth Casing Diameter Casing Depth 0000m 0000m 0000m 0000m 0000m 0000m 0000m 0000m 0000m	Chiselling: Depths m Time thmm Tool 0000 to 0000 0000 Chisel
---	--	---

Remarks: Depth of water 0000m Cable percussion terminated at 0000m due to obstruction Borehole terminated at required depth	Shift Data: Groundwater Shift dd/mm/yyyy Casing depth Remarks - 00000000 0000m Start of Borehole 0000m 00000000 0000m End of Borehole
--	--

Equipment Methods: Hand 0000 0000 Base 0000
Compressed air-mist flush



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Borehole No
BH05
 Sheet [] of []

Project Name:
 Bantry Bay Inner [] Harbour

Project No.
 PC [] [] [] [] [] [] []

Co-ords: [] [] [] [] [] [] - [] [] [] [] [] N

Hole Type
 Cable [] Rotary []

Client: Bantry Bay [] Harbour Commissioners

Dates:
 [] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale
 [] []

Well Backfill	Water Strikes	Rotary Coring				Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R [] [] []					
		[] [] [] [] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []			[] Oak to strong black fossiliferous SILTSTONE with [] quartz and calcite veins and crystals of pyrite weathering slightly weathered Occasional clay smearing along fracture surfaces fractures. Closely spaced dipping [] to [] degrees with planar smooth surfaces [] m - [] m fracture index - []		
		[] [] [] [] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []			End of Borehole at [] m		

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Groundwater: Struck [] Rose to [] Water [] Sealed [] Comment []		Hole Information: Hole depth [] Casing diameter [] Casing depth [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] []		Chiselling: Depths [] Time [] [] [] [] [] [] to [] [] [] [] [] [] []	
Remarks: Depth of water [] Cable percussion terminated at [] m due to obstruction Borehole terminated at required depth []			Shift Data: Groundwater [] Shift [] [] [] [] [] [] [] Casing depth [] [] [] Remarks Start of Borehole [] End of Borehole []		
Equipment Methods: [] and [] [] [] [] Base [] Compressed air-mist flush []					



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Borehole No
BH08
 Sheet 00

Project Name: Bantry Bay Inner Harbour	Project No.: PC0000	Co-ords: 000000 - 000000N	Hole Type: Cable Rotary
Client: Bantry Bay Harbour Commissioners	Dates: 00/00/00 - 00/00/00	Level: -0000m AO	Scale: 0000

Well Backfill	Water Strikes	Samples			In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results							
		0000-0000	B							Loose grey black slightly silty very sandy GRAVEL with some shells and occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse sub-angular to rounded. Cobbles are 00mm dia.	
		0000-0000	SPT	N 00 0000000000							
		0000-0000	SPTLS								
		0000-0000	B							Grey black silty very sandy GRAVEL with some shells and many lenses of grey clay. Sand is fine to coarse. Gravel is fine to coarse sub-angular to rounded. Cobbles are 00mm dia.	
		0000-0000	SPT	N 00 0000000000							
		0000-0000	SPTLS								
		0000-0000	U		blois						
		0000-0000	SPT								
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	B								
		0000-0000	U		blois						
		0000-0000	SPT		N 00 0000000000						
		0000-0000	SPTLS								
		0000-0000	CPT								
		0000-0000									
		0000-0000									
		0000-0000									
		0000-0000									
		0000-0000									
		0000-0000									

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Groundwater: Struck [] Rose to [] After [] Sealed [] Comment []	Hole Information: Hole depth []m Casing diameter []mm Casing depth []m []m []mm []m []mm []m []mm []m []mm	Chiselling: Depths []m Time []h[]m[]s Tool []m Chisel [] to [] [] []
Remarks: Depth of water []m Cable percussion terminated at []m due to obstruction Borehole terminated at required depth []	Shift Data: Groundwater [] Shift [] dd/mm/yyyy Casing depth []m Remarks Start of Borehole []m End of Borehole []m	
Equipment Methods: [] and [] DeltaBase [] Compressed air-mist flush		



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Borehole No
BH08
 Sheet 000

Project Name: Bantry Bay Inner Harbour		Project No.: PC0000	Co-ords: 000000 - 000000N	Hole Type Cable Rotary
Client: Bantry Bay Harbour Commissioners		Dates: 00000000	Level: -0000m AO	Scale 0000

Well Backfill	Water Strikes	Rotary Coring						Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R	Fractures	Fracture spacing					
										Moderately weak to very strong grey laminated SILTSTONE and fine-grained SANDSTONE weathering: Slightly weathered Occasional clay smearing and localised oxide stains on fracture surfaces Fractures very closely to medium spacing Fractures dip 00 to 00 degrees with planar smooth and undulating rough surfaces 000m - 000m Fracture index - 00 000m - 000m Fracture index - 00 000m - 000m Fracture index - 00		
										End of Borehole at 0000m		

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Groundwater: Struck Rose to After Sealed Comment					Hole Information: Hole Depth Casing Diameter Casing Depth 000m 000mm 000m 000m 000mm 000m 000m 000mm 000m					Chiselling: Depths Time Tool 000 to 000 0000 Chisel				
Remarks: Depth of water 000m Cable percussion terminated at 000m due to obstruction Borehole terminated at required depth										Shift Data: Groundwater Shift dd/mm/yyyy Casing depth Remarks - 00000000 000m Start of Borehole - 00000000 000m End of Borehole				
Equipment Methods: ando DeltaBase Compressed air-mist flush														



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Borehole No
BH0
Sheet [] of []

Project Name: Bantry Bay Inner [] Harbour		Project No.: PC [] [] [] []		Co-ords: [] [] [] [] [] [] - [] [] [] [] [] [] N		Hole Type: Cable [] Rotary []	
Client: Bantry Bay [] Harbour Commissioners				Dates: [] [] [] [] [] []		Level: - [] [] [] [] m AO []	
						Scale: [] [] [] []	

		Samples		In Situ Testing		Casing	Level	Depth	Stratum Description		Legend
Well Backfill	Water Strikes	Depth (m)	Type	Results		Flush	m AO	m			
		[] [] [] []	B CPT S	N [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] []		[] []	[] [] [] []	[] []	[] Miller described [] weathered rock recovered as [] [] dense [] slightly silty [] very sandy GRA [] [] [] with some cobbles []		
		[] [] [] []	CPT	[] [] or [] [] [] []		[] []	[] [] [] []	[] []	Chiselled from [] m to [] m or [] hours []		
		[] [] [] []	CPT	[] [] or [] [] [] []		[] []	[] [] [] []	[] []	Moderately strong [] grey MU [] STON [] [] [] weathering [] [] frequent clay smears along [] fracture surfaces [] Some oxide staining [] [] fractures [] Closely spaced [] T [] o sets [] Ma or set - approximate [] degree dip [] [] Minor set - sub-vertical [] Surfaces are undulating smooth []		
		[] [] [] []		[] [] [] [] [] [] [] []		[] []	[] [] [] []	[] []	[] m - [] [] [] fracture index - NI [] [] m - [] [] [] fracture index - NI []		
		[] [] [] []		[] [] [] [] [] [] [] []		[] []	[] [] [] []	[] []	Strong [] grey [] interbedded MU [] STON [] and [] fine to medium-grained SAN [] STON [] [] weathering [] frequent clay smears along [] fracture surfaces [] Some oxide staining [] [] fractures [] Closely spaced [] T [] o sets [] [] Ma or set - approximate [] degree dip [] [] Minor set - sub-vertical [] Surfaces are undulating smooth []		
		[] [] [] []		[] [] [] [] [] [] [] []		[] []	[] [] [] []	[] []	Moderately [] weak [] grey MU [] STON [] [] weathering [] [] frequent clay smears along [] fracture surfaces [] [] fractures [] Closely spaced [] T [] o sets [] Ma or set - approximate [] degree dip [] [] Minor set - sub-vertical [] Surfaces are undulating smooth []		
		[] [] [] []		[] [] [] [] [] [] [] []		[] []	[] [] [] []	[] []	Moderately strong [] grey [] interbedded MU [] STON [] and [] fine to medium-grained SAN [] STON [] [] [] weathering [] frequent clay smears along [] fracture surfaces [] [] fractures [] Closely spaced [] T [] o sets [] [] Ma or set - approximate [] degree dip [] [] [] Minor set - sub-vertical [] Surfaces are undulating smooth []		
						[] []	[] [] [] []	[] []	End of Borehole at [] m		

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Groundwater: Struck [] Rose to [] Water [] Sealed [] Comment []				Hole Information: Diameter [] Casing [] Depth []			Chiselling: Depth [] Time [] [] Tool []		
--	--	--	--	---	--	--	---	--	--

Remarks: Depth of water [] m Cable percussive boring terminated at [] m due to obstruction Borehole terminated at required depth []

Equipment Methods: [] and [] [] eltaBase [] Compressed air-mist flush []

Shift Data: Groundwater [] Shift [] [] [] [] [] [] [] Casing depth [] [] [] [] [] [] [] [] Remarks Start of Borehole [] [] [] [] [] [] End of Borehole [] [] [] [] [] [] [] []

Project Name: Bantry Bay Inner []harbour	Project No. PC []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]	Co-ords: []-[]-[]-[]-[]-[] - []-[]-[]-[]-[]-[]N	Hole Type Cable [] Rotary []
Client: Bantry Bay []harbour Commissioners	Dates: []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]	Level: -[]-[]-[] m AO []	Scale []-[]-[]-[]

Well Backfill	Water Strikes	Samples		In Situ Testing		Casing Flush	Level AO	Depth	Stratum Description	Legend
		Depth []m	Type	Results						
		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]	S B						Dark grey COBBLES Cobbles are mudstone	[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]	CPT B	[] or [] mm					Weak to moderately weak dark grey interbedded fine-grained SANDSTONE and MUDSTONE weathering Moderately weathered extensive pervasive oxide staining and clay infilling of fractures fractures extremely closely spaced rock is non-intact fractures dip to degrees with undulating smooth surfaces []m - []m fracture index - NI []m - []m fracture index - NI	[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]			Nilmm min []mm a/g []mm max				Moderately strong to strong grey to dark grey fossiliferous LIMESTONE interbedded with MUDSTONE weathering Slightly weathered Localised oxide staining and clay smearing along fracture surfaces fractures extremely closely spaced to closely spaced fractures dip to degrees with occasional intersecting degree fractures Surfaces are stepped smooth and undulating smooth []m - []m fracture index - NI []m - []m fracture index - NI	[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]			Nilmm min []mm a/g []mm max				Moderately strong to strong grey to dark grey fossiliferous LIMESTONE weathering Slightly weathered Localised oxide staining and clay smearing along fracture surfaces fractures extremely closely spaced to closely spaced fractures dip to degrees with occasional intersecting degree fractures Surfaces are stepped smooth and undulating smooth []m - []m fracture index - NI []m - []m fracture index - NI	[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]							End of Borehole at []m	[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]

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Water	Depth []m	TCR	SCR	R []	Fracture spacing	Casing	Level	Depth
-------	------------	-----	-----	-------	------------------	--------	-------	-------

Groundwater: Struck [] Rose to [] Water [] Sealed [] Comment []	Hole Information: Dole [] Depth []m Casing [] Diameter []mm Casing [] Depth []m []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[] []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]	Chiselling: Depths []m Time []h []m []s Tool Chisel []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[] []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
--	---	---

Remarks: Depth of water []m Cable percussion terminated at []m due to obstruction Borehole terminated at required depth	Shift Data: Groundwater [] Shift []dd []mm []yyy Casing depth []m []m []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[] []-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]-[]
--	--

Equipment Methods: [] and [] Compressed air-mist flush []
--



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 [] [] [] [] [] [] [] [] prioritygeotechnical.ie

Drilled By
 G [] [] [] []
 Logged By
 SC [] [] [] []

Borehole No
BH11
 Sheet [] of []

Project Name: Bantry Bay Inner [] Harbour	Project No.: PC [] [] [] []	Co-ords: [] [] [] [] - [] [] [] [] N	Hole Type: Cable
Client: Bantry Bay [] Harbour Commissioners	Dates: [] [] [] [] - [] [] [] []	Level: - [] [] [] m AO []	Scale: [] [] [] []

Well Backfill	Water Strikes	Samples		In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results						
		[] [] [] []	SPTLS						Loose dark grey clayey gravelly SAND with many shell fragments. Sand is coarse. Gravel is fine to coarse subangular.	
		[] [] [] []	B							
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	S							
		[] [] [] []	SPTLS						Firm brown grey slightly sandy slightly gravelly CLAY. Sand is coarse. Gravel is fine to medium subrounded.	
		[] [] [] []	B							
		[] [] [] []	U	[] [] blobs [] [] recovery						
		[] [] [] []	SPTLS						Firm to stiff brown green grey slightly sandy slightly gravelly CLAY. Sand is coarse. Gravel is fine to medium subangular.	
		[] [] [] []	B							
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	SPTLS							
		[] [] [] []	SPTLS							
		[] [] [] []	B							
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	SPTLS						Stiff to very stiff dark grey slightly sandy gravelly SILT with many cobbles. Sand is coarse. Gravel is coarse angular. Cobbles are angular.	
		[] [] [] []	B							
		[] [] [] []	SPT	N [] [] [] [] [] [] [] []						
		[] [] [] []	SPTLS						Becomes very stiff below [] m	
		[] [] [] []	SPTLS							
		[] [] [] []	B							
		[] [] [] []	SPT	[] [] [] [] [] [] [] [] or [] mm						
		[] [] [] []	SPTLS							
		[] [] [] []	B							
		[] [] [] []	SPT							
		[] [] [] []	SPTLS							
		[] [] [] []	B							
		[] [] [] []	CPT	[] [] or [] mm						
		[] [] [] []	CPT	[] [] or [] mm						
		[] [] [] []							Chiselled from [] m to [] m for [] hours	
		[] [] [] []							End of Borehole at [] m	

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Groundwater: Struck [] Rose to [] Ater [] Sealed [] Comment []	Hole Information: Diameter [] mm Casing depth [] m	Chiselling: Depth [] m Time [] h [] m Tool Chisel
---	--	--

Remarks: [] Depth of water [] m Borehole terminated due to obstruction []	Shift Data:
---	--------------------

Equipment Methods: [] and []	<table border="1"> <tr> <th>Groundwater</th> <th>Shift</th> <th>Start of Borehole</th> <th>End of Shift</th> <th>Start of Shift</th> <th>End of Borehole</th> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> </tr> <tr> <td>-</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> <td>[] [] [] []</td> </tr> </table>	Groundwater	Shift	Start of Borehole	End of Shift	Start of Shift	End of Borehole	-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []
Groundwater	Shift	Start of Borehole	End of Shift	Start of Shift	End of Borehole																				
-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []																				
-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []																				
-	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []	[] [] [] []																				



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 Logged By
 SC

Borehole No
BH12
 Sheet [] of []

Project Name:
 Bantry Bay Inner Harbour

Project No.:
 PC [] [] [] []

Co-ords: [] [] [] [] - [] [] [] [] N

Hole Type:
 Cable

Client: Bantry Bay Harbour Commissioners

Dates:
 [] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale:
 [] [] []

Well Backfill	Water Strikes	Samples		In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results						
		[] [] - [] []	SPT	N [] [] [] [] [] [] [] []	[] []				Soil: dark grey slightly sandy slightly gravelly SILT Sand is fine Gravel is medium to coarse subangular CLA becomes stiffer below [] [] m	
		[] [] - [] []	SPTLS	[] [] [] [] [] [] [] []	[] []				Chiselled from [] [] m to [] [] m or [] hours	
		[] [] - [] []	CPT	[] [] [] [] [] [] [] []	[] []				End of Borehole at [] [] m	
		[] [] - [] []	B	[] [] [] [] [] [] [] []	[] []					
		[] [] - [] []	CPT	[] [] [] [] [] [] [] []	[] []					

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Groundwater:
 Struck Rose to Water Sealed Comment [] [] [] [] [] [] [] []

Hole Information:
 Hole Depth Casing Diameter Casing Depth
 [] [] [] m [] [] [] mm [] [] [] [] m

Chiselling:
 Depths m Time hhmm Tool
 [] [] [] [] to [] [] [] [] Chisel

Remarks: Borehole terminated due to obstruction

Shift Data: Groundwater Shift ddmm/yyyy Casing depth Remarks
 - [] [] [] [] [] [] [] [] [] [] Start of Borehole
 - [] [] [] [] [] [] [] [] [] [] End of Borehole

Equipment Methods: and



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 [] [] [] [] [] [] [] [] [] [] [] [] prioritygeotechnical.ie

Drilled By
 C G
Logged By
 SC

Borehole No
BH13
 Sheet [] of []

Project Name:
 Bantry Bay Inner [] Harbour

Project No.:
 PC [] [] [] []

Co-ords: [] [] [] [] [] [] - [] [] [] [] [] [] N

Hole Type:
 Cable [] Rotary

Client: Bantry Bay [] Harbour Commissioners

Dates:
 [] [] [] [] [] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale:
 [] [] []

Well Backfill	Water Strikes	Rotary Coring						Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R	Fractures	Fracture spacing					
										Open hole boring [] riller described [] St [] generally CLA [] with boulders []		
			CPT							Open hole boring [] riller described [] St [] generally CLA []		
			CPT							Becomes firm below [] m		
			CPT							Moderately strong dark grey interlaminated fine-grained SANDSTONE and SILTSTONE weathering slightly to moderately feathered Localised and occasional pervasive oxide stains along fracture surfaces [] fractures [] very closely spaced [] fractures dip approximately [] degrees with planar smooth surfaces [] [] m - [] m fracture index - [] [] m - [] m fracture index - []		
										[] m - [] m fracture index - []		
										End of Borehole at [] m		

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Groundwater: Struck [] m Rose to [] m After [] m Sealed [] m Comment []					Hole Information: Hole depth [] m Casing diameter [] mm Casing depth [] m [] m [] mm [] mm [] mm					Chiselling: Depths [] m Time [] h [] m [] s Tool Chisel				
Remarks: Cable percussion terminated at [] m due to obstruction [] Borehole terminated at required depth []										Shift Data: Groundwater [] Shift [] dd/mm/yyyy [] Casing depth [] m Start of Borehole [] m End of shift [] m				
Equipment Methods: [] and [] [] [] [] [] [] [] [] [] [] [] [] Compressed air-mist flush []														



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[]C []G

Logged By
AM

Borehole No

BH14

Sheet [] of []

Project Name:

Bantry Bay Inner []harbour

Project No.

PC [][][]

Co-ords: [][][][] - [][][][]N

Hole Type

Cable [] Rotary

Client: Bantry Bay []harbour Commissioners

Dates:

[][][][][] [][][][][]

Level: - [][][]m AO []

Scale

[][][]

[]ell []ater Backfill	[]ater Strikes	Samples		In Situ Testing	Casing []ush	Level []m AO []	Depth []m	Stratum Description	Legend
		Depth []m	Type	Results					
		[][]-[][]	B					Loose []rown COBBLES []ith silt and sand. Sand is coarse. Cobbles are sub-angular to sub-rounded.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]-[][]	B			- [][][]	[][][]	Medium dense []dark grey []ery silty []ery gravelly SAND []ith many cobbles. Sand is medium. Gravel is []ine to medium []sub-rounded. Cobbles are rounded.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]-[][]	B			- [][][]	[][][]	Brown []silty []ery sandy GRAVEL. Sand is coarse. Gravel is []ine to medium []sub-angular.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]	- [][][]	[][][]		
		[][]-[][]	B			- [][][]	[][][]	Medium dense []grey []rown []silty sandy GRAVEL []ith many cobbles and shells. Sand is coarse. Gravel is []ine to coarse []sub-angular to sub-rounded.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]-[][]	B			- [][][]	[][][]	Soft to firm []dark grey []rown []slightly sandy organic SILT. Sand is []ine to medium.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]-[][]	U	[]blois [] recovery					
		[][]-[][]							
		[][]-[][]	B						
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]							
		[][]-[][]	U	[]blois [] recovery		- [][][]	[][][]	Firm []dark grey []slightly gravelly slightly sandy CLAY. Sand is []ine to medium. Gravel is []ine to medium []sub-rounded.	
		[][]	CPT	N [][][][][][][][][][][]	[][][]				
		[][]							
		[][]	U	[]blois					

Continued next sheet

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Groundwater:

Struck [] Rose to [] Ater [] Sealed [] Comment [] No []ater encountered []

Hole Information:

[]ole []epth [] Casing []iameter [] Casing []epth
[][]m [][]mm [][]m
[][]m [][]mm [][]m
[][]m [][]mm [][]m

Chiselling:

[]epths []m [] Time []h[]m[]m [] Tool []

Remarks: Cable percussion terminated at [][]m due to obstruction []
Borehole terminated due to obstruction []

Shift Data: Ground []ater [] Shift []dd/mm/yyyy [] Casing depth [] Remarks
[] - [][][]m [][]m Start of Borehole []
[] - [][][]m [][]m End of Borehole []

Equipment Methods: [] ando [][][][][]eltaBase [][][][]
Compressed air-mist flush []



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Drilled By
 C G
Logged By
 AM

Borehole No
BH14
 Sheet [] of []

Project Name: Bantry Bay Inner <input type="checkbox"/> Harbour	Project No.: PC [] [] [] []	Co-ords: [] [] [] [] - [] [] [] [] N	Hole Type: Cable <input type="checkbox"/> Rotary
Client: Bantry Bay <input type="checkbox"/> Harbour Commissioners	Dates: [] [] [] [] [] []	Level: - [] [] [] m AO []	Scale: [] []

Well Backfill	Water Strikes	Samples			In Situ Testing			Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results	TCR	SCR	R []					
		[] [] - [] []	B	[] [] recovery							[] m dark grey slightly gravelly slightly sandy CLAY. Sand is fine to medium. Gravel is fine to medium sub-rounded.	
		[] [] - [] []	B								Medium dense cobbles of SILTSTONE	
		[] [] - [] []	B CPT	N [] [] [] [] [] [] [] []							Chiselled form [] [] m to [] [] m	
		[] [] - [] []	B CPT	[] [] [] [] [] [] [] [] or [] mm							Open hole boring - drill described Rock	
		[] [] - [] []	B CPT	[] [] [] [] [] [] [] [] or [] mm							Weak to moderately weak grey thinly laminated MUDSTONE weathering slightly weathered. Frequent clay smearing along fracture surfaces. Fractures closely spaced dipping approximately [] degrees with planar smooth surfaces. [] m [] m fracture index - []	
		[] [] - [] []	B CPT	[] [] [] [] [] [] [] [] or [] mm							[] m - [] m fracture index - []	
		[] [] - [] []	B CPT	[] [] [] [] [] [] [] [] or [] mm							End of Borehole at [] [] m	

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Groundwater: Struck <input type="checkbox"/> Rose to <input type="checkbox"/> Water <input type="checkbox"/> Sealed <input type="checkbox"/> Comment: No water encountered				Hole Information: Hole Depth [] [] [] [] m Casing Diameter [] [] [] [] mm Casing Depth [] [] [] [] m [] [] [] [] m [] [] [] [] mm [] [] [] [] m				Chiselling: Depths [] [] [] [] m Time [] [] [] [] [] [] Tool [] [] [] [] [] []			
Remarks: Cable percussion terminated at [] [] m due to obstruction. Borehole terminated due to obstruction.						Shift Data: Groundwater [] [] [] [] [] [] [] [] Shift [] [] [] [] [] [] [] [] Casing depth [] [] [] [] [] [] [] [] Remarks Start of Borehole [] [] [] [] [] [] [] [] End of Borehole [] [] [] [] [] [] [] []					
Equipment Methods: [] and [] DeltaBase [] Compressed air-mist flush											



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Drilled By
 [] [] [] G []

Logged By
 SC [] AM

Borehole No
BH16
 Sheet [] of []

Project Name:
 Bantry Bay Inner [] Harbour

Project No.
 PC [] [] [] []

Co-ords: [] [] [] [] [] [] - [] [] [] [] N

Hole Type
 Cable [] Rotary

Client: Bantry Bay [] Harbour Commissioners

Dates:
 [] [] [] [] [] [] [] [] [] [] [] []

Level: - [] [] [] m AO []

Scale
 [] [] []

Well Backfill	Water Strikes	Samples			In Situ Testing		Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	Type	Results	Results						
		[] [] - [] [] [] [] - [] [] [] [] [] []	[] B [] S [] S			[] []			Brown slightly silty very gravelly SAND with many cobbles. Sand is medium to coarse. Gravel is coarse subrounded.		
		[] [] - [] [] [] [] - [] []	B []				- [] []	[] []	Brown silty very gravelly SAND. Sand is medium to coarse. Gravel is coarse subrounded.		
		[] [] - [] [] [] [] - [] []	B []								
		[] [] [] [] [] [] [] []	SPT SPTLS SPT SPTLS	[] [] [] [] or [] [] mm		[] []	- [] []	[] []	Chiselled from [] [] m to [] [] m for [] hours		
		[] [] - [] []	[]	[] [] [] []		[] []	- [] []	[] []	Boulder clay recovered as very dense grey GRAVEL fine to coarse sandstone and calcite		
						[] []	- [] []	[] []	End of Borehole at [] [] m		

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Groundwater: Struck [] Rose to [] Water [] Sealed [] Comment []	Hole Information: Hole Depth [] m Casing Diameter [] mm Casing Depth [] m [] m [] mm [] m [] m [] mm [] m	Chiselling: Depths [] m Time [] h [] m [] s Tool Chisel
--	--	---

Remarks: Cable percussion terminated due to obstruction at [] m
 Borehole terminated at required depth

Shift Data: Groundwater [] Shift [] dd/mm/yyyy Casing depth [] m - [] [] [] [] [] [] [] [] [] [] [] [] - [] [] [] [] [] [] [] [] [] [] [] []	Remarks Start of Borehole [] [] [] [] [] [] [] [] [] [] [] [] End of Borehole [] [] [] [] [] [] [] [] [] [] [] []
--	---

Equipment Methods: [] and [] Soil Mech PSM [] G
 Compressed air-mist flush



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Drilled By
C G
Logged By
S C M

Borehole No
BH17
Sheet 00

Project Name: Bantry Bay Inner Harbour	Project No.: PC0000	Co-ords: 000000 - 000000N	Hole Type: Cable Rotary
Client: Bantry Bay Harbour Commissioners	Dates: 00000000	Level: -0000 m AO	Scale: 0000

Well Backfill	Water Strikes	Rotary Coring						Casing Flush	Level m AO	Depth m	Stratum Description	Legend
		Depth m	TCR	SCR	R	Fractures	Fracture spacing					
		0000-0000								Boulders recovered as grey clayey GRAVEL sandstone		
		0000-0000								Moderately strong grey massive MUONON weathering: Slightly weathered reagent clay smears along fracture surfaces fractures too sets Closely spaced dipping approximately degrees with occasional degree fractures Surfaces are planar smooth 000m - 000m fracture index - 000		
		0000-0000								Moderately strong to strong grey fine to medium grained LIMONON with reagent calcite veins weathering: Slightly weathered reagent clay smears along fracture surfaces fractures too sets Medium spaced dipping approximately degrees with occasional degree fractures Surfaces are undulating rough 000m - 000m fracture index - 000		
										End of Borehole at 0000m		

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Groundwater: Struck Rose to Water Sealed Comment	Hole Information: Borehole Depth Casing Diameter Casing Depth 0000m 0000mm 0000m 0000m 0000mm 0000m	Chiselling: Depths m Time thmm Tool 0000 to 0000 0000 Chisel 0000 0000 0000
Remarks: Cable percussion terminated due to obstruction at 000m Borehole terminated at required depth	Shift Data: Groundwater Shift dd/mm/yyyy Casing depth Remarks - 00000000 0000m Start of Borehole - 00000000 0000m Start of Borehole	
Equipment Methods: Handheld Soil Mech PSM CG Compressed air-mist flush		

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date:
[] [] [] [] [] []

Location: Bantry Co. Cork

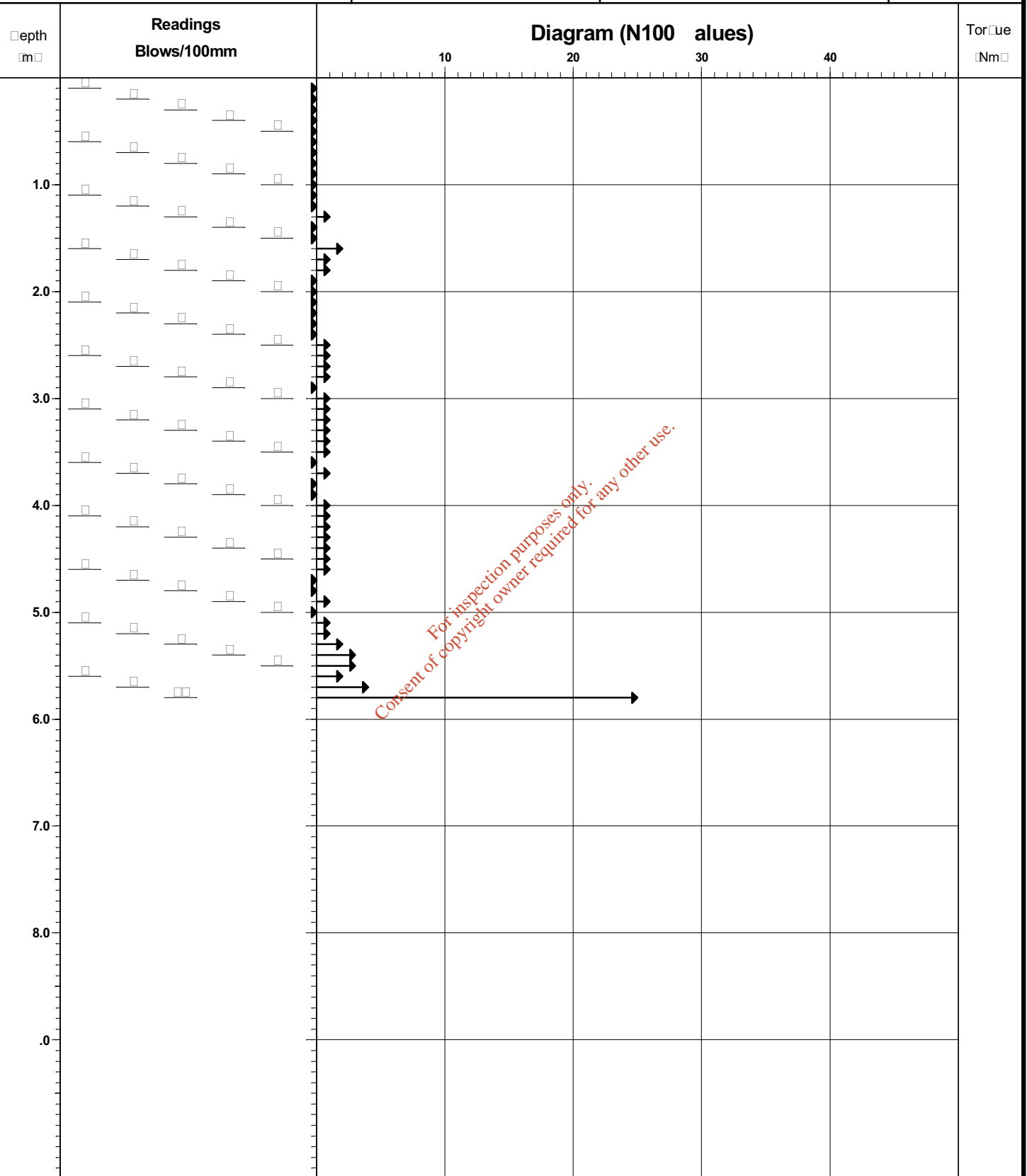
N: [] [] [] []

Operated by:
L []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO



Remarks: -

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] [] []
Probe Type: [] PS []	Log Scale: [] [] [] []

Project Name: Bantry Bay Inner [] Harbour

E: [] [] [] []

Date:
[] [] [] [] [] []

Location: Bantry [] Co Cork

N: [] [] [] []

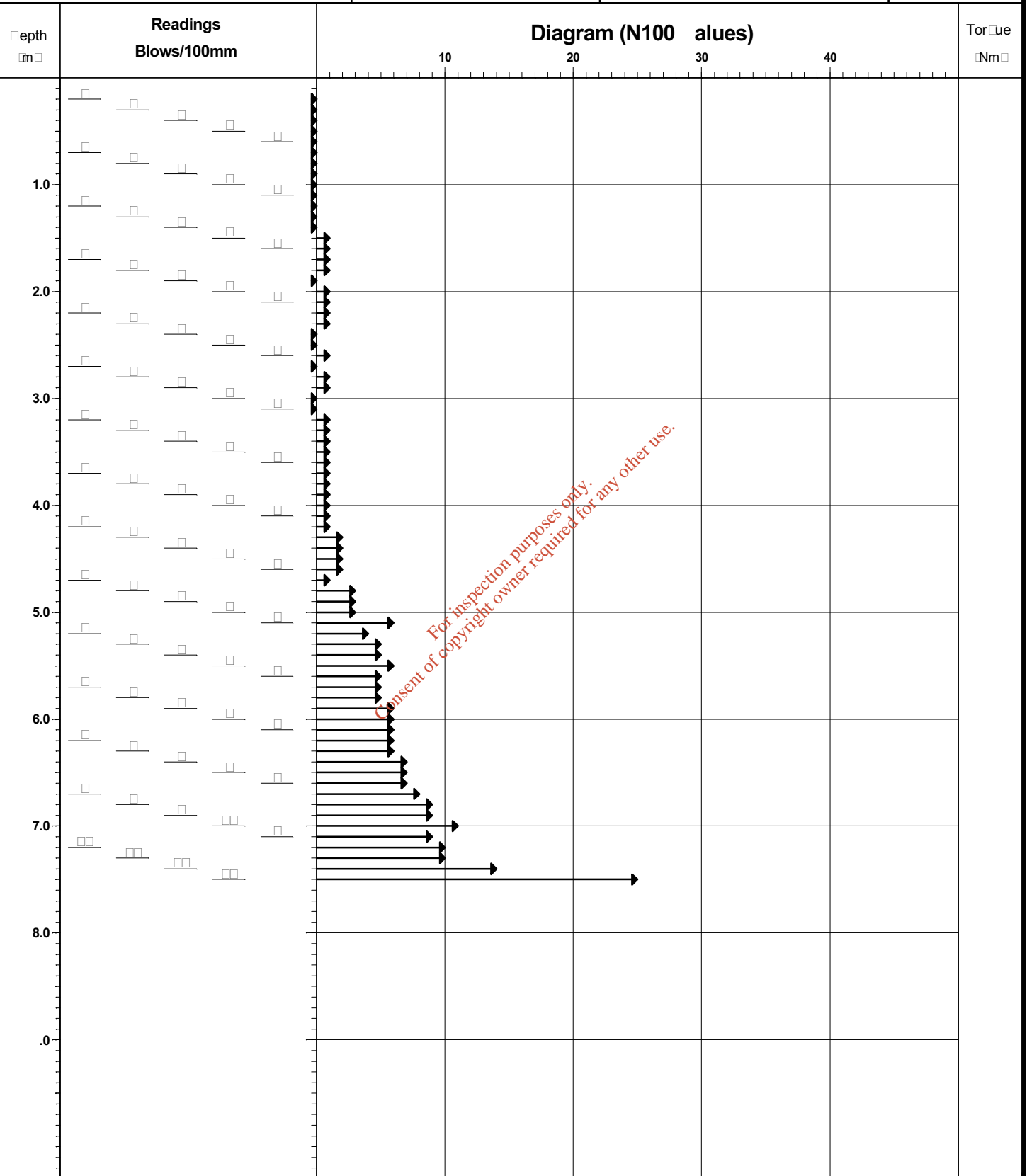
Operated by:

Client: Bantry Bay [] Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO []

L []



Remarks: -

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []



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Probe No []
DP03
Sheet [] of []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Location: Bantry Co Cork

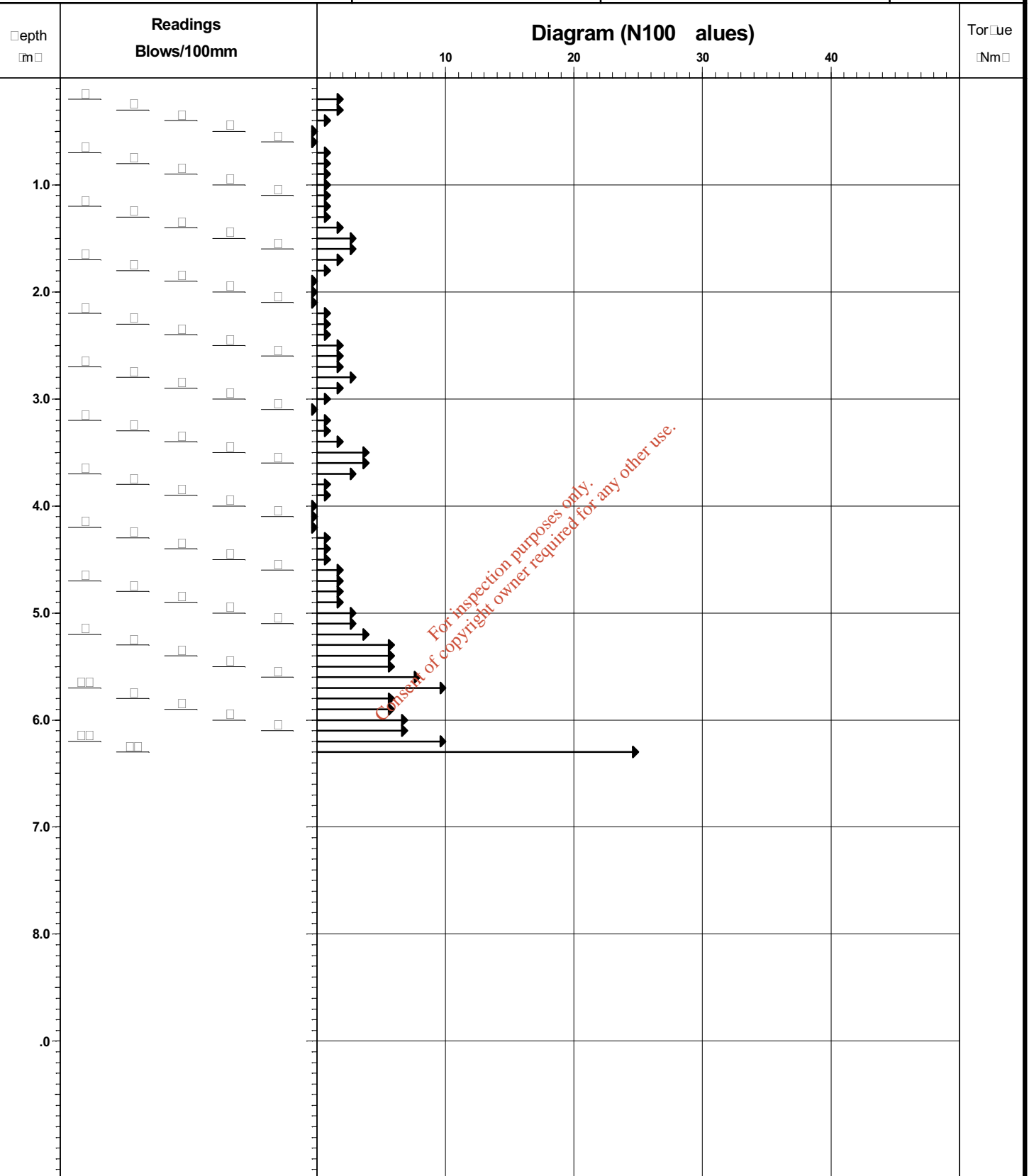
N: [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

Date: [] [] [] [] [] []
Operated by: [] [] [] [] [] [] [] []
L []



Remarks: -

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date: [] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

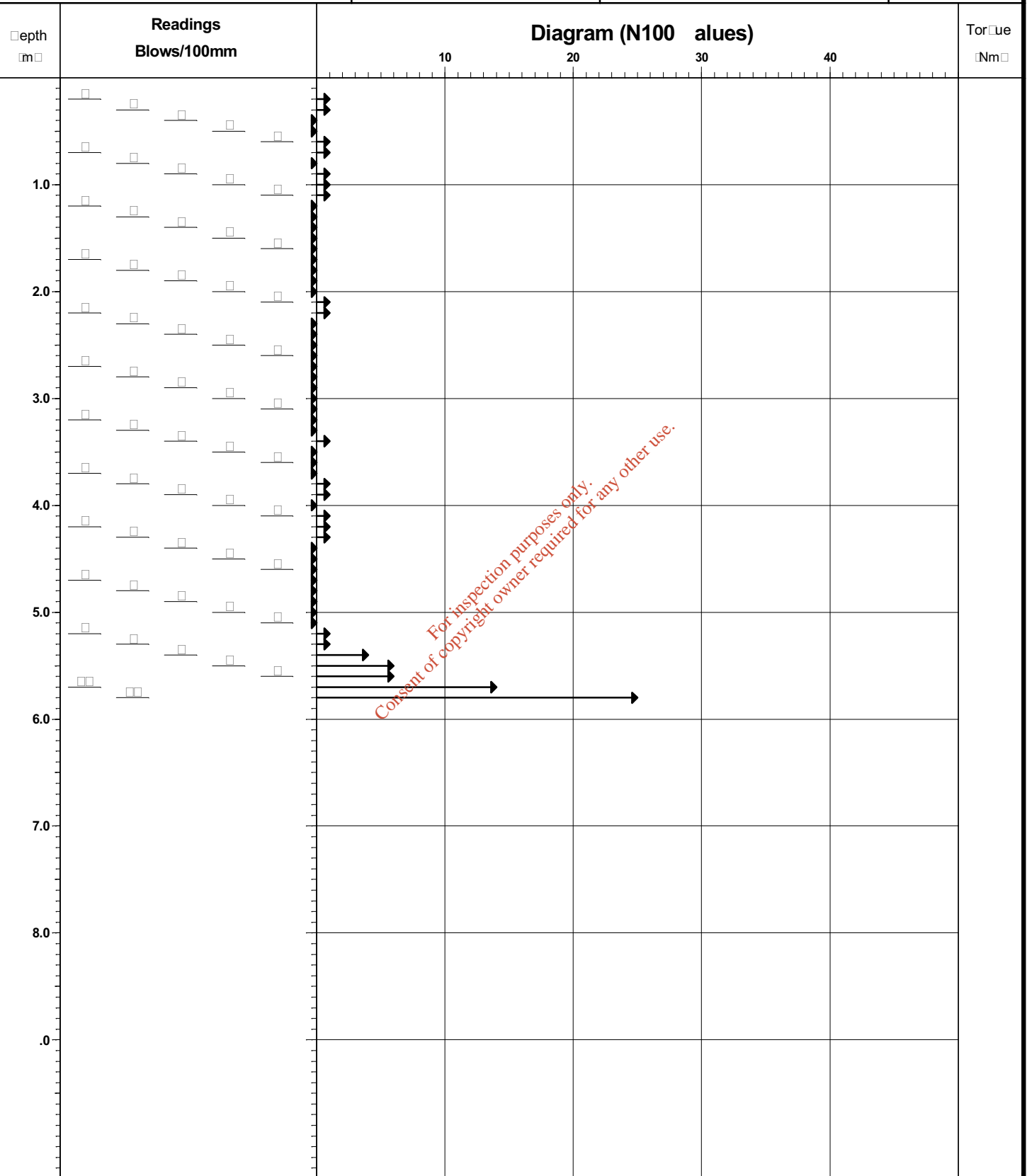
Operated by: [] [] [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



Remarks: Water depth [] [] [] m

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date: [] [] [] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

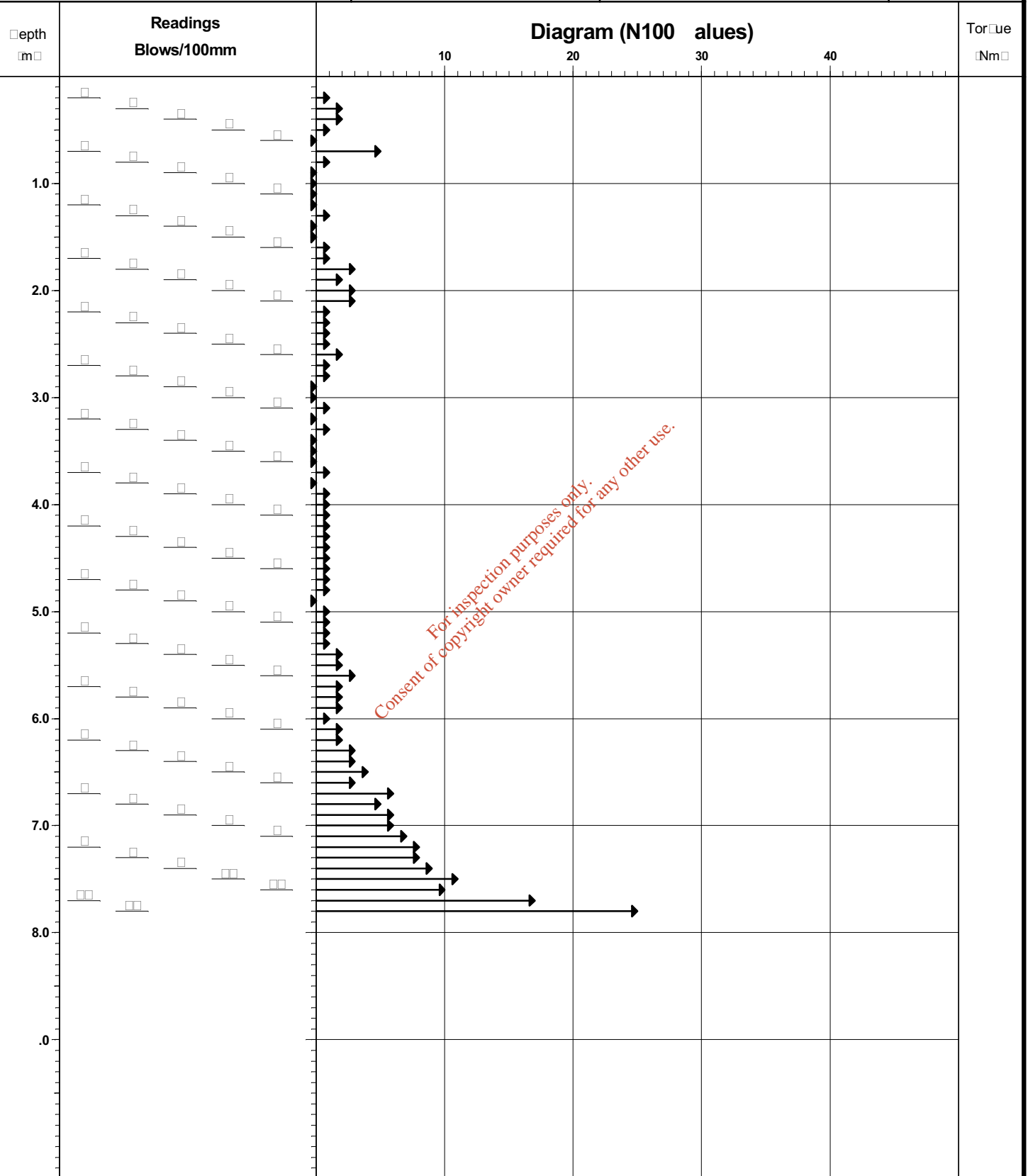
Operated by: [] [] [] [] [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] [] m AO []

L []



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Remarks: -

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] [] []
Probe Type: [] PS []	Log Scale: [] [] [] []

HoldBASE III (BIC-422.0) Standard Dynamic Probe Log v2 dated 27th Nov 03

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date:
 [] [] [] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

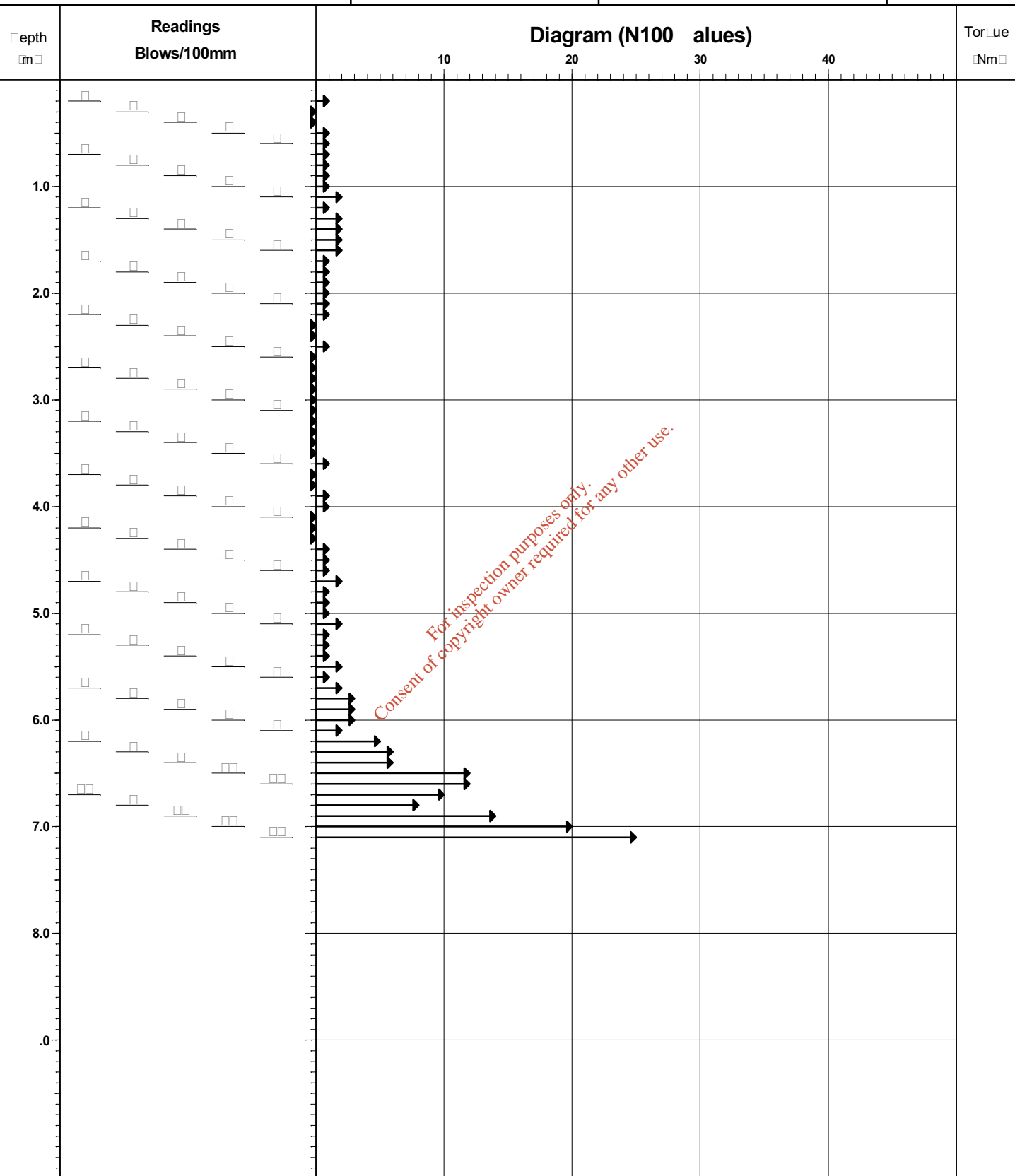
Operated by:

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



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Remarks: Water level [] m

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] [] []
Probe Type: [] PS []	Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date: [] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

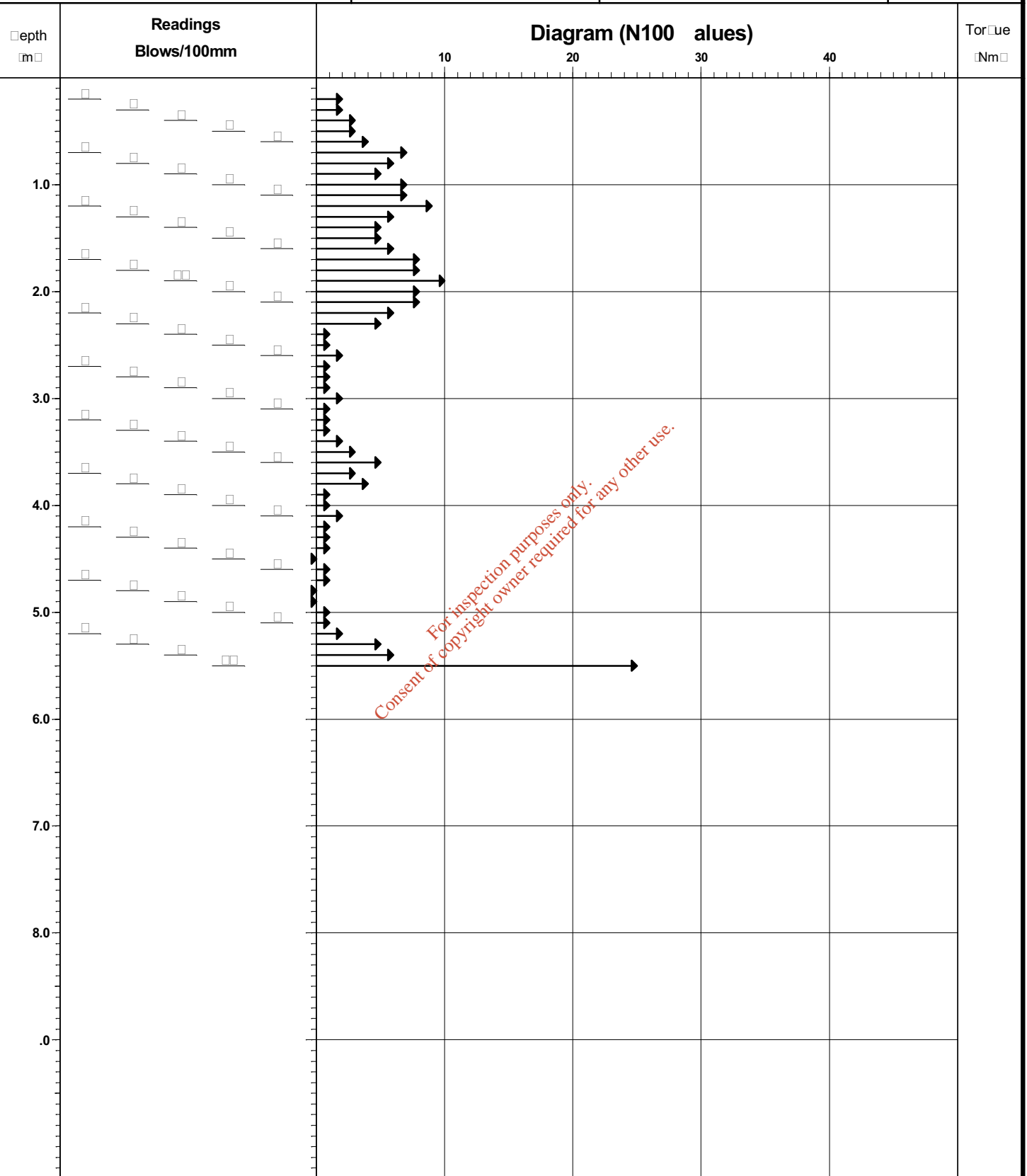
Operated by: [] [] [] [] [] [] [] [] [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



Remarks: -

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: 0000

Date: 00000000

Location: Bantry Co Cork

N: 0000

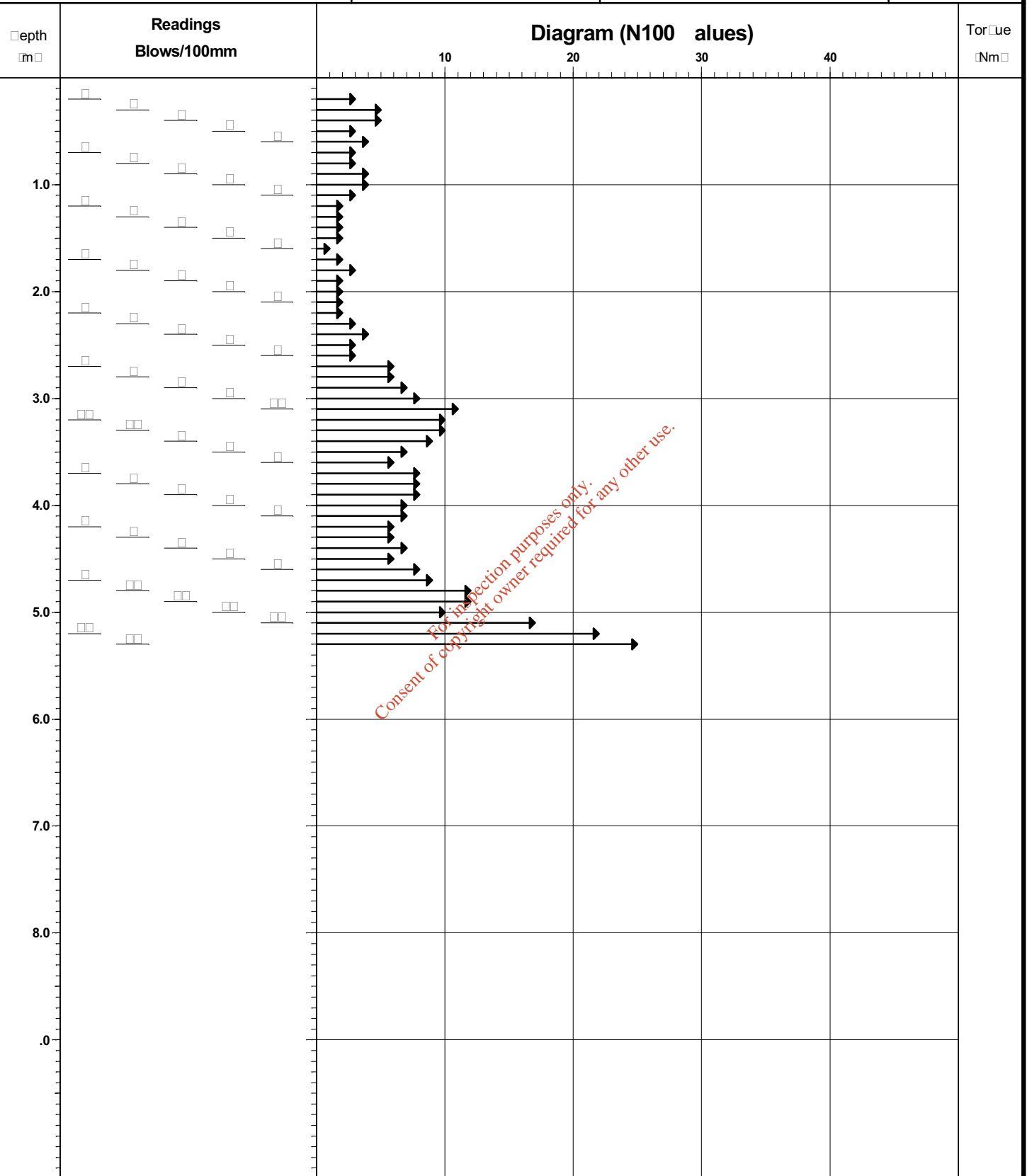
Operated by:

Client: Bantry Bay Harbour Commissioners

Project No: PC0000

Level: -000 m AOD

L



Remarks: -

Fall Height: 000

Cone Base Diameter: 00

Hammer Wt: 0000

Final Depth: 0000

Probe Type: PS

Log Scale: 0000

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date: [] [] [] [] [] []

Location: Bantry Co. Cork

N: [] [] [] []

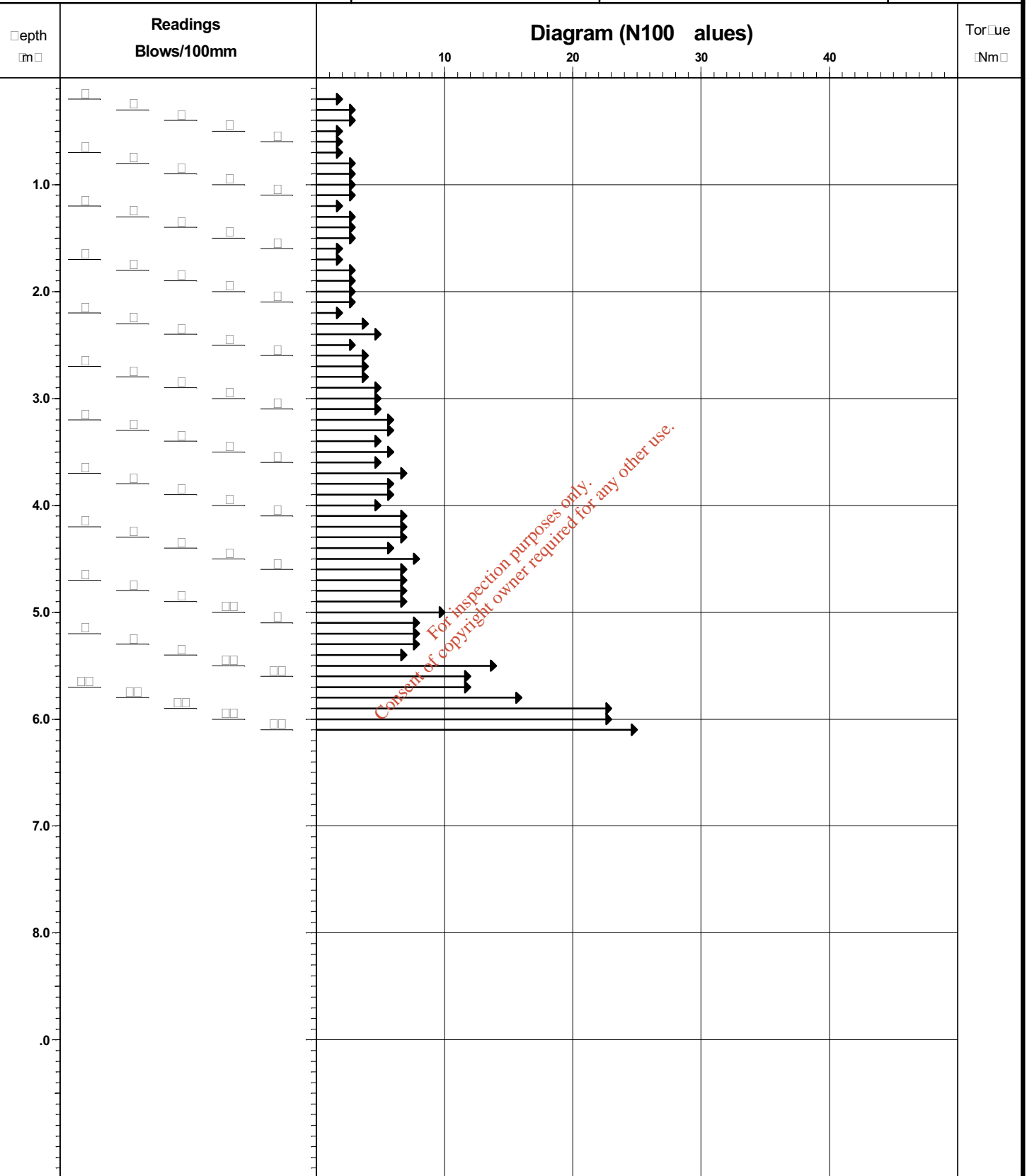
Operated by: [] [] [] [] [] [] [] [] [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



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Remarks: -

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date: [] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

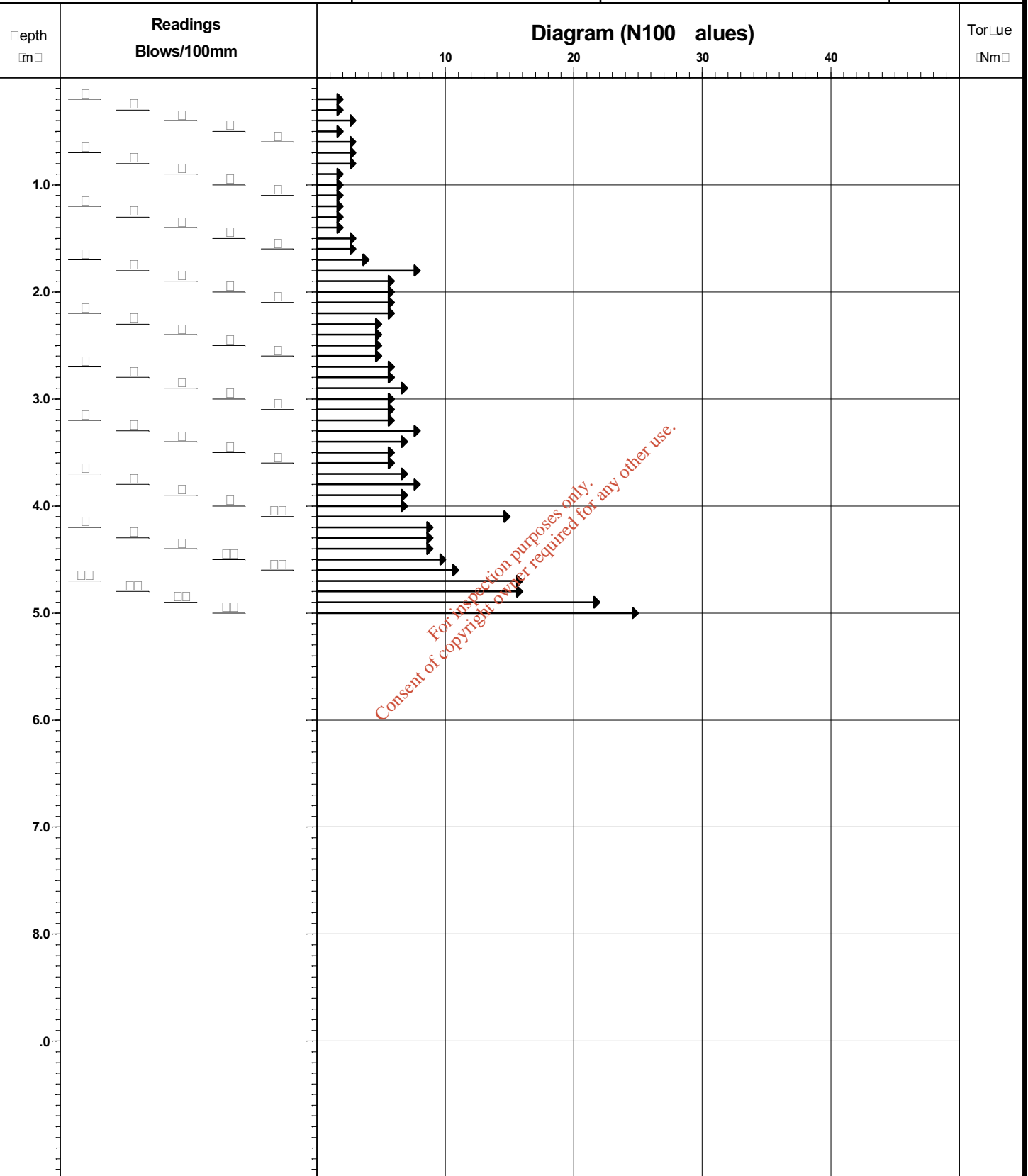
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Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



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Remarks: -

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] [] []
Probe Type: [] PS []	Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Location: Bantry Co Cork

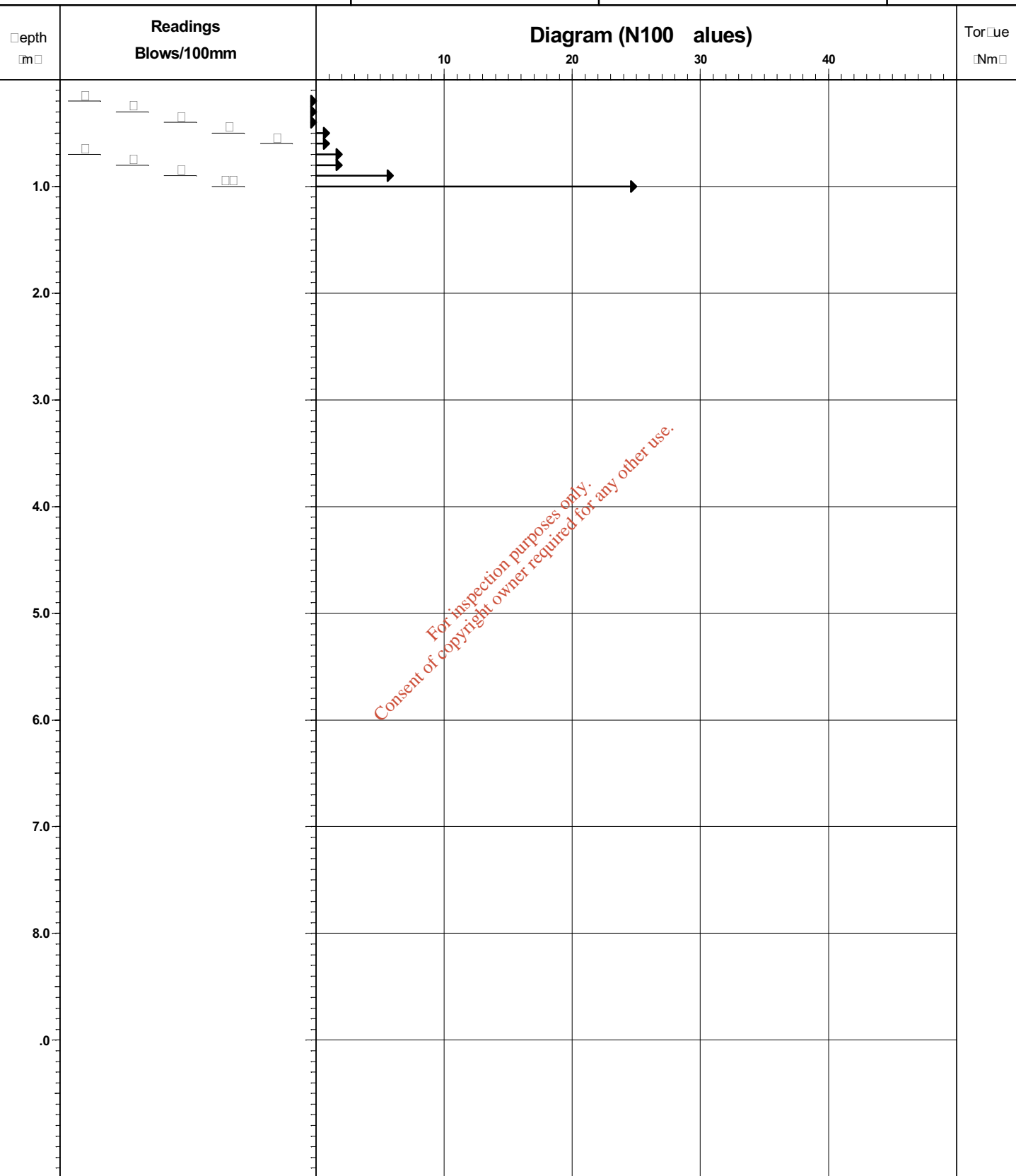
N: [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC[] [] [] []

Level: -[] [] [] m AO

Date: [] [] [] [] [] []
Operated by: [] []



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Remarks: Water level [] m

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] []
Probe Type: [] PS	Log Scale: [] [] []

HoldBASE III (B1422/0) Standard Dynamic Probe Log v2 dated 27th Nov 03

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date:
[] [] [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

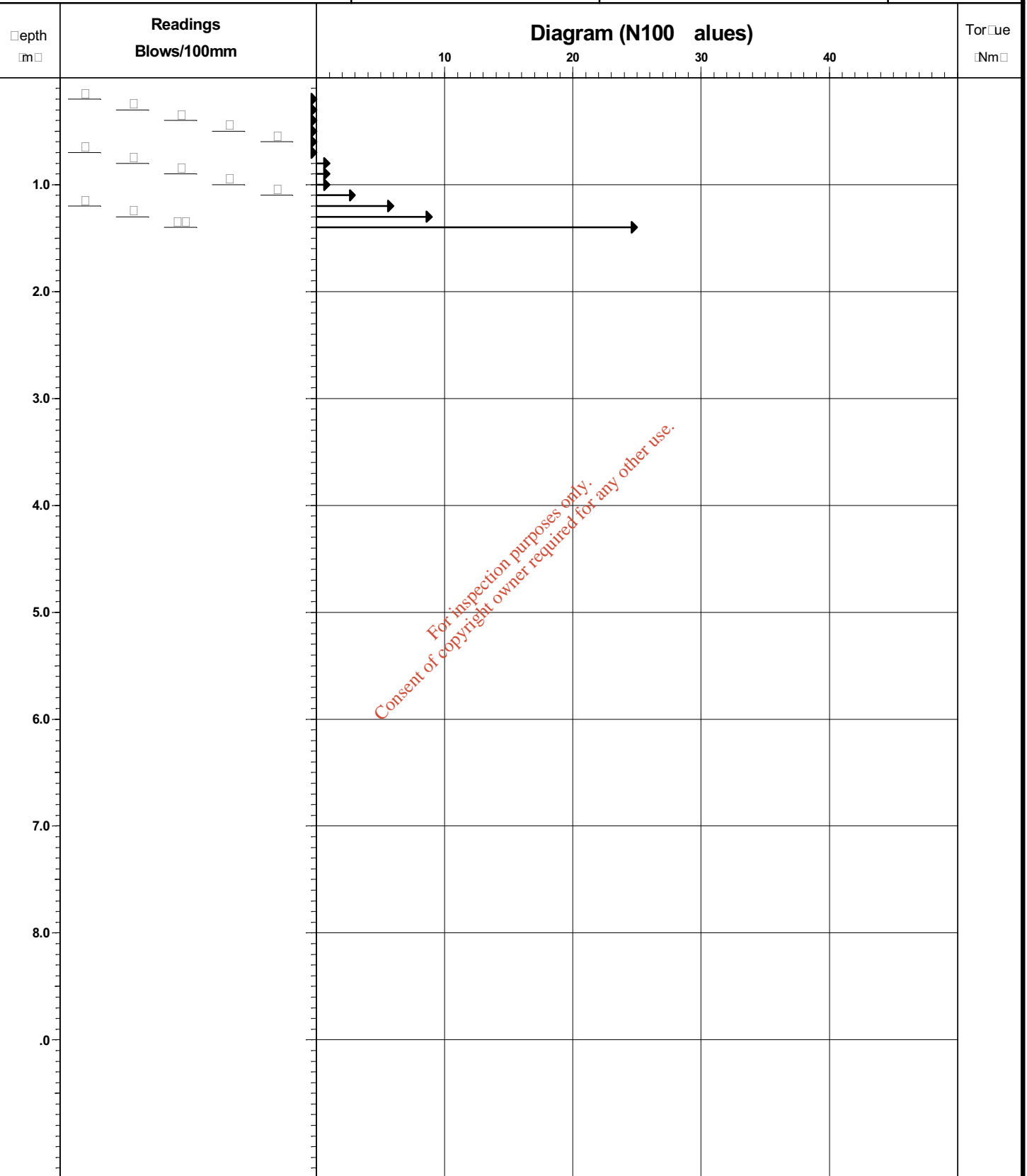
Operated by:

Client: Bantry Bay Harbour Commissioners

Project No: PC[] [] [] []

Level: -[] [] [] m AO

L []



Remarks: -

Fall Height: [] []	Cone Base Diameter: [] []
Hammer Wt: [] [] [] []	Final Depth: [] [] [] []
Probe Type: [] PS []	Log Scale: [] [] [] []



Priority Geotechnical
 Tel: [] [] [] [] [] [] [] [] []
 Fax: [] [] [] [] [] [] [] [] []
 [] [] [] prioritygeotechnical.ie

Probe No []
DP13
 Sheet [] of []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date:
 [] [] [] [] [] [] [] [] []

Location: Bantry Co Cork

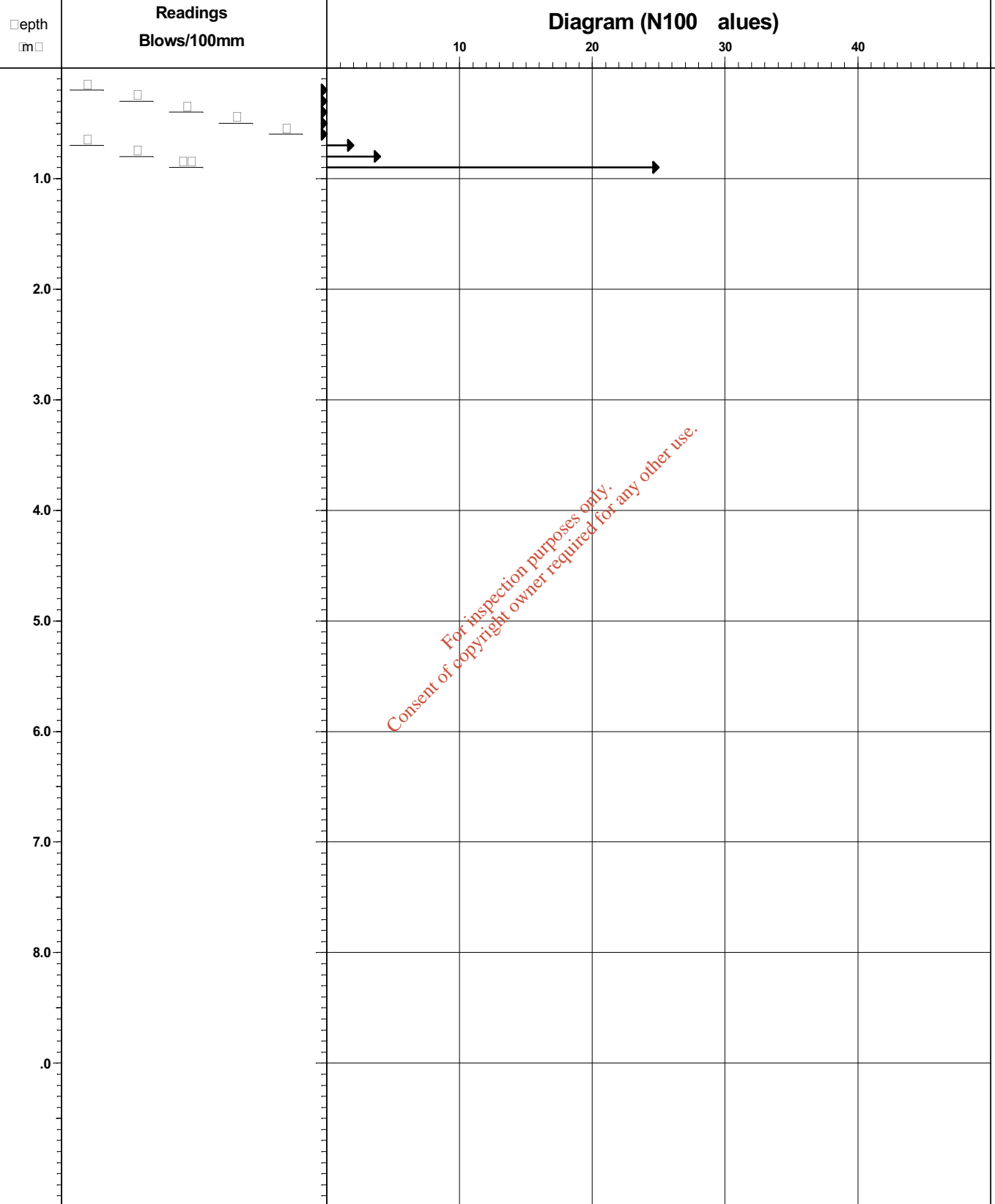
N: [] [] [] []

Operated by:
 L []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] [] m AO []



Remarks: Water level [] m

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

HoleBASE III (BIS-422.0) Standard Dynamic Probe Log v2 dated 27th Nov 03



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 Fax: [] [] [] [] [] [] [] []
 [] [] [] prioritygeotechnical.ie

Probe No: [] []

DP14

Sheet [] of []

Date: [] [] [] [] [] []

Operated by: [] [] [] [] [] []

L: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

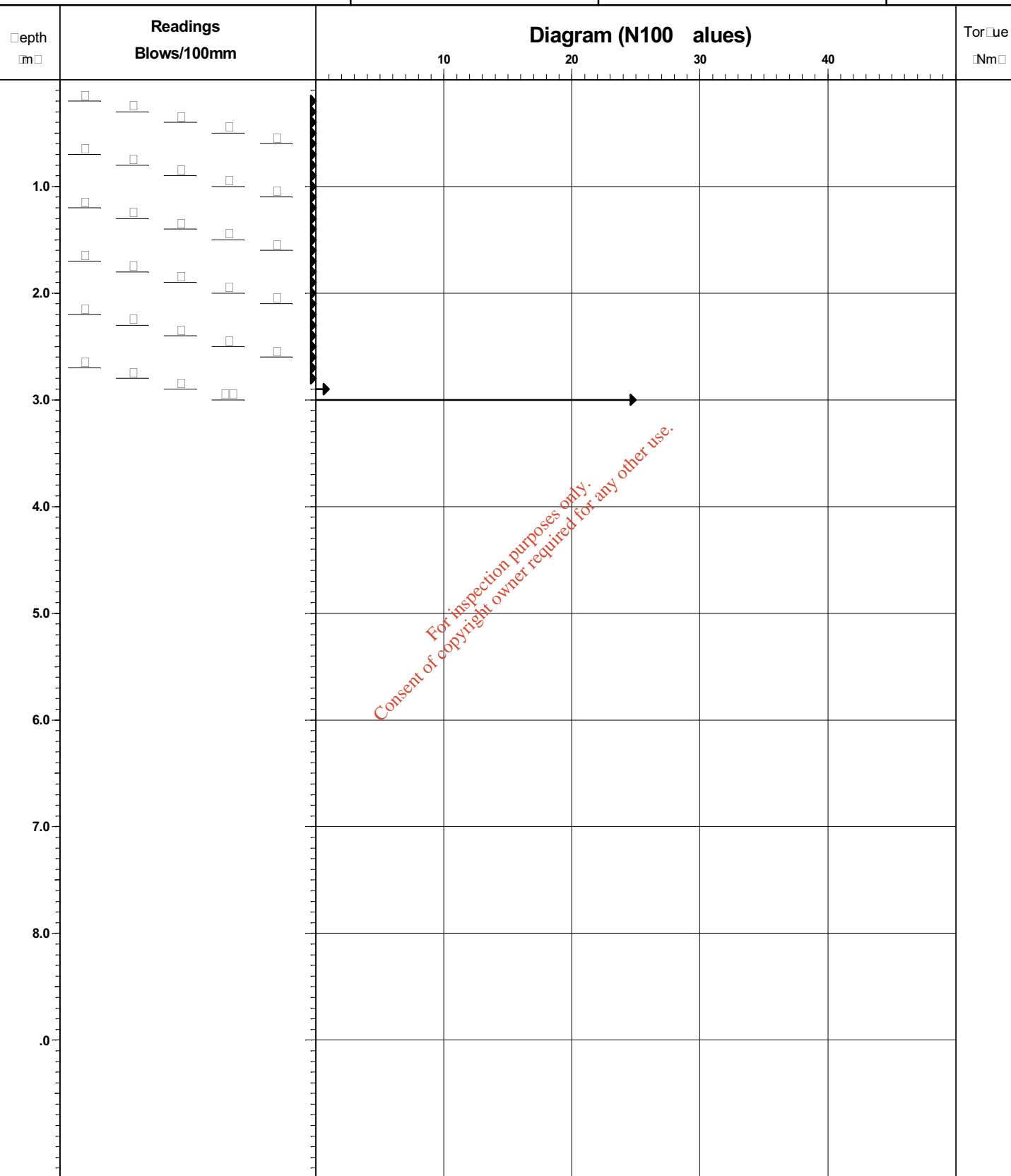
Location: Bantry Co Cork

N: [] [] [] []

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO



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Remarks: Water level [] [] [] m

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: PS

Log Scale: [] [] [] []

HOLDBASE III (BIG-4220) Standard Dynamic Probe Log v2 dated 27th Nov 03

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Location: Bantry Co Cork

N: [] [] [] []

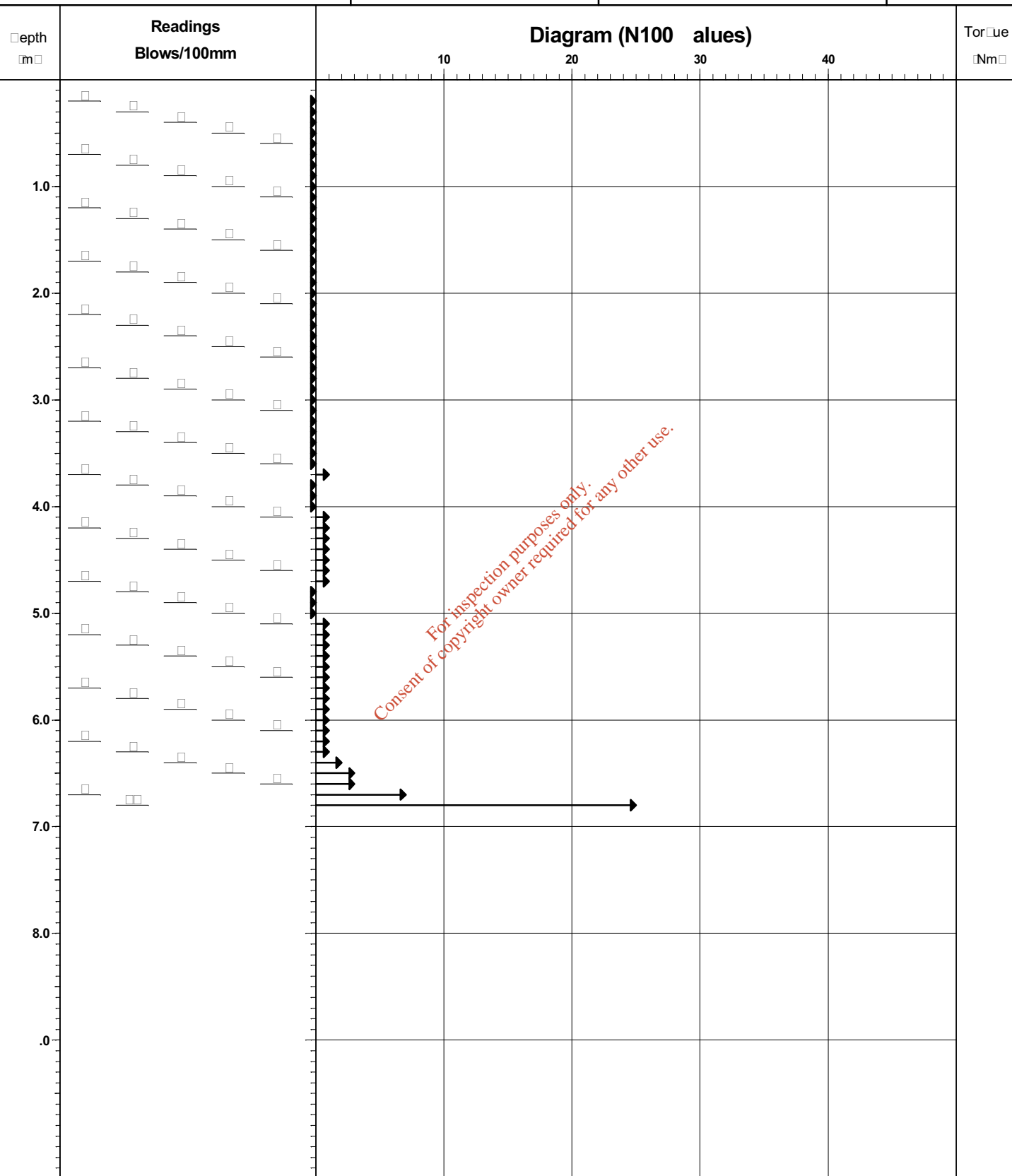
Operated by:

Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



Remarks: Water level [] [] [] m

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

Project Name: Bantry Bay Inner Harbour

E: [] [] [] []

Date:
[] [] [] [] [] []

Location: Bantry Co. Cork

N: [] [] [] []

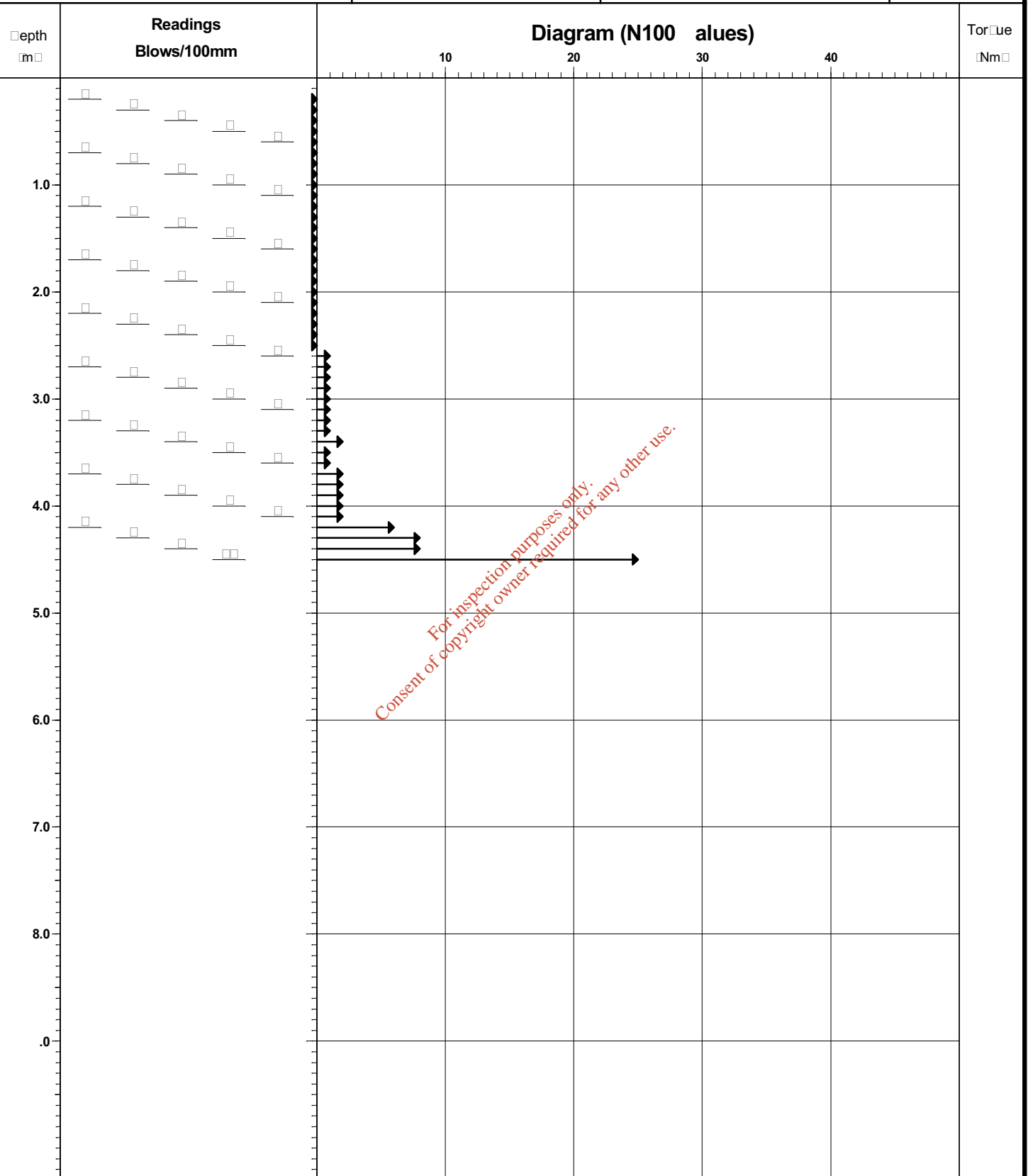
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Client: Bantry Bay Harbour Commissioners

Project No: PC [] [] [] []

Level: - [] [] [] m AO

L []



Remarks: Water level [] [] [] [] m

Fall Height: [] []

Cone Base Diameter: [] []

Hammer Wt: [] [] [] []

Final Depth: [] [] [] []

Probe Type: [] PS []

Log Scale: [] [] [] []

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APPENDIX B

BATHYMETRIC SUB-BOTTOM PROFILE

Bantry Inner Harbour Bathymetric
Sub-bottom Profile Survey

Report prepared August

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**Bantry Inner Harbour
Bathymetric & Sub-bottom Profile
Survey Report**

August –6th 2009

PH9012

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Client:

Priority Geotechnical Ltd.
Unit 12B
Owenacurra Business Park
Midleton, Co. Cork

Prepared By:

Hydrographic Surveys Ltd.,
The Cobbles,
Crosshaven,
Co. Cork.

Contents

1. Introduction	3
2. Methodology	4
2.1 Horizontal Control	4
2.2 Vertical Datum	4
2.3 Bathymetric Survey	4
2.4 Sub-bottom Profile Survey	<input type="checkbox"/>
3. Results	<input type="checkbox"/>
3.1 Bathymetric Results	<input type="checkbox"/>
3.2 Sub-bottom Profiling Results	<input type="checkbox"/>
Appendix One	<input type="checkbox"/>
Equipment List and Specifications	
List of Drawings	
HS 3000 Bathymetry	Scale 1:1000
HS 300A Tracé plot and Cross-section Location Plot	Scale 1:1000
HS 300B Interpreted Sediment Thickness	Scale 1:1000
HS 300C Interpreted Rock Head levels (CD)	Scale 1:1000
HS 300D Sub-bottom Cross-sections	Scale 1:1000

1. Introduction:

Hydrographic Surveys Ltd. was instructed by Priority Geotechnical Ltd, to undertake a bathymetric and sub-bottom profiling survey in Bantry Bay Inner Harbour. See drawing HS83_A/09 for survey line locations. The survey was undertaken on 6th August 2009.

The main objectives of the geophysical survey were:

- To determine bathymetric levels to Chart Datum.
- To determine the depth to rock and overburden thickness

Results of the survey are presented in this report and associated drawings

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2. Methodology

Horizontal Control:

Horizontal control and grid was provided by DGPS using satellite broadcast corrections. The navigation unit used was the Trimble DGPS 132 model which provides sub-metre accuracy. The DGPS position was interfaced and logged to Hypack survey software which provides real-time line guidance and continuous logging of position.

The weather conditions were good throughout the acquisition period. Health and safety standards were adhered to at all times.

2.2 Vertical Datum

Datum for the survey is Chart Datum as specified by the Client.

Tides were measured at Bantry Harbour using a Valeport 740 model vented tide gauge. This was installed on the pier in Bantry and recorded tidal height every 5 minutes for the duration of the survey. The tidal height results were reduced to Chart datum using a TBM of +4.31m CD.

2.3 Bathymetric Survey

The ODOM hydrotrac digital echo sounder, used in high frequency mode, was used to record seabed levels in both digital and analogue form. The echosounder has a resolution of 0.01m and is calibrated on site by the bar-check method. The sounder was also interfaced into the Hypack 2008 survey software thereby providing a digital record with related position fixes.

Survey lines were undertaken along predetermined survey lines as specified by the client in drawing IBM0188_T_02_REVA.dwg.

2.4 Sub-bottom Profile Survey

The sub-bottom profiling survey was carried out using the Tritech Seanet System-SeaKing Sub-bottom Profiler. The SeaKing System utilizes CHIRP pulses as its wave source.

Positioning and line guidance were provided using the Trimble DGPS unit and Hypack survey software as outlined in sections 2.1 above.

The bathymetric and sub-bottom profile surveys were undertaken concurrently.

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3. Results

3.1 Bathymetric Result

The results from the bathymetric survey are plotted in Drawing HS: 83/09.

Contours have been added at 0.5m interval.

From the results it is clear the seabed deepens north and west of the pier outside the harbour. As one would expect much of the inner harbour is very shallow, lying above CD and dries out at Low Tide. The -1.5m contour covers the entire eastern section of the harbour. The southern survey line adjacent to the southern bank/wall ranges from -0.3m to -1.9 m CD. The northern bank ranges from 0m to -1.7m CD with a raised embankment extending out towards the centre of the harbour at the corner adjacent to the north section of XS9 (See HS: 83_A/09).

3.2 Sub-bottom Profiling Results

As requested by the client, survey line track plots with interpreted depth of sediment above rock level have been plotted in drawing HS: 83_B/09. Due to a number of possible reasons a reflector representing rockhead was not identified in all of the survey lines. This may be due to reduced signal penetration and/or noise in some areas of the survey, signal absorption in the dense clay/peat layers or insufficient property contrast between two layers.

Where rockhead has not been identified, the depth of the deepest interpreted reflector has been plotted on Drawing HS: 83_B/09.

The interpreted rockhead levels were reduced to Chart Datum and plotted on Drawing HS: 83_C/09. It appears rock is closest to the surface along the eastern boundary of the

survey. In the rest of the harbour, where rock was interpreted it generally lies 4.1m-7.1m below the seabed surface. Rock levels appear to deepen moving towards the mouth and outside the harbour lying upto 11.7m below the seabed surface.

As requested, the results of this survey are also presented in cross-section form in chart: HS: 83_D/09. Sub-bottom profile interpretation was undertaken with the aid of Borehole information provided by Priority Geotechnical Ltd. Logs were provided for the following Boreholes: BH05, BH08, BH09, BH10 and BH15. Boreholes that were crossed by/ or were adjacent to surveys lines have been added to the cross-sections.

A total of five independent reflectors were interpreted in the profiles. A near surface reflector has been marked in red and generally lies within 1m of the surface. This is likely to represent unconsolidated, seawater saturated sediments.

Silt, Sand and Clay layers have been interpreted underlying the surface layer with a Silt/Peat and Cobble layer present on Cross section 13 to the east of the survey boundary. Rockhead has been interpreted directly below this Silt/peat and cobble layer on Cross-section 13.

Generally on the other cross-sections additional layers of Silts and Peats were interpreted before a rockhead layer.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Hydrographic Surveys Ltd., while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

Appendix One

Equipment List and Specifications

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Equipment List and Technical Specifications

Navigation

Trimble AgDGPS 132. This unit provides sub-metre differential position accuracy. The L-band satellite receiver uses a Trimble developed, sensitive design to provide coverage across the entire satellite footprint.

Bathymetry

ODOM Hydrotrac digital echosounder

Hypack 2008 survey software.

The navigation can be interfaced into this software package to provide real-time line guidance and continuous logging of position in both Latitude and Longitude and Irish National Grid.

Tide Gauge:

Valeport model 740 with vented transducer

Sub-Bottom Profiler

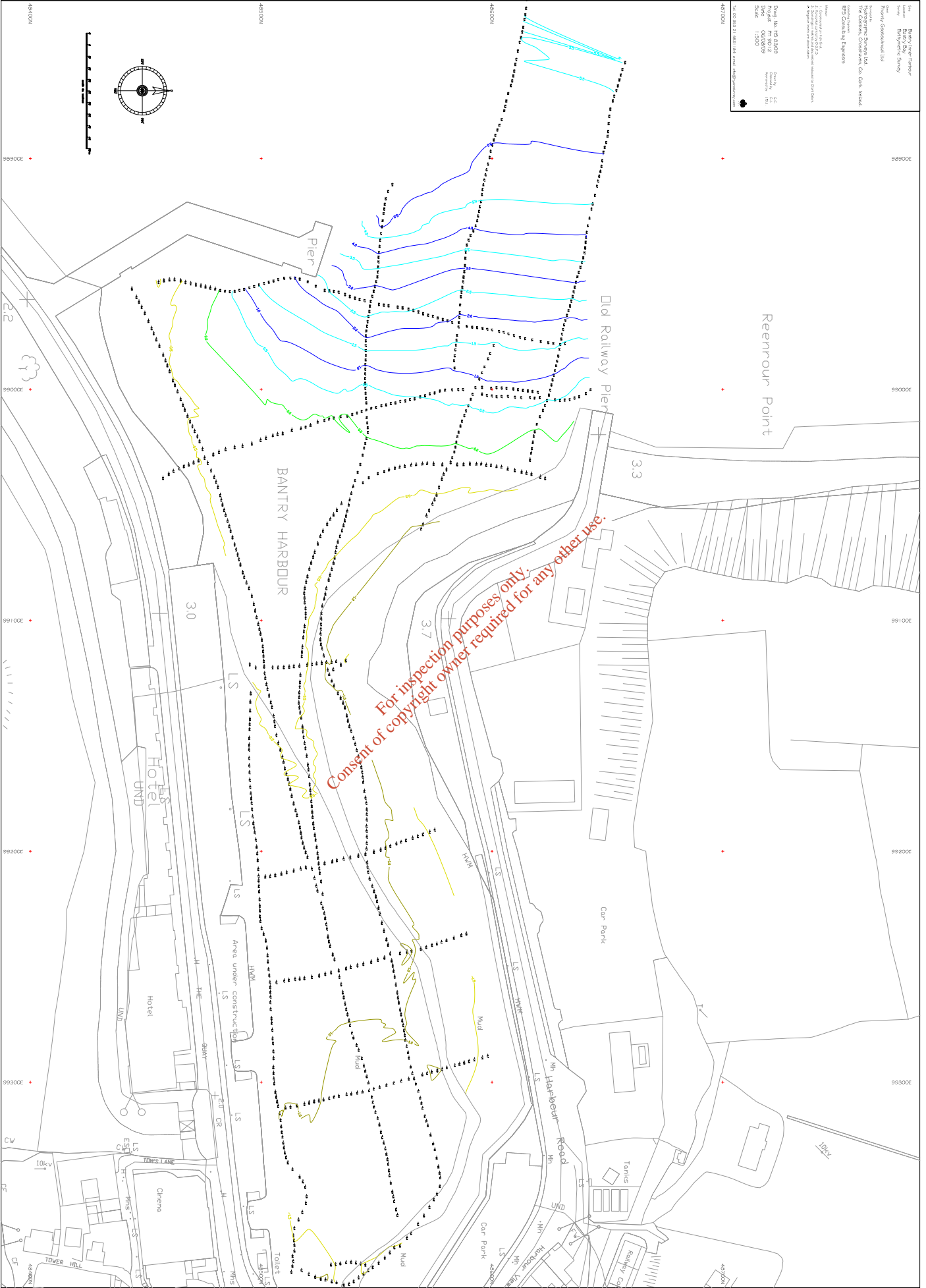
Tritech Seanet System-SeaKing Sub-bottom Profiler. The SeaKing System utilizes CHIRP pulses as its wave source. SeaNet Pro was utilized as Data acquisition software and interfaced with the Trimble AgDGPS 132 output.

All charts are produced in Autocad Format.

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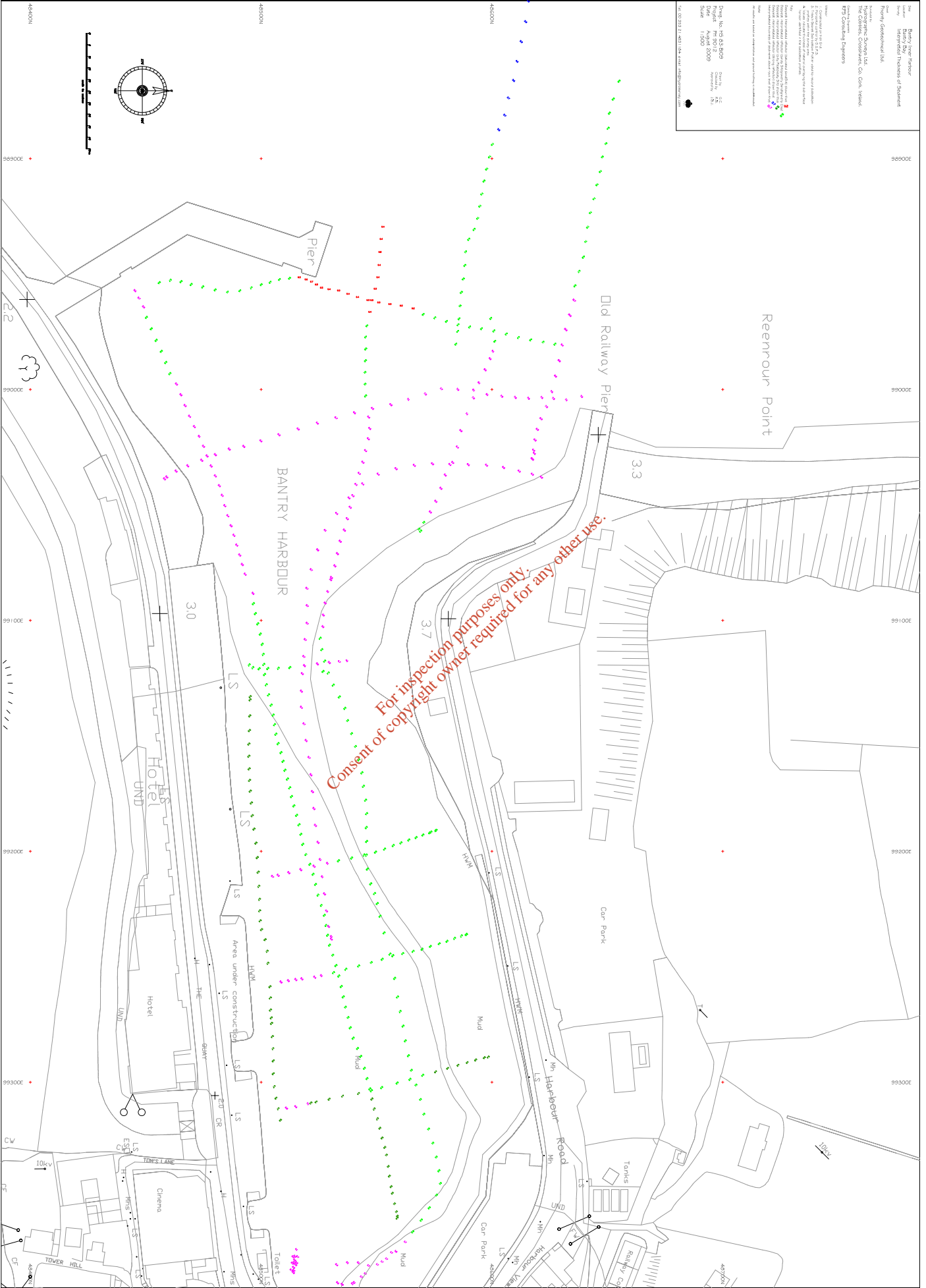
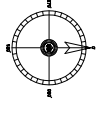
*For inspection purposes only.
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Client: Bantry Harbour
 User: Bantry Bay
 Title: Bathymetric Survey
 Priority: Generalist Ltd
 Surveyed: 15/06/2015
 Project: PM 8012
 Scale: 1:5000
 Drawing No: MS 8389
 Project: PM 8012
 Scale: 1:5000
 Date: 15/06/2015
 Drawing No: MS 8389
 Project: PM 8012
 Scale: 1:5000
 Date: 15/06/2015



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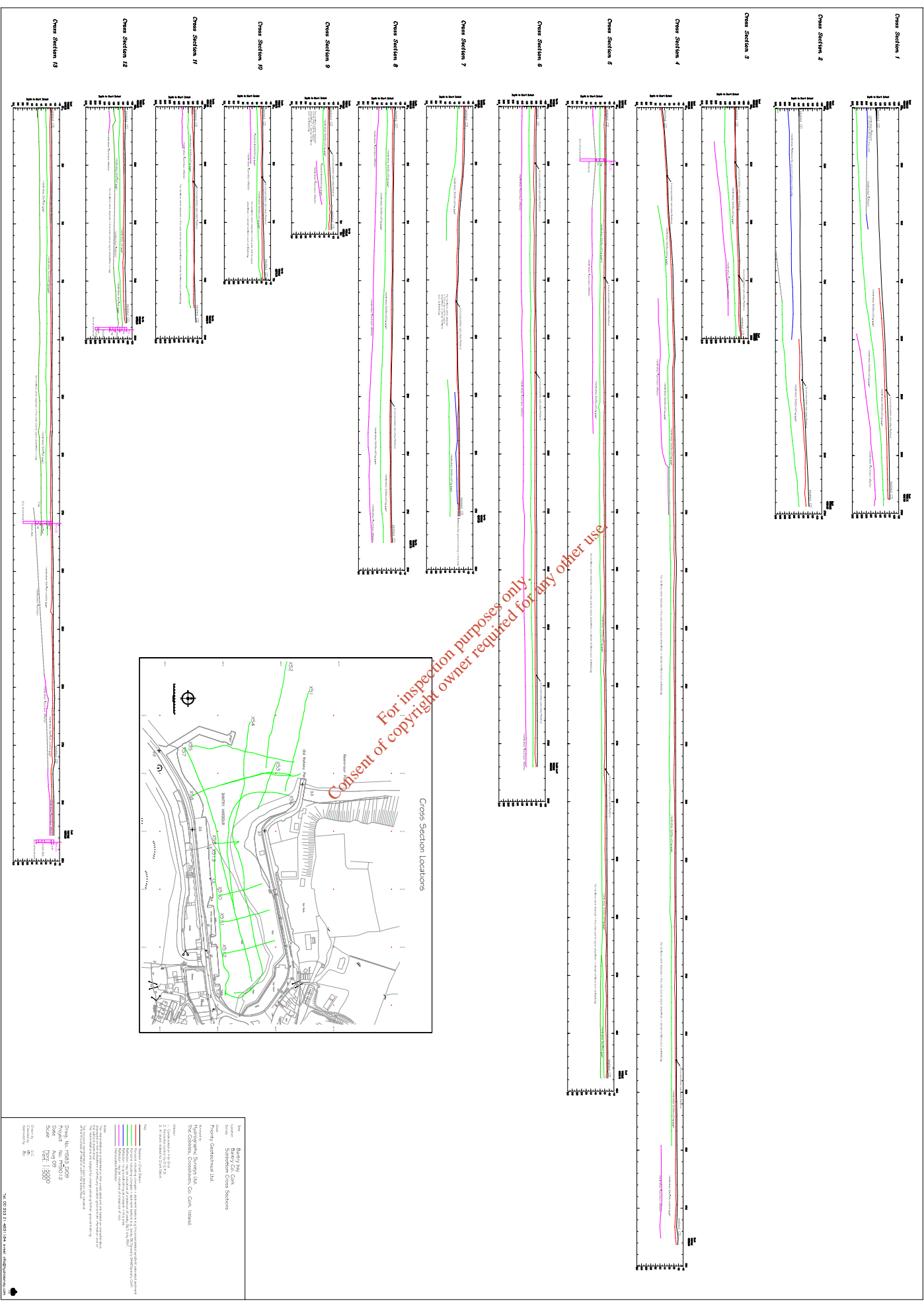
Bannry Harbour
 Bannry Bay
 Interregional Harbour of Settlement
 Priority Generalised List
 Project Name: Bannry Harbour
 Project Location: Bannry Harbour, Co. Wick, Ireland.
 Project Number: 15/02/0029
 Date: 15/02/2023
 Scale: 1:500
 Drawing No.: 15/02/0029
 Project No.: 15/02/0029
 Date: 15/02/2023
 Scale: 1:500



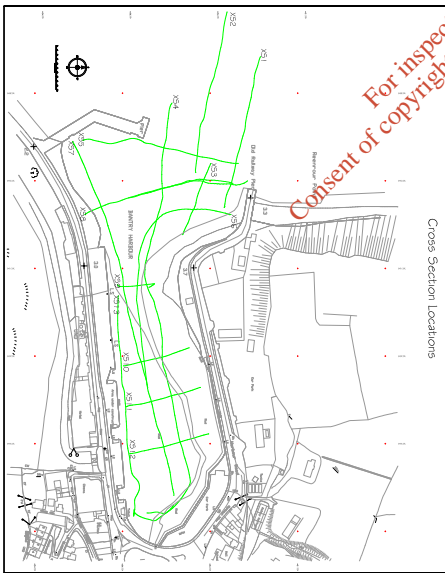
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 Author: Bannry Harour
 Date: 15/08/2009
 Project: Bannry Harour
 Property: Godalshill Ltd.
 Drawn: [Name]
 Checked: [Name]
 Project Engineer: [Name]
 Project Manager: [Name]
 Date: August 2009
 Scale: 1:500
 Drawing No: [Number]
 Drawing Title: [Title]
 Drawing Date: [Date]
 Drawing Scale: [Scale]





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Site	Burry Bay Coal
Study	Station Cross Sections
Lead	Merly Gresham Ltd
Client	Hydrogenic Swamps Ltd
Drawn	The Company, Consultant Co. Civil, Inland
Project No.	100012
Scale	1:5000
Drawn By	MDG
Checked By	MDG
Drawn Date	10/12/12
Checked Date	10/12/12

Note: This drawing is a technical drawing and should not be used for any other purpose without the written consent of the author. The author is not responsible for any errors or omissions in this drawing. The author is not responsible for any damage or loss resulting from the use of this drawing.

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APPENDIX C

LABORATOR RESULTS

Key to Laboratory Results

Key

Natural Moisture Content

Atterberg Limit

Grading analysis

Loss on Ignition

Organic Content

Undrained Triaxial Compression

Shear Box

Triaxial Compression - CU

Oedometer consolidation

Marine Sediment Analysis

UCS

Point Load

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KEY TO SYMBOLS ON LABORATORY TEST RESULTS SHEETS

U	Undisturbed Sample	
P	Piston Sample	
TWS	Thin Wall Sample	
B	Bulk Sample - Disturbed	
D	Jar Sample - Disturbed	
W	Water Sample	
pH	Acidity/Alkalinity Index	
SO ₃	% - Total Sulphate Content (acid soluble)	
SO ₃	g/ltr - Water Soluble Sulphate (Water or 2:1 Aqueous Soil Extract)	
+	Calcareous Reaction	
Cl	Chloride Content	
PI	Plasticity Index	
<425	% of material in sample passing 425 micron sieve	
LL	Liquid Limit	
PL	Plastic Limit	
MC	Water Content	
NP	Non Plastic	
γ_b	Bulk Density	
γ_d	Dry Density	
P _s	Particle Density	
U/D	Undrained/Drained Triaxial	
U/C	Unconsolidated/Consolidated Triaxial	
T/M	Single Stage/Multistage Triaxial	
100/38	Sample Diameter (mm)	
REM	Remoulded Triaxial Test Specimen	
TST	Triaxial Suction Test	
V	Vane Test	
DSB	Drained Shear Box	
RSB	Residual Shear Box	
RS	Ring Shear	
σ_3	Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
c	Cohesion	
c _e	Effective Cohesion Intercept	
ϕ	Angle of Shearing Resistance - Degrees	
ϕ_e	Effective Angle of Shearing Resistance	
ϵ_f	Strain at Failure	
*	Failed under 1st Load	
**	Failed under 2nd Load	
#	Unstable	
##	Excessive Strain	
p _o	Effective Overburden Pressure	
m _v	Coefficient of Volume Decrease	
c _v	Coefficient of Consolidation	
Opt	Optimum	
Nat	Natural	
Std	Standard Compaction - 2.5kg Rammer	(¶ CBR)
Hvy	Heavy Compaction - 4.5kg Rammer	(§ CBR)
Vib	Vibratory Compaction	
CBR	California Bearing Ratio	
Sat m.c.	Saturation Moisture Content	
MCV	Moisture Condition Value	

Laboratory Symbols	Project	Contract
		Figure



Natural Moisture Content/Atterberg Limits Summary

Job Ref

BS 1377 : Part 2 : 1990 : Clause 3

Location

Bantry Bay Inner Harbour

PC9030

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH01	8	1.5	D	Very sandy very silty GRAVEL with occasional cobbles	28				
BH01	11	2	B	Very sandy very silty GRAVEL with occasional cobbles		72	47	25	76.2
BH01	12	2.5	D	Slightly gravelly sandy organic SILT	79				
BH01	14	3	B	Slightly gravelly sandy SILT		73	41	32	88.8
BH01	16	3.5	D	Slightly sandy gravelly SILT with some cobbles	60				
BH01	18	4	B	Slightly sandy gravelly SILT with some cobbles		96	55	41	44.9
BH01	20	4.5	D	Slightly gravelly organic SILT	22				
BH01	23	5.5	D	Slightly sandy slightly gravelly organic SILT	76				
BH01	24	6	B	Very silty very sandy GRAVEL		135	88	47	82.5
BH01	26	6.5	D	Slightly gravelly organic SILT	119				
BH01	27	7	B	Slightly gravelly organic SILT		131	79	52	67.8
BH01	29	7.5	D	Slightly gravelly organic SILT	73				
BH01	31	8	B	Very sandy very silty GRAVEL		72	48	24	67.6
BH02	1	0	B	Very silty very gravelly SAND		64	38	26	70.7
BH02	2	0.5	D	Very silty very gravelly SAND	30				
BH03	1	0	B	Very silty very sandy GRAVEL		72	49	23	67
BH03	3	0.35	D	Slightly sandy slightly organic SILT	52				
BH04	1	0	B	Slightly gravelly sandy SILT		84	53	31	96.6
BH04	3	0.5	D	Slightly gravelly sandy organic SILT	73				
BH04	11	2.5	B	Slightly gravelly slightly sandy CLAY		47	27	20	96.1
BH04	12	2.5	D	Slightly gravelly slightly sandy CLAY	33				
BH04	16	3.5	D	Slightly sandy gravelly CLAY	13				



Natural Moisture Content/Atterberg Limits Summary

Job Ref

BS 1377 : Part 2 : 1990 : Clause 3

Location

Bantry Bay Inner Harbour

PC9030

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH05	1	0	B	Slightly gravelly SILT		44	NP	NP	77.1
BH05	4	1	D	Slightly gravelly slightly sandy CLAY	29				
BH05	5	1.5	B	Slightly gravelly slightly sandy SILT		42	27	15	98.1
BH05	7	2	D	Slightly gravelly slightly sandy CLAY	35				
BH05	10	3	D	COBBLES with much gravel	32				
BH05	11	3.5	B	COBBLES with much gravel		35	21	14	55.5
BH05	12	4	D	COBBLES with much gravel	17				
BH06	2	1.5	B	Slightly gravelly sandy CLAY with some cobbles	21				
BH07	2	1.5	B	Silty SILT	33	72	45	27	51
BH07	10	3.5	B	Very silty very gravelly SAND	48	67	42	25	68.7
BH07	13	4.15	D	Silty very gravelly SAND	81				
BH07	23	8	D	Slightly sandy SILT	39				
BH07	25	8.5	B	Slightly sandy SILT	37	45	29	16	100
BH07	28	9.45	D	Slightly sandy SILT	39				
BH08	9	2	D	Slightly sandy gravelly CLAY with some cobbles	34				
BH08	10	2.5	D	Slightly sandy slightly gravelly organic SILT	90				
BH08	12	3	B	Slightly sandy slightly gravelly organic SILT		105	73	32	88.3
BH08	14	3.5	D	Slightly sandy slightly gravelly organic SILT	85				
BH08	17	4.5	D	Slightly sandy slightly gravelly organic SILT	26				
BH08	19	5	B	Slightly sandy slightly gravelly organic SILT		42	28	14	84.4
BH08	20	5.5	D	CLAY	29				
BH08	22	6	B	CLAY		41	23	18	41.3



Natural Moisture Content/Atterberg Limits Summary

Job Ref

BS 1377 : Part 2 : 1990 : Clause 3

Location

Bantry Bay Inner Harbour

PC9030

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH11	5	1	B	Slightly sandy slightly gravelly CLAY		39	22	17	67.9
BH11	7	6	B	Slightly sandy slightly gravelly CLAY		34	21	13	62.9
BH12	2	1.5	B	Slightly gravelly sandy SILT	65	67	44	23	90.4
BH12	3	2	D	Slightly gravelly sandy SILT	73				
BH12	9	3	D	Sandy organic SILT	91				
BH12	10	3.5	B	Sandy organic SILT	118	117	81	36	97.8
BH12	19	7	B	Slightly sandy slightly gravelly SILT	28	38	24	14	93.1
BH12	20	7.5	D	Slightly sandy slightly gravelly CLAY	29				
BH12	21	7.5	D	Slightly sandy slightly gravelly CLAY	30				
BH13	2	1.5	B	Slightly sandy gravelly CLAY with some cobbles	17	31	19	12	65
BH14	2	1.5	B	Very silty very gravelly SAND with many cobbles	32	38	NP	NP	85.3
BH14	6	5	D	Slightly gravelly sandy organic SILT	65				
BH14	8	5.95	D	Slightly gravelly sandy organic SILT	93				
BH14	9	6	B	Slightly gravelly sandy organic SILT	100	111	72	39	95.4
BH14	17	9	B	Slightly gravelly slightly sandy CLAY	33	43	26	17	93.2
BH15	4	1.5	D	Slightly gravelly slightly sandy SILT	24				
BH15	7	2.5	B	Slightly sandy organic SILT		90	48	42	90.1
BH15	8	2.5	D	Slightly sandy slightly organic SILT	49				
BH15	13	3.5	D	Slightly sandy organic SILT	78				
BH15	3	4	B	Slightly gravelly slightly sandy SILT		62	41	21	92
BH15	17	4.5	D	Silty PEAT	132				
BH15	20	5.5	B	Slightly gravelly sandy organic SILT		111	66	45	91.7



Natural Moisture Content/Atterberg Limits Summary

Job Ref

BS 1377 : Part 2 : 1990 : Clause 3

Location

Bantry Bay Inner Harbour

PC9030

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH15	21	5.5	D	Slightly gravelly sandy organic SILT	82				
BH15	23	6.5	D	Slightly gravelly CLAY	26				
BH15	25	7.5	B	Slightly gravelly slightly sandy SILT with many cobbles		44	29	15	96.1
BH15	26	7.5	D	Slightly gravelly slightly sandy CLAY with many cobbles	31				
BH17	7	7.1	B	Slightly sandy gravelly CLAY with some cobbles		35	23	12	53
BH17	8	7.4	D	Slightly sandy gravelly SILT with some cobbles	24				

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PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref **PC9030**

Borehole / Pit No **BH01**

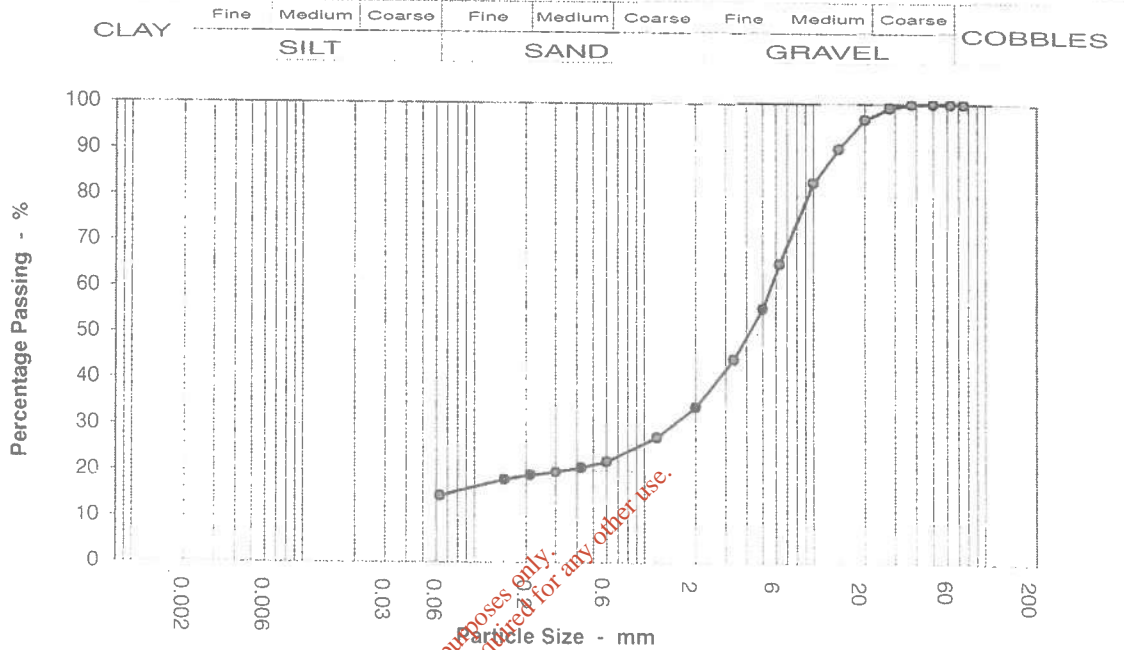
Location **Bantry Bay Inner Harbour**

Sample No **6**

Soil Description **Silty very sandy GRAVEL**

Depth **1.00 m**

Sample type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	97		
14	90		
10	83		
6.3	65		
5	55		
3.35	44		
2	34		
1.18	27		
0.6	22		
0.425	21		
0.3	20		
0.212	19		
0.15	18		
0.063	14		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	66.1
Sand	19.5
Silt & Clay	14.4

Grading Analysis	
D100	125.000
D60	5.617
D10	
Uniformity Coefficient	N/A

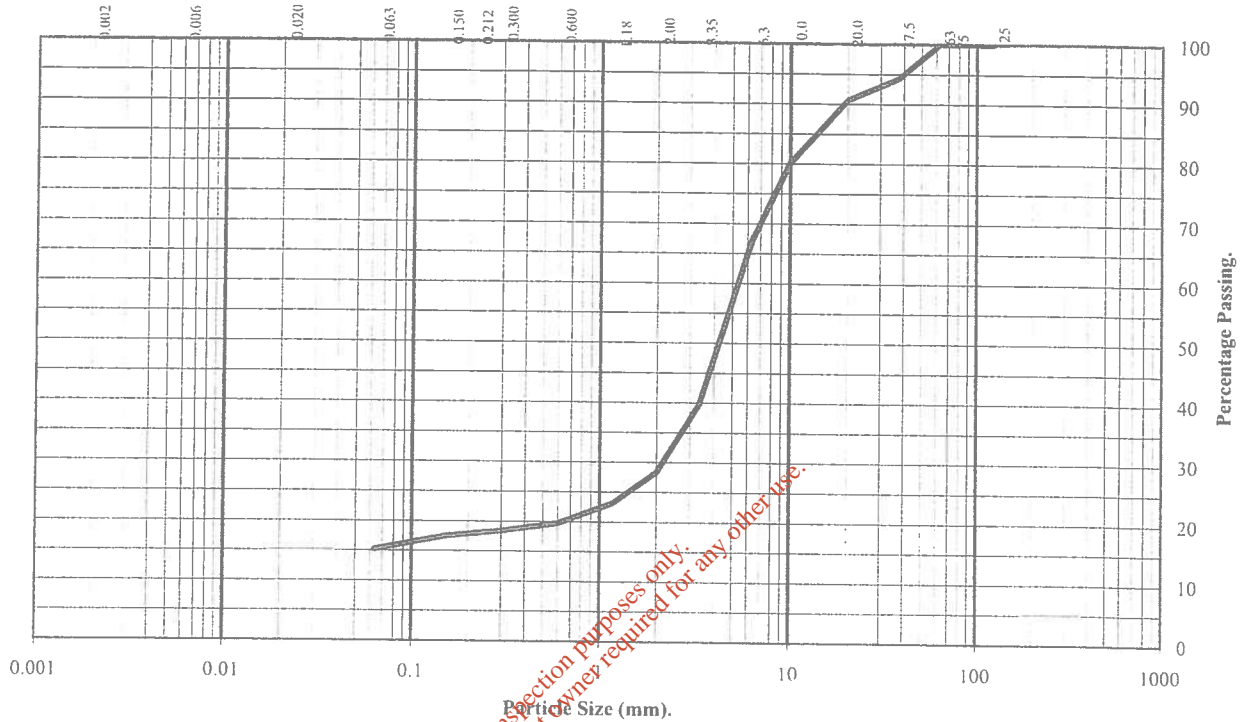
PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **BH01**

Depth (m): **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	94
20	91
10	80
6.3	67
3.35	40
2.00	28
1.18	23
0.60	20
0.30	18
0.21	18
0.15	17
0.06	15

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	72
Sand	13
Silt and Clay	15

Remarks:

#- not determined

Alan Walters 14/01/10
Checked by Date

[Signature] 14/01/10
Approved by Date



Bantry Inner Harbour

Contract No.:
8847/09
Client Ref No:
PC9030





PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

PC9030

Borehole / Pit No

BH01

Location

Bantry Bay Inner Harbour

Sample No

11

Soil Description

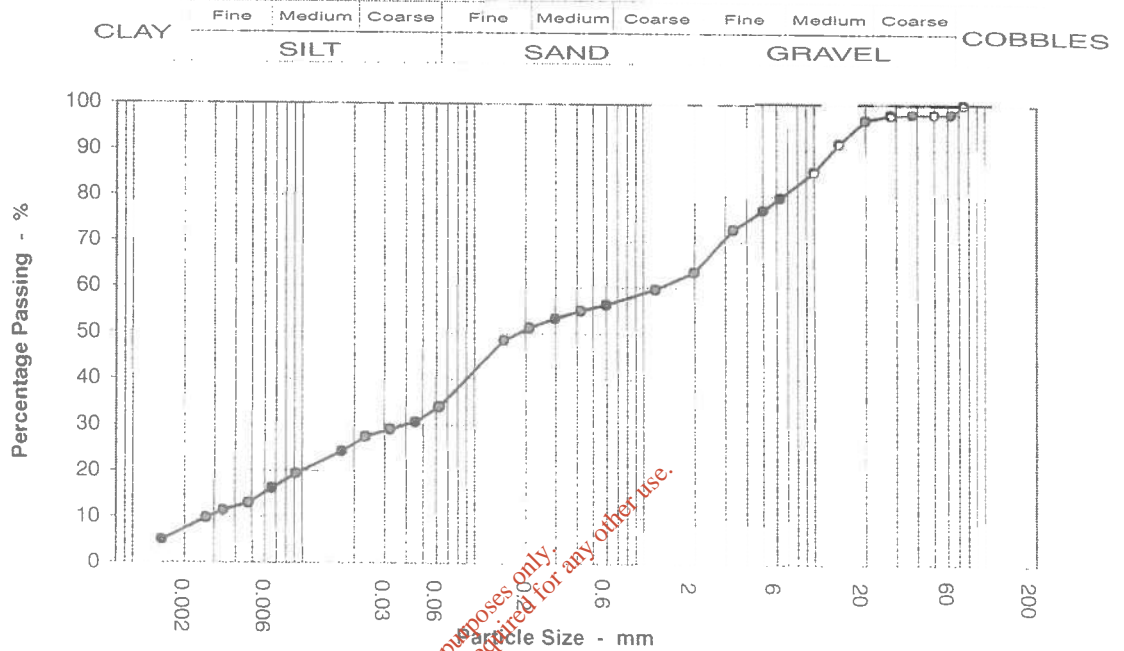
Very sandy very silty GRAVEL with occasional cobbles

Depth

2.00 m

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	34
90	100	0.045	31
75	100	0.033	29
63	98	0.023	27
50	98	0.017	24
37.5	98	0.009	19
28	98	0.007	16
20	97	0.005	13
14	91	0.003	11
10	85	0.003	10
6.3	79	0.002	5
5	77		
3.35	73		
2	63		
1.18	59		
0.6	56		
0.425	55		
0.3	53		
0.212	51		
0.15	48		
0.063	34		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	2.0
Gravel	34.8
Sand	29.8
Silt	26.5
Clay	6.8

Grading Analysis	
D100	125.000
D60	1.292
D10	0.003
Uniformity Coefficient	453



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

PC9030

Borehole / Pit No

BH01

Location

Bantry Bay Inner Harbour

Sample No

14

Soil Description

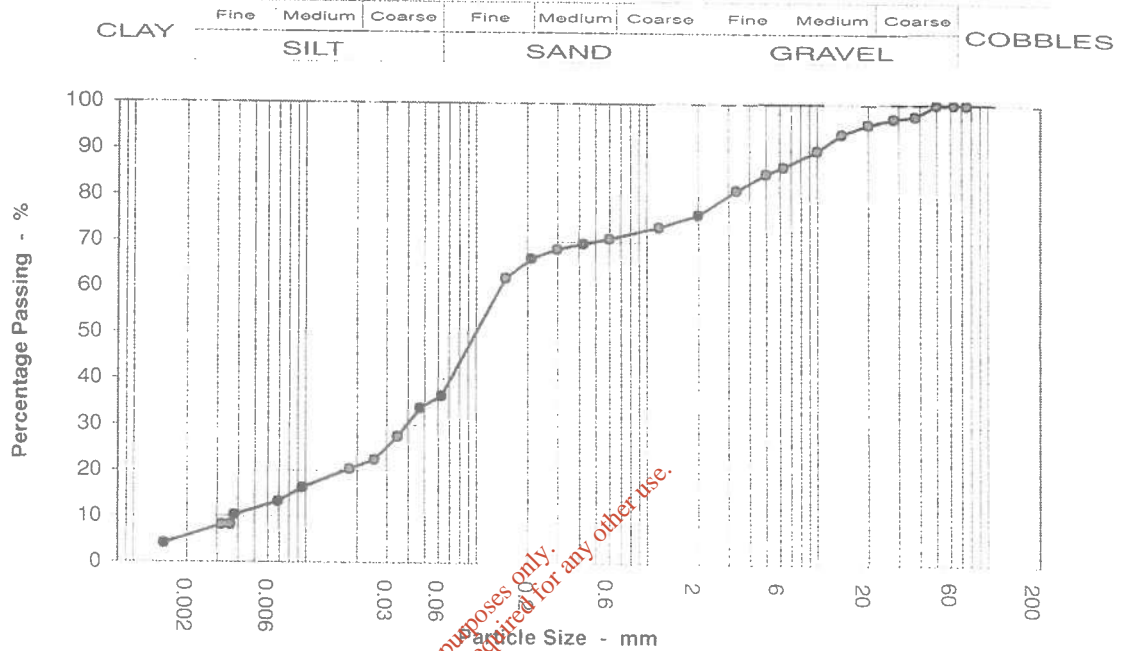
Slightly gravelly sandy SILT

Depth

3.00 m

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.063	36
90	100	0.047	34
75	100	0.035	28
63	100	0.025	22
50	100	0.018	20
37.5	98	0.010	16
28	97	0.007	13
20	96	0.004	10
14	94	0.004	8
10	90	0.003	8
6.3	86	0.002	4
5	85		
3.35	81		
2	76		
1.18	73		
0.6	71		
0.425	70		
0.3	68		
0.212	66		
0.15	62		
0.063	36		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	0.0
Gravel	24.1
Sand	40.1
Silt	30.5
Clay	5.3

Grading Analysis	
D100	125.000
D60	0.143
D10	0.004
Uniformity Coefficient	38



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref PC9030

Borehole / Pit No BH01

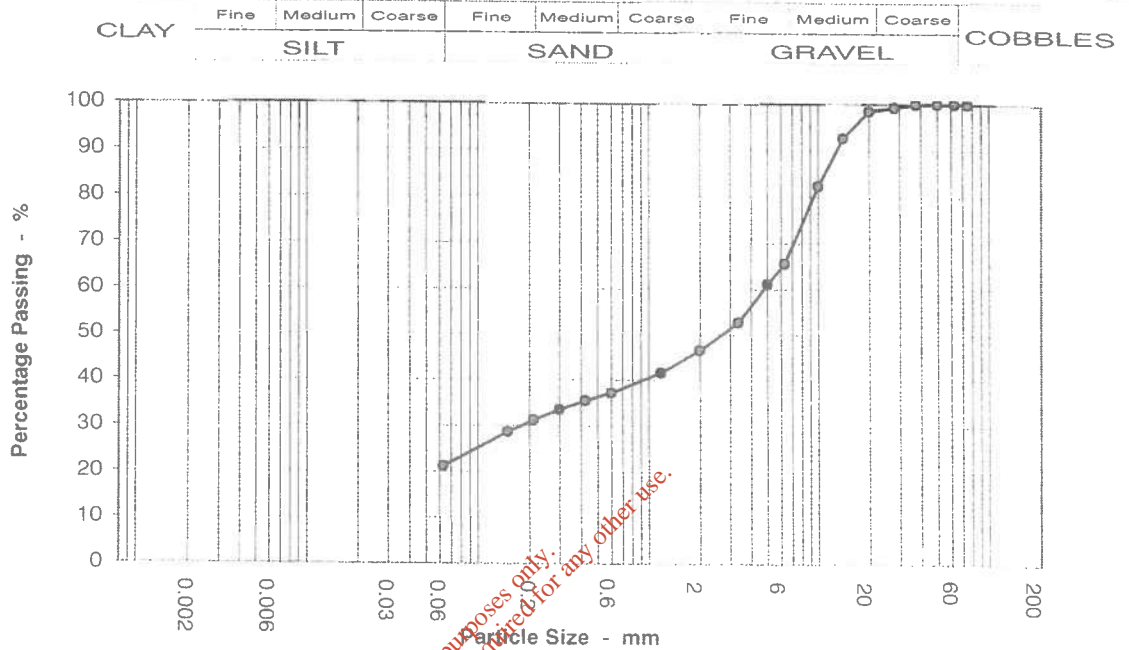
Location **Bantry Bay Inner Harbour**

Sample No 24

Soil Description **Very silty very sandy GRAVEL**

Depth 6.00 m

Sample type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	99		
14	93		
10	82		
6.3	65		
5	61		
3.35	53		
2	46		
1.18	41		
0.6	37		
0.425	35		
0.3	33		
0.212	31		
0.15	29		
0.063	21		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	53.5
Sand	25.3
Silt & Clay	21.2

Grading Analysis	
D100	125.000
D60	4.809
D10	
Uniformity Coefficient	N/A



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref **PC9030**

Borehole / Pit No BH01

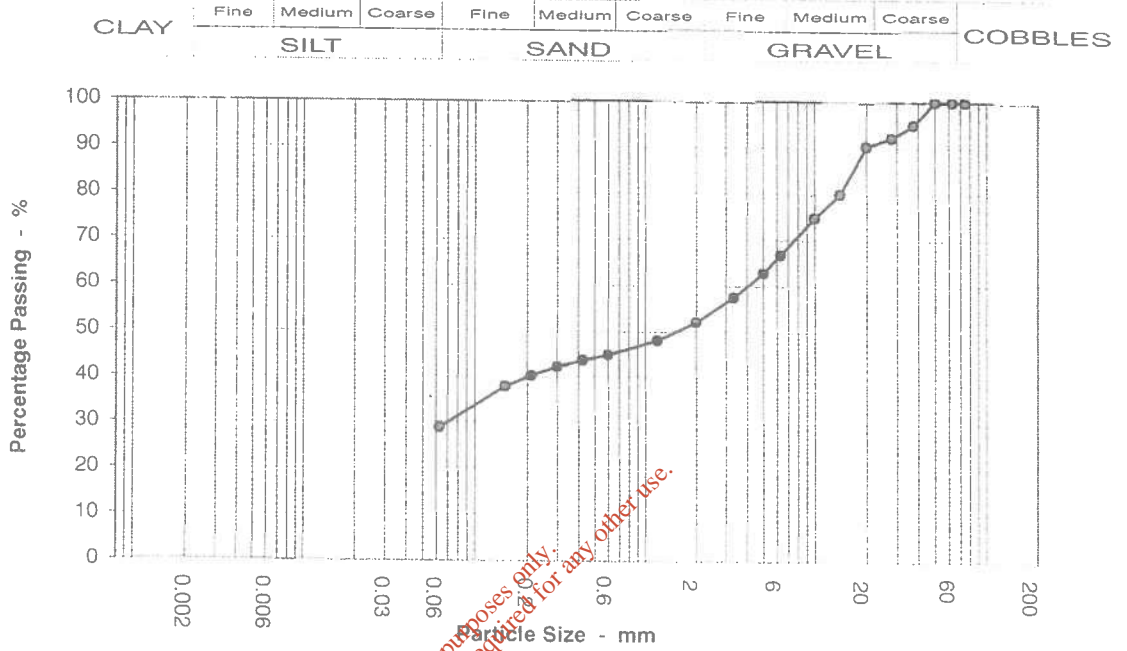
Location **Bantry Bay Inner Harbour**

Sample No 31

Soil Description **Very sandy very silty GRAVEL**

Depth 8.00 m

Sample type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	95		
28	92		
20	90		
14	80		
10	75		
6.3	67		
5	63		
3.35	57		
2	52		
1.18	48		
0.6	45		
0.425	44		
0.3	42		
0.212	40		
0.15	38		
0.063	29		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	48.1
Sand	23.1
Silt & Clay	28.8

Grading Analysis	
D100	125.000
D60	4.181
D10	
Uniformity Coefficient	N/A

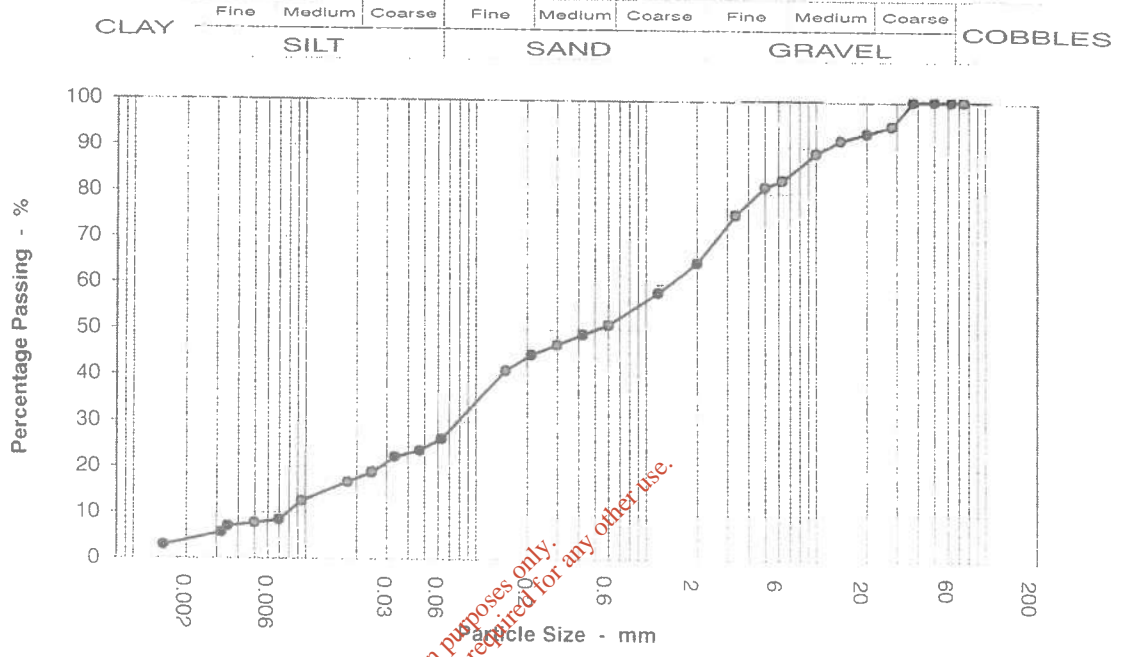


PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	PC9030
Borehole / Pit No	BH02
Sample No	1
Depth	0.00 m
Sample type	B

Location	Bantry Bay Inner Harbour
Soil Description	Very silty very gravelly SAND



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.063	26
90	100	0.047	24
75	100	0.034	22
63	100	0.025	19
50	100	0.018	17
37.5	100	0.010	12
28	95	0.007	8
20	93	0.005	8
14	91	0.004	7
10	89	0.003	6
6.3	83	0.002	3
5	81		
3.35	75		
2	65		
1.18	58		
0.6	51		
0.425	49		
0.3	47		
0.212	44		
0.15	41		
0.063	26		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	0.0
Gravel	35.4
Sand	38.9
Silt	22.1
Clay	3.6

Grading Analysis	
D100	125.000
D60	1.425
D10	0.008
Uniformity Coefficient	178

PARTICLE SIZE DISTRIBUTION TEST

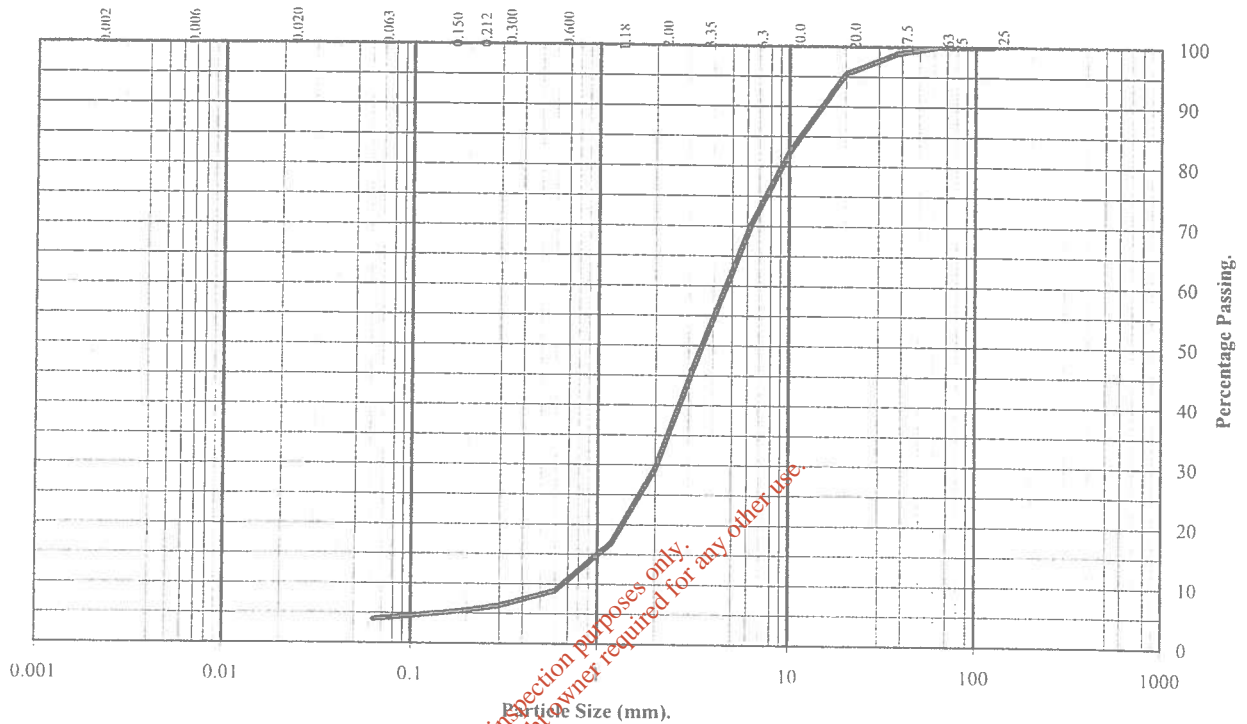
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number:

BH02

Depth (m): **1.00**



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BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	99
20	95
10	82
6.3	70
3.35	48
2.00	29
1.18	17
0.60	9
0.30	6
0.21	6
0.15	5
0.06	4

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	25
Silt and Clay	4

Remarks:

#- not determined

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Bantry Inner Harbour

Contract No.:
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Client Ref No:
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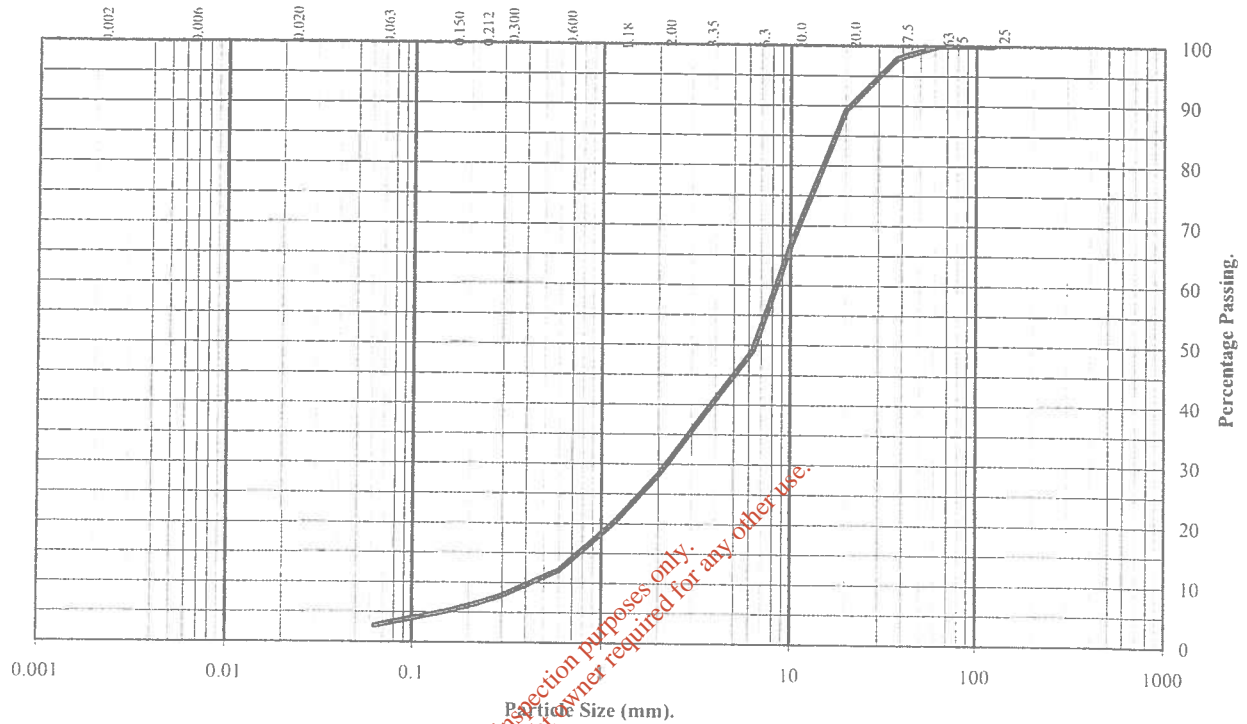
PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **BH02**

Depth (m): **3.00**



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BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	98
20	89
10	67
6.3	49
3.35	38
2.00	28
1.18	20
0.60	12
0.30	8
0.21	6
0.15	5
0.06	3

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	72
Sand	25
Silt and Clay	3

Remarks:

#- not determined

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Bantry Inner Harbour

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PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref **PC9030**

Borehole / Pit No BH02

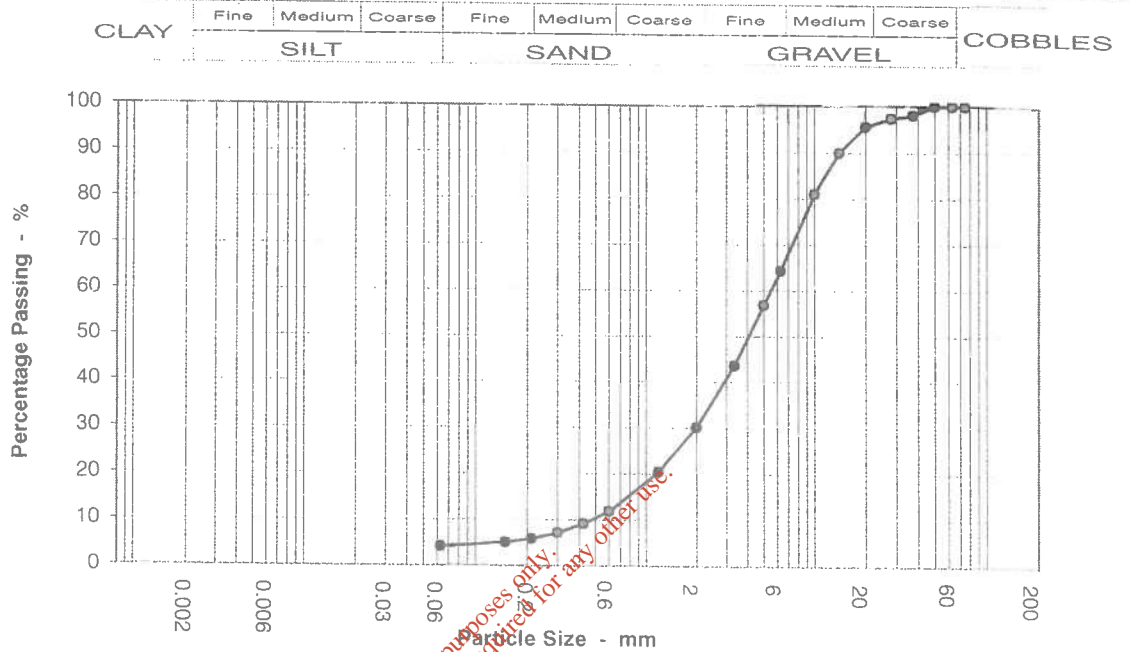
Location **Bantry Bay Inner Harbour**

Sample No 12

Soil Description **Slightly silty very sandy GRAVEL**

Depth 6.00 m

Sample type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	97		
20	96		
14	90		
10	81		
6.3	64		
5	57		
3.35	43		
2	30		
1.18	20		
0.6	12		
0.425	9		
0.3	7		
0.212	6		
0.15	5		
0.063	4		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.2
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	70.0
Sand	26.0
Silt & Clay	4.0

Grading Analysis	
D100	125.000
D60	5.573
D10	0.482
Uniformity Coefficient	12