

# Unconfined Compressive Strength, UCS

Job Name 

Bantry Inner Harbour
----------------------

  
Job Number 

PC9030
--------

  
Borehole: 

BH08
------

  
Depth: 

10.1-10.6	m
-----------	---

  
Rock Type 

Siltstone
-----------

Bulk Density **2.71 Mg/m<sup>3</sup>**  
Load at Failure, P **88 kN**  
Stress at Failure **30.14 MPa**



NOTES:

Operator	ER
Checked	GH

# Unconfined Compressive Strength, UCS

Job Name 

Bantry Inner Harbour
----------------------

  
Job Number 

PC9030
--------

  
Borehole: 

BH08
------

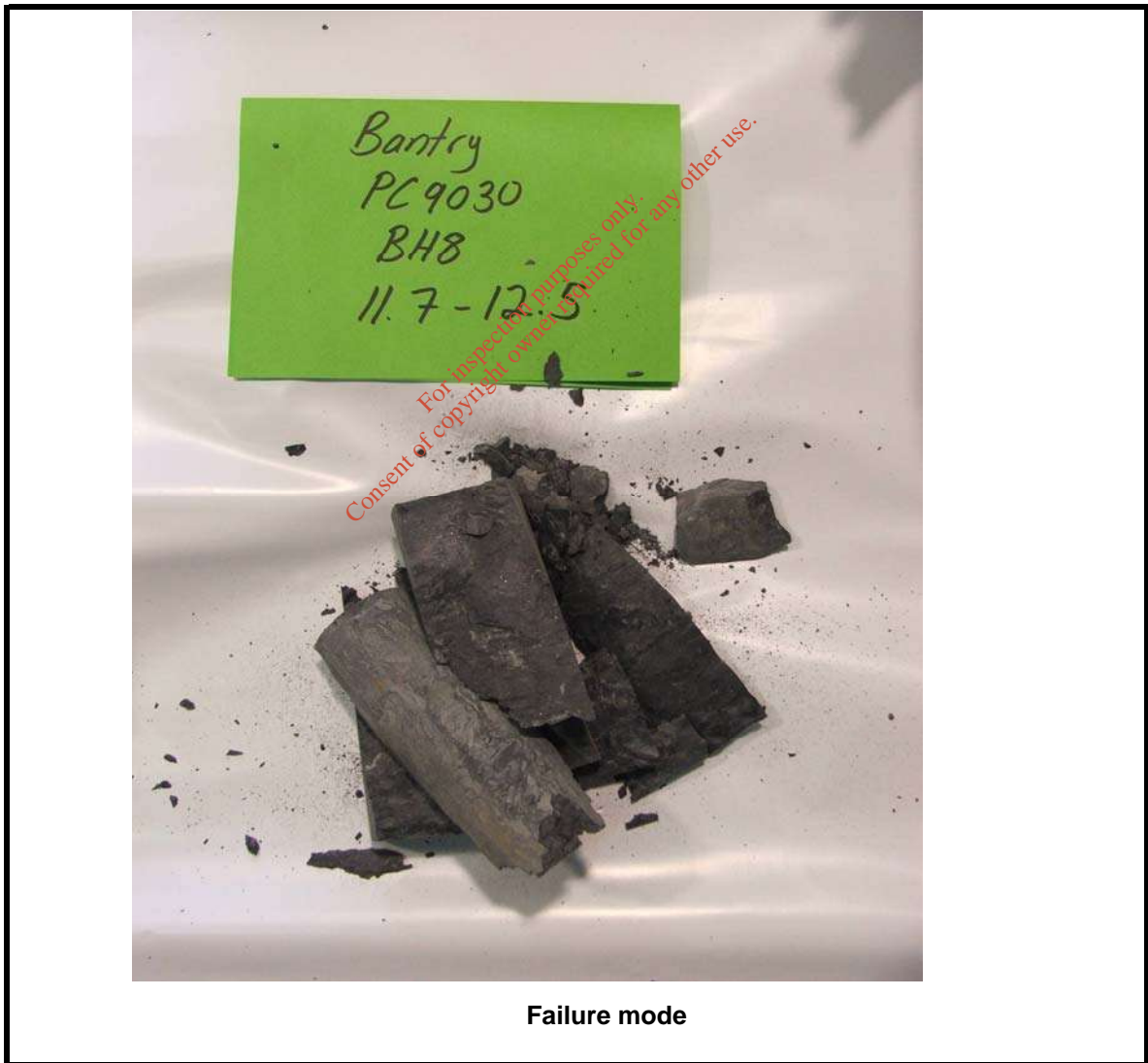
  
Depth: 

11.7-12.5	m
-----------	---

  
Rock Type 

Siltstone
-----------

Bulk Density  $2.73 \text{ Mg/m}^3$   
Load at Failure, P  $50 \text{ kN}$   
Stress at Failure  $17.12 \text{ MPa}$



NOTES:

Operator	ER
Checked	GH

# Unconfined Compressive Strength, UCS

Job Name 

Bantry Inner Harbour
----------------------

  
Job Number 

PC9030
--------

  
Borehole: 

BH10
------

  
Depth: 

2.2-2.6	m
---------	---

  
Rock Type 

Sandstone
-----------

Bulk Density **2.74 Mg/m<sup>3</sup>**  
Load at Failure, P **241 kN**  
Stress at Failure **82.2 MPa**  
Load Rate **3 kN/s**



NOTES:

Operator	ER
Checked	GH

# Unconfined Compressive Strength, UCS

Job Name	<b>Bantry Inner Harbour</b>
Job Number	<b>PC9030</b>
Borehole:	<b>BH10</b>
Depth:	<b>5.65-6.05</b> m
Rock Type	<b>Limestone</b>
Bulk Density	<b>2.85 Mg/m<sup>3</sup></b>
Load at Failure, P	<b>129 kN</b>
Stress at Failure	<b>44.2 MPa</b>



NOTES:

Operator	ER
Checked	GH



# Unconfined Compressive Strength, UCS

Job Name 

Bantry Inner Harbour
----------------------

  
Job Number 

PC9030
--------

  
Borehole: 

BH15
------

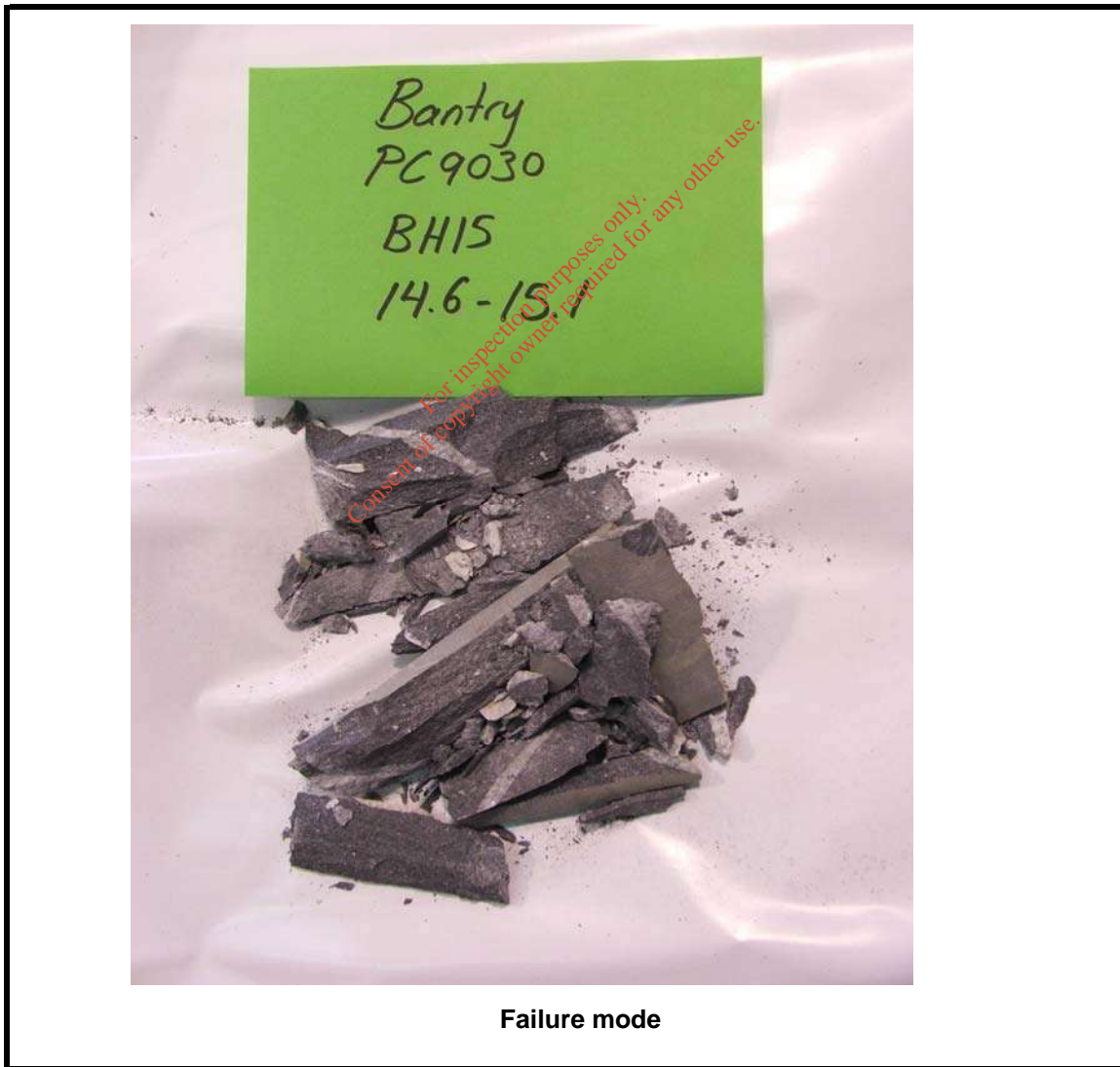
  
Depth: 

14.6-15.1	m
-----------	---

  
Rock Type 

Mudstone & Limestone
----------------------

  
Bulk Density  $2.85 \text{ Mg/m}^3$   
Load at Failure, P 366 kN  
Stress at Failure 125.2 MPa

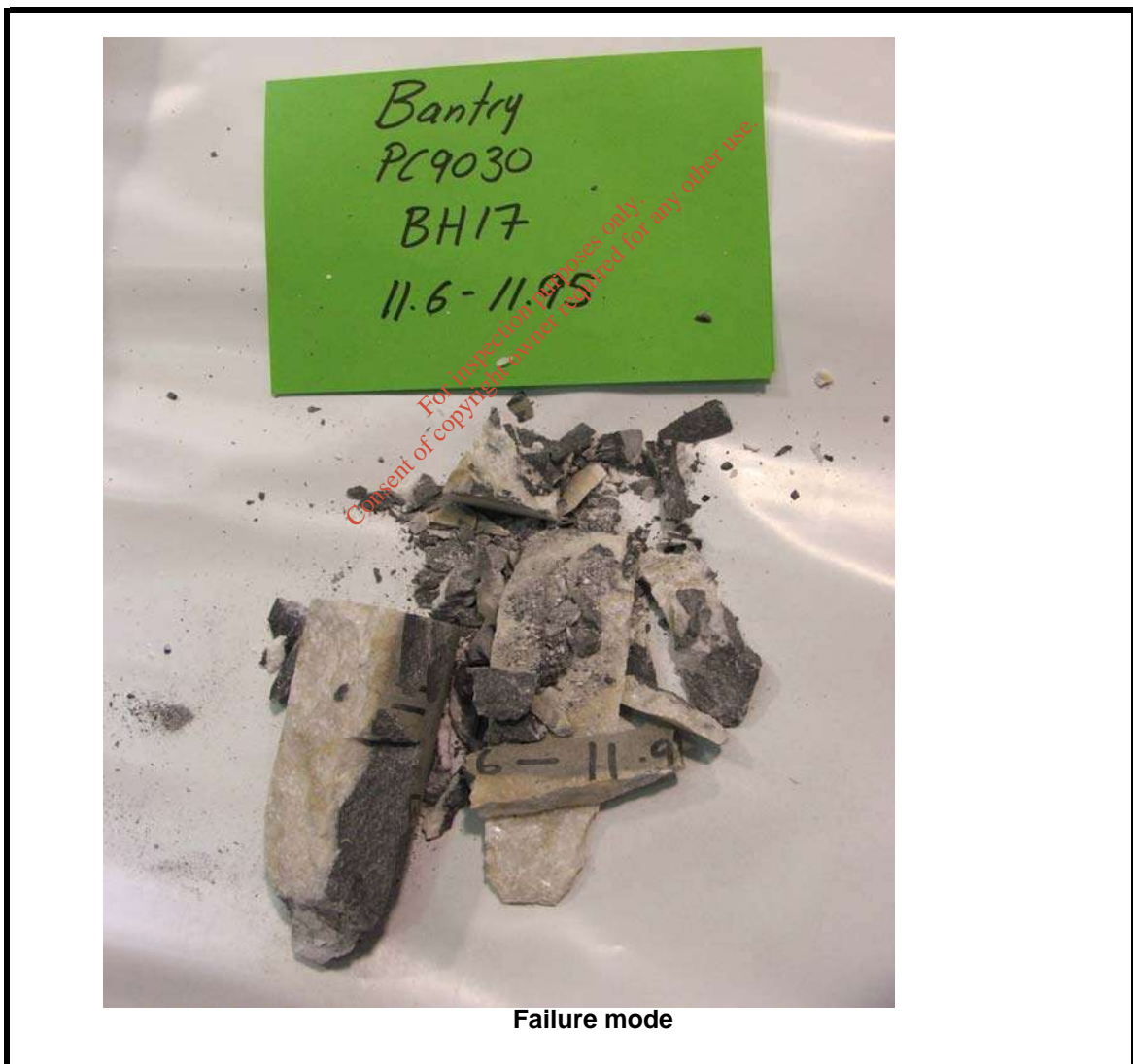


NOTES:

Operator	ER
Checked	GH

# Unconfined Compressive Strength, UCS

Job Name	<b>Bantry Inner Harbour</b>
Job Number	<b>PC9030</b>
Borehole:	<b>BH17</b>
Depth:	<b>11.6-11.95</b> m
Rock Type	<b>Limestone</b>
Bulk Density	<b>2.76 Mg/m<sup>3</sup></b>
Load at Failure, P	<b>137 kN</b>
Stress at Failure	<b>46.2 MPa</b>



NOTES:

Operator	ER
Checked	GH

---

**APPENDIX D**

**PHOTOGRAPHIC RECORD**

Key to Photographic Records

Key

Rotary Cored Boreholes

BH01, BH02, BH03, BH04,  
BH05, BH06, BH07, BH08,  
BH09, BH10, BH13, BH14,  
BH15, BH16 and BH17.

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<p><b>Number:</b> BH01</p>	<p><b>Project</b> Bantry Inner Harbour <b>Project No</b> PC9030 <b>Engineer</b> RPS</p>	
----------------------------	---	--





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Number:

BH02

Project  
Project No  
Engineer

Bantry Inner Harbour  
PC9030  
RPS



<b>Number:</b> BH03	<b>Project</b> Bantry Inner Harbour <b>Project No</b> PC9030 <b>Engineer</b> RPS	
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<p>Number: BH04</p>	<p>Project Bantry Inner Harbour                  Project No PC9030                  Engineer RPS</p>	
---------------------	--	--





<p>Number: BH05</p>	<p>Project Bantry Inner Harbour                  Project No PC9030                  Engineer RPS</p>	
---------------------	--	--





<p>Number: BH06</p>	<p>Project: Bantry Inner Harbour                  Project No: PC9030                  Engineer: RPS</p>	
---------------------	---	--





<p>Number: BH07</p>	<p>Project Bantry Inner Harbour Project No PC9030 Engineer RPS</p>	
---------------------	--	--



<p>Number: BH08</p>	<p>Project Bantry Inner Harbour                  Project No PC9030                  Engineer RPS</p>	
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<p>Number: BH09</p>	<p>Project: Bantry Inner Harbour                  Project No: PC9030                  Engineer: RPS</p>	
---------------------	---	--





<p><b>Number:</b>                      BH10</p>	<p><b>Project</b>                      Bantry Inner Harbour  <b>Project No</b>                      PC9030  <b>Engineer</b>                      RPS</p>	
---	--	--





<p>Number: BH13</p>	<p>Project Bantry Inner Harbour Project No PC9030 Engineer RPS</p>	
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<b>Number:</b> BH14	<b>Project</b> Bantry Inner Harbour <b>Project No</b> PC9030 <b>Engineer</b> RPS	
---------------------	--	--



<p>Number: BH15</p>	<p>Project Bantry Inner Harbour                  Project No PC9030                  Engineer RPS</p>	
---------------------	--	--





Number:

BH16

**Project**  
**Project No**  
**Engineer**

Bantry Inner Harbour  
PC9030  
RPS



Number:

BH17

Project  
Project No  
Engineer

Bantry Inner Harbour  
PC9030  
RPS

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## APPENDIX E

### EXPLORATION LOCATION PLAN -GEOLOGICAL LONG SECTIONS

Key to Exploratory Locations

Key

Exploration Location Plan

PC9030-SI-01

Geological Long Sections

PC9030-LS-A, PC9030-LS-01 to 03

Location	Easting	Northing	Elevation, Chart Datum	Depth of borehole, m
BH01	98932.84	48542.43	-8.851	12.2
BH02	98959.44	48528.04	-6.78	13.15
BH03	98947.01	48495.83	-5.33	9.35
BH04	98946.56	48454.08	-3.89	11.0
BH05	98976.9	48453.03	-3.76	11.25
BH06	99031.9	48471.69	-3.89	8.8
BH07	99262.87	48497.69	-3.09	14.64
BH08	99311.73	48500.97	-3.11	12.7
BH09	99384.12	48510.65	-2.42	7.7
BH10	99395.6	48530.11	-3.15	7.0
BH11	99102.66	48528.33	-3.5	8.1
BH12	99221.04	48560	-3.42	10.2
BH13	99105.67	48560.43	-2.14	16.1
BH14	99184.4	48584.64	-1.43	14.9
BH15	99288.51	48602.5	-2.82	15.1
BH16	99008.51	48625.13	-4.56	7.6
BH17	99161.32	48496.56	-3.72	12.9

Location	Easting	Northing	Elevation, Chart Datum	Depth of probe, m bsl
DP01	99312.45	48565.75	-3.11	5.7
DP02	99308.66	48604.53	-2.81	7.4
DP03	99259.86	48594.92	-2.56	6.2
DP04	99237.77	48526.83	-3.52	5.8
DP05	99219.07	48590.89	-2.37	7.7
DP06	99185.64	48511.82	-3.77	7.0
DP07	99144.07	48575.49	-0.9	5.4
DP08	99130.07	48542.06	-2.81	5.2
DP09	99069.61	48570.25	-2.97	6.0
DP10	99055.32	48609.42	-3.06	4.9
DP11	99001.47	48525.76	-4.31	0.9
DP12	99003.88	48587.82	-4.8	1.3
DP13	99008.51	48625.13	-4.56	0.8
DP14	98957.44	48615.62	-6.7	2.9
DP15	98932.95	48624.34	-7.72	6.7
DP16	98894.12	48586.98	-9.47	4.4

Location	Easting	Northing	Elevation, Chart Datum	Depth of sample, m bsl
GS01	99311.09	48590.25	-3.09	0.5
GS02	99385.53	48544.12	-2.75	0.5
GS03	99348.37	48563.91	-3.01	0.5
GS04	99317.95	48501.81	-2.9	0.5
GS05	99310.67	48539.61	-3.14	0.5
GS06	99239.31	48551.66	-3.39	0.5
GS07	99253.93	48498.95	-3.28	0.5
GS08	99127.37	48525.51	-3.64	0.5
GS09	99118.07	48490.52	-3.83	0.5
GS10	99048.01	48474.69	-3.89	0.5
GS11	99040.39	48547.61	-4.41	0.5
GS12	99043.82	48623.73	-3.8	0.5
GS13	99006.98	48449.6	-3.73	0.5
GS14	99014.07	48628.93	-4.44	0.5
GS15	99004.68	48581.78	-4.94	0.5
GS16	98981.51	48541.36	-5.84	0.5
GS17	98958.69	48496.68	-5.79	0.5
GS18	98952.05	48452.57	-3.78	0.5
GS19	98974.04	48425.78	-3.39	0.5
GS20	98958.95	48608.98	-6.55	0.5
GS21	98902.33	48547.23	-9.85	0.5







Further details on the ground conditions may be found in the sub-bottom survey APPENDIX B. The data presented represents a review of the known ground conditions details between exploratory locations may differ.

JOB NAME:  
**BANTRY INNER HARBOUR,  
GROUND INVESTIGATION  
LONG SECTIONS**

JOB NUMBER:  
**PC9030**

DRAWING NUMBER:  
**PC9030-LS-A**

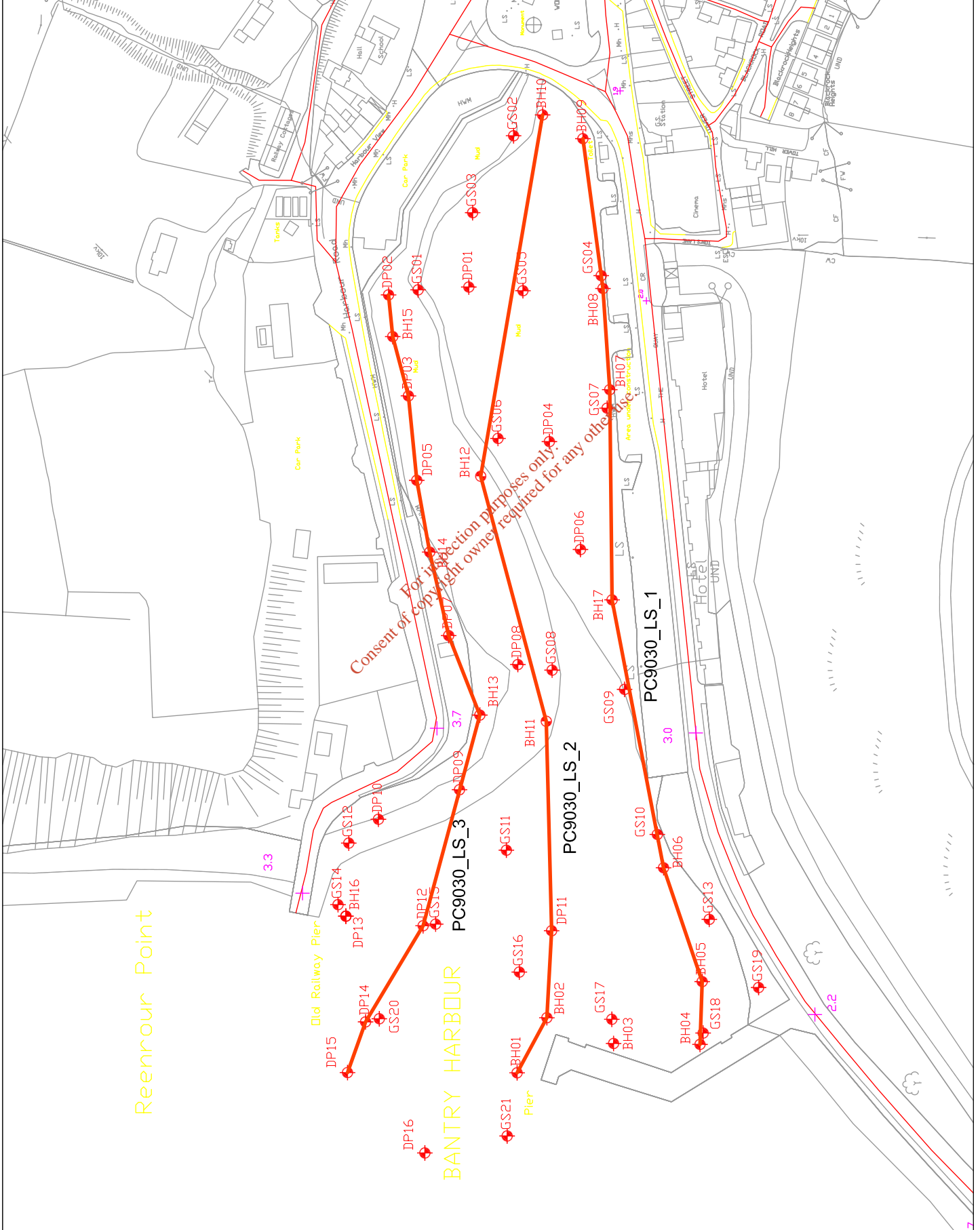
DRAWN BY:  
**Greg HAYES**

DATE:  
**23/03/2010**

SCALE:  
**1:1750 ON A3**

APPROVED:  
**GH**

REVISION:  
**F01**





Legend	Undefined
CLAY	
Gravelly CLAY	
Cobbly CLAY	
Sandy gravelly CLAY	
SILT	
Sandy SILT	
Gravelly SILT	
Sandy gravelly peaty SILT	
Sandy organic SILT	
Sandy gravelly organic SILT	
Gravelly organic SILT	
Gravelly SAND	
Silty gravelly SAND	
Silty gravelly cobbly SAND	
GRAVEL	
Sandy GRAVEL	
Clayey sandy GRAVEL	
Silty organic sandy GRAVEL	
Silty organic sandy GRAVEL	
Silty sandy cobbly GRAVEL	
GRAVEL	
Silty PEAT	
COBBLES	
Gravelly COBBLES	
Silty sandy COBBLES	
CLAY	
SANDSTONE	
SANDSTONE	
IMESTONE	

JOB NAME:  
**BANTRY INNER HARBOUR,  
 GROUND INVESTIGATION -  
 GEOLOGICAL SECTION**

JOB NUMBER:  
**PC9030**

DRAWING NUMBER:  
**PC9030-LS-01**

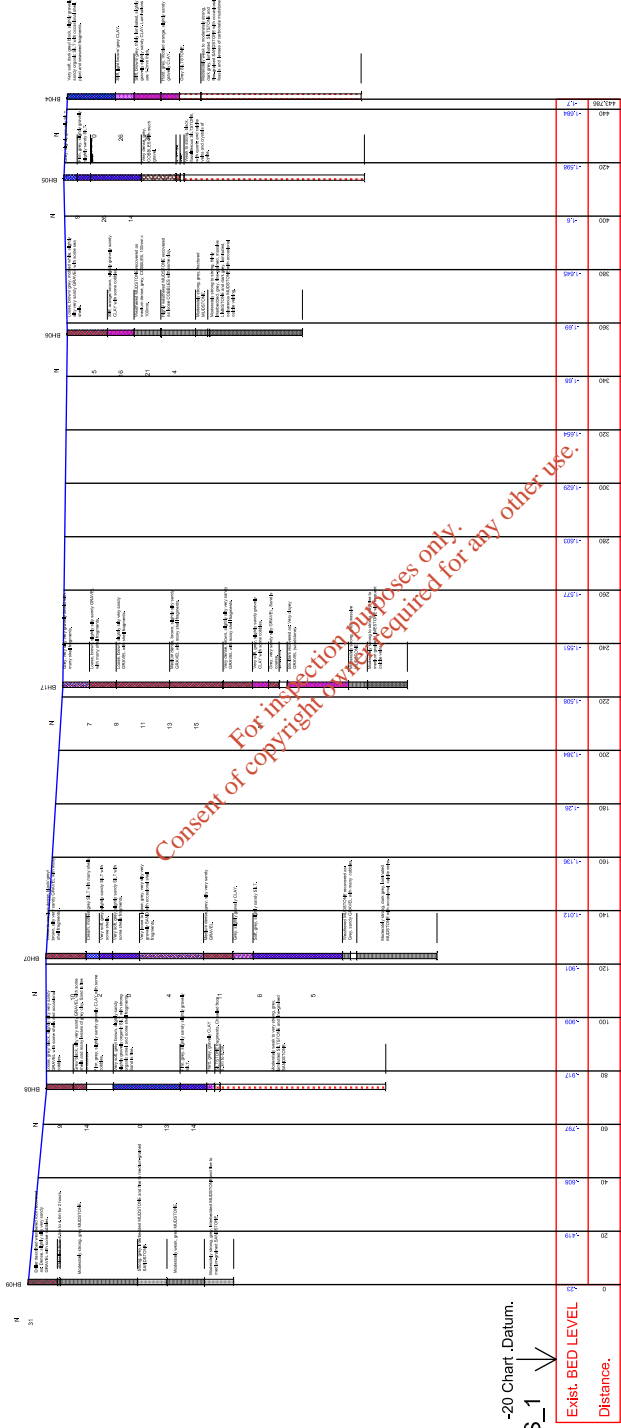
DRAWN BY:  
**Greg HAYES**

DATE:  
**23/03/2010**

SCALE:  
**1:2000 ON A3**

APPROVED:  
**GH**

REVISION:  
**F01**



-20 Chart Datum.  
 PC9030\_LS\_1

Exst. BED LEVEL  
 Distance.

Horiz. 1:1000 Vert. 1:100  
 Start Chainage E = 99394.12 N = 48510.65



Legend	Undefined
CLAY	
Gravelly CLAY	
Cobbly CLAY	
Sandy gravelly CLAY	
SILT	
Sandy SILT	
Gravelly SILT	
Sandy gravelly peaty SILT	
Sandy organic SILT	
Sandy gravelly organic SILT	
Sandy gravelly cobbly SILT	
Gravelly organic SILT	
Gravelly SAND	
Silty gravelly SAND	
Silty gravelly cobbly SAND	
GRAVEL	
Sandy GRAVEL	
Clayey sandy GRAVEL	
Silty organic sandy GRAVEL	
Silty organic sandy GRAVEL	
Silty sandy cobbly GRAVEL	
GRAVEL	
Silty PEAT	
COBBLES	
Gravelly COBBLES	
Silty sandy COBBLES	
SILTSTONE	
SANDSTONE	
IMESTONE	

JOB NAME:  
**BANTRY INNER HARBOUR,  
 GROUND INVESTIGATION -  
 GEOLOGICAL SECTION**

JOB NUMBER:  
**PC9030**

DRAWING NUMBER:  
**PC9030-LS-02**

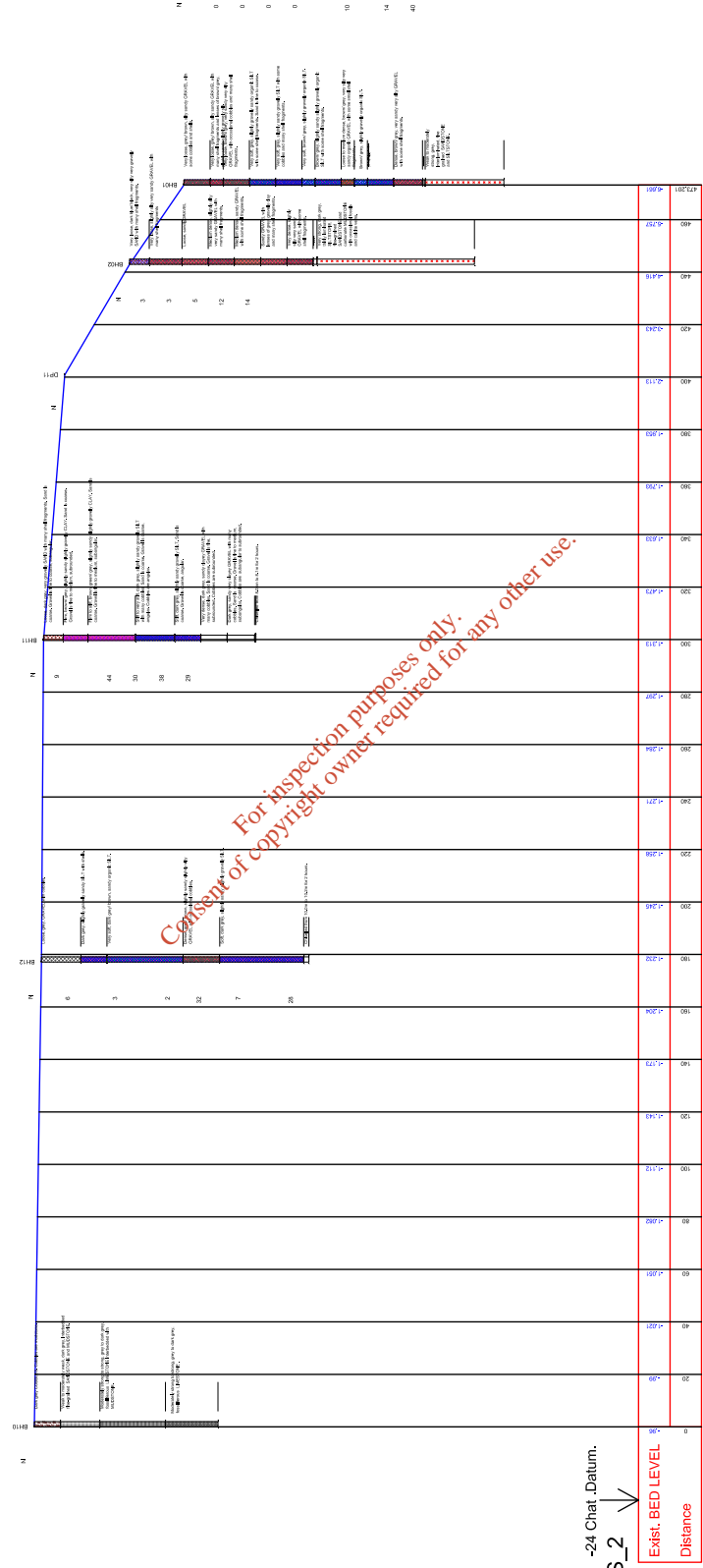
DRAWN BY:  
**Greg HAYES**

DATE:  
**23/03/2010**

SCALE:  
**1:2000 ON A3**

APPROVED:  
**GH**

REVISION:  
**F01**



-24 Chat Datum.  
 PC9030\_LS\_2

Exist. BED LEVEL	0
Distance	0

Horiz. 1:1000 Vert. 1:100  
 Start Chainage E = 99395.6 N = 48530.11





Legend	Undefined
CLAY	
Gravelly CLAY	
Cobbly CLAY	
Sandy gravelly CLAY	
SILT	
Sandy SILT	
Gravelly SILT	
Sandy gravelly SILT	
Sandy organic SILT	
Sandy organic SILT	
SILT	
Sandy gravelly cobbly SILT	
Gravelly organic SILT	
Gravelly SAND	
Silty gravelly SAND	
Silty gravelly cobbly SAND	
GRAVEL	
Sandy GRAVEL	
Clayey sandy GRAVEL	
Silty sandy GRAVEL	
Silty organic sandy GRAVEL	
Silty sandy cobbly GRAVEL	
SILT	
SILT PEAT	
COBBLES	
Gravelly COBBLES	
Silty sandy COBBLES	
CLAY	
SANDSTONE	
SANDSTONE	
IMESTONE	

JOB NAME:  
**BANTRY INNER HARBOUR,  
 GROUND INVESTIGATION -  
 GEOLOGICAL SECTION**

JOB NUMBER:  
**PC9030**

DRAWING NUMBER:  
**PC9030-LS-03**

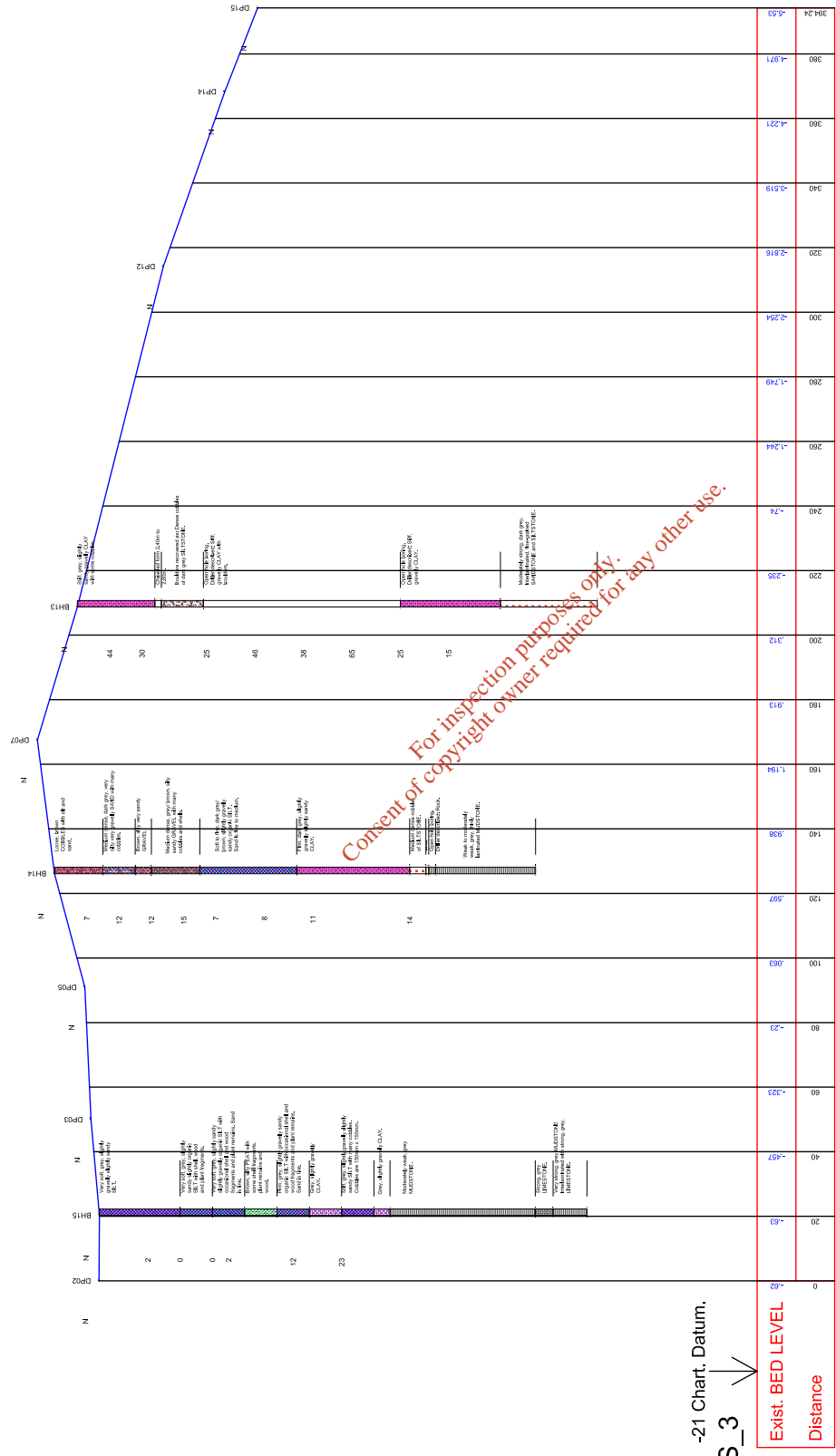
DRAWN BY:  
**Greg HAYES**

DATE:  
**23/03/2010**

SCALE:  
**1:1500 ON A3**

APPROVED:  
**GH**

REVISION:  
**F01**



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-21 Chart. Datum.  
**PC9030\_LS\_3**

Horiz. 1:1000 Vert. 1:100  
 Start Chainage E = 99308.66 N = 48604.53



Bantry Inner Harbour - Phase 1 Development  
Environmental Quantitative Risk Assessment  
Appendix B — PGL SI Report & Lab Data January 2015

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**BANTR INNER HARBOUR  
DE ELOPMENT PHASE 1  
SEDIMENT SAMPLING ANALYSIS  
DRAFT FACTUAL REPORT**

**NO. P14127**

**Client:** Port of Cork Company,  
Harbour Office,  
Custom House Street,  
Cork

**Engineer:** Malachy Walsh ☐ Partners,  
Park House,  
Mahon Technology Park,  
Bessboro Rd,  
Blackrock,  
Co. Cork

---

**12/02/2015**





## REPORT CONTROL SHEET

<b>Employer</b>	Port of Cork Company					
<b>Employer s Representative</b>	Malachy Walsh <input type="checkbox"/> Partners Consulting Engineers					
<b>Pro ect Name</b>	Bantry Inner Harbour Development- Phase 1 Sediment Sampling <input type="checkbox"/> Analysis					
<b>Report Name</b>	Bantry Inner Harbour Development- Phase 1 Sediment Sampling <input type="checkbox"/> Analysis Factual Report					
<b>Pro ect Number</b>	P14127					
<b>This Report Comprises of</b>	RCS	TOC	Text	No. of Appendices	Drawings	Electronic data
	1	1	10	3	2	<input type="checkbox"/> pdf, <input type="checkbox"/> dwg

Revision	Status	Author(s)	Approved By	Issue Date
D01	Draft	<i>J. McHugh</i>	<i>Gregory Hayes</i>	12.02.2015

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## APPENDICES

<b>APPENDIX A</b>	<b>EXPLORATOR HOLE RECORDS</b>
<b>APPENDIX B</b>	<b>LABORATOR RESULTS</b>
<b>APPENDIX C</b>	<b>EXPLORATION LOCATION PLAN</b>

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# 1 INTRODUCTION

## 1.1 SCOPE OF WORKS

In December 2014, The Port of Cork Company, (the Employer) commissioned Priority Geotechnical, PGL, to carry out an environmental site investigation at the Bantry Bay Inner Harbour. Malachy Walsh & Partners were acting Employer's Representative.

The Employer is proposing to commence with Phase 1 of the Bantry Inner Harbour Development Scheme. This will comprise of the following:

- Construction of an area of reclamation adjacent to the Railway Pier.
- Construction of an area of reclamation adjacent to the Town Pier.
- Town Pier improvements including the widening of the pier and extension to the pier head.
- Beach re-nourishment to the North.
- Dredging of material to design dredge depth of -4.0m CD in the vicinity of the Town Pier.
- The use of dredges material as suitable fill material in construction.

The purpose of sampling and analysing the sediment at the site is to

1. determine the extent, depth and concentration of any contamination
2. determine the potential use of the dredge material in relation to the relevant aspect of the scheme e.g. beach re-nourishment and
3. provide background data for the necessary dredge and re-use or disposal permission applications.



---

The investigation, which was specified by Malachy Walsh & Partners comprised nine (9) cable percussion boreholes with sea bed surface grab sampling and six (6) additional locations with only sea bed surface grab sampling for the sole purpose of environmental sampling and environmental laboratory analysis. Factual reporting was required. The final works, as completed are detailed in Section 3.2 of this factual report.

This investigation was carried out in accordance with the contract specification: Specification and Related Documents for Ground Investigation in Ireland (Engineers Ireland, October 2006), Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the British Standard BS10175:2012 code of Practice for Investigation of Contaminated Sites. The fieldworks were carried out between 5<sup>th</sup> and 7<sup>th</sup> of January, 2015.

## 1.2 REPORTING

This factual data report P14127RpD01 presents the factual records of the fieldwork with respect to the site investigation contract undertaken for the Bantry Harbour Development Scheme, Phase 1.

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## 2 THE SITE

### 2.1 SITE LOCATION DESCRIPTION

The study area was located within Bantry Harbour, Bantry, Co. Cork in the southwest of Ireland. The investigation works were carried out in the vicinity of the Town Pier. The site is located within the tidal zone. The full extent of the site is indicated on the exploratory location layout, drawing ref: P14127-SI-01, presented in **APPENDIX C** of this factual report.

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### 3 FIELDWORK

#### 3.1 GENERAL

The fieldwork was carried out in general accordance with BS EN1997-2: 2007, Eurocode 7 Geotechnical Design, Part 2, Ground investigation and testing and BS 5930 (1999) Code of Practice for Site Investigation and Part 9 of BS 1377 (1990), Method of Tests for Soil for Civil Engineering Purposes and the British Standard BS10175:2012 code of Practice for Investigation of Contaminated Sites.

Details of the equipment and plant used are presented below.

Operation	Equipment	Nominal diameter, mm	Flush	Comments
Cable Percussion Boreholes	Dando 2000 Spud Barge	200 mm	N/A	Environmental samples recovered

The exploratory locations were selected by Malachy Walsh Partners and set out subject to harbour restrictions. The as constructed exploratory locations were surveyed using Trimble 5700/5800 GPS equipment to the Ordinance Survey, Irish Transverse Mercator (ITM) system of co-ordinates and elevations to Mean Head datum. The elevations were subsequently converted to Chart datum, (mCD OD Malin 2.2m) this being presented on the exploratory logs. The exploratory locations are shown on the Exploration Location Layout and Plan (dwg. ref : P14127-SI-A and P14127-SI-01) presented in **APPENDIX C** of this factual report.



### 3.2 EXPLORATORY HOLES

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

#### SUMMARY OF EXPLORATORY HOLES

Exploratory Hole Type	Quantity	Depth Range (m below sea bed level)	Remarks
Cable percussive boreholes	9 No.	0.8m to 4.0m	BHSL01, BHSL02, BHSL03, BHSL06, BHSL07, BHSL08, BHSL11, BHSL14 and BHSL15.

The exploratory hole records are presented in **APPENDIX A** of this factual report. The records provide descriptions, in general accordance with BS 5930 (1999) A2: 2010 and Eurocode 7, Identification and classification of soils, Part 1, Identification and description (BS EN ISO 14688-1: 2002), of the materials encountered and details of the samples taken, together with any observations made during the investigation.

### 3.3 SAMPLING

A total of thirty two (32) number environmental samples (ES) were taken in general accordance with the preparation for and methods of taking samples, together with their site, preservation and handling was in accordance with British Standard BS 5930: 1981 - Code of Practice for Site investigation, BS10175:2012 Code of Practice for Investigation of Contaminated. The samples were recovered directly from sea bed surface (11 No.) by grab sampler and below sea bed level (21 No.) by cable percussion drilling. At some locations it was not possible to recover a suitable grab sample sediment from the sea bed due to the non-cohesive nature of the marine deposits. This was the case at exploratory locations SL01, SL03, SL07, SL04, SL07 and SL15, where materials recovered were granular in nature and did not have sufficient fines content to allow analysis.

The sediment samples were recovered to undertake the Waste Acceptance Criteria (WAC) suite analysis comprised of: 2No. 500gr plastic tubs, 2No. 250ml amber glass jars and 2No. 60ml amber vials per sample. The sediment samples recovered to undertake the Marine Suite (with Cr VI) comprised of: 1No. 500gr aluminium jar and 1No. 500gr plastic jar per sample.

In addition to the environmental sampling eight (8) bulk disturbed samples (B) were taken to allow for particle size distribution by sieving be undertaken as requested by the Employer's Representative. Of these three (3) underwent hydrometer analysis (See 3.4.1). The results of these classification tests are presented in **APPENDIX B**.

### 3.4 SCHEDULED ENVIRONMENTAL SAMPLE SUMMARY

Exploratory Hole	Location as per Dwg 16342-002	Type of Sample	Sample Depth (m)
BHSL01	SL-01	GS ES	On the Sea Bed (0m) 0.3m (below sea bed)
BHSL02	SL-02	GS ES ES ES	On the Sea Bed (0m) 1.0m (below sea bed) 2.0m (below sea bed) 2.0m (below sea bed)
BHSL03	SL-03	ES ES	1.0m (below sea bed) 2.0m (below sea bed)
BHSL05	SL-05	GS	On the Sea Bed (0m)
BHSL06	SL-06	GS ES ES	On the Sea Bed (0m) 1.0m (below sea bed) 2.0m (below sea bed)
BHSL07	SL-07	ES ES ES ES	1.0m (below sea bed) 2.0m (below sea bed) 3.0m (below sea bed) 4.0m (below sea bed)
BHSL08	SL-08	GS ES	On the Sea Bed (0m) 1.0m (below sea bed) 2.0m (below sea bed) 3.0m (below sea bed) 4.0m (below sea bed)
BHSL09	SL-09	GS	On the Sea Bed (0m)
BHSL10	SL-10	GS	On the Sea Bed (0m)
BHSL11	SL-11	GS ES ES	On the Sea Bed (0m) 1.0m (below sea bed) 2.0m (below sea bed)

Exploratory Hole	Location as per Dwg 16342-002	Type of Sample	Sample Depth (m)
BHSL12	SL-12	GS	On the Sea Bed (0m)
BHSL13	SL-13	GS	On the Sea Bed (0m)
BHSL14	SL-14	GS ES  ES	On the Sea Bed (0m) 1.0m (below sea bed) 2.0m (below sea bed)
BHSL15	SL-15	ES	1.0m (below sea bed)

**ES** denotes disturbed environmental samples **GS** denotes grab sample

### 3.4.1 Scheduled Geotechnical Sample summary

The following samples were scheduled for particle size distribution by sieve analysis

1. BHSL01 @ 1.0m,
2. BHSL02 @ 1.0m,
3. BHSL02 @2.0m,
4. BHSL02 @ 2.10m,
5. BHSL03 @ 2.0m,
6. BHSL06 @ 1.0m,
7. BHSL06 @ 2.0m and
8. BHSL06 @ 2.3m.

Of which the following samples were further analysed by hydrometer analysis

1. BHSL06 @ 2.0m,
2. BHSL06 @ 1.0m and
3. BHSL02 @ 2.0m.



## 4. LABORATOR TESTING

All environmental samples scheduled for the Marine suite analysis were sent to RPS Mountain Head Laboratory in the UK accredited by the Marine Institute of Ireland. The analysis of the sediment was carried out in accordance with the [Guidelines For The Assessment Of Dredge Material For Disposal In Irish Waters] (April 2006) Marine Environment and Health Series, No. 24.

The samples scheduled for WAC testing were transported to a UKAS accredited laboratory, Chemtest in Newmarket in the UK. The WAC suite was amended to include Tributyl Tin and Dibutyl Tin as required by the Works Specification.

Laboratory testing was scheduled by Malachy Walsh [Partners]. Laboratory testing was carried out by PGL in accordance with BS1377 (1990), Methods of test for soils for civil engineering so as to characterise the deposits encountered. The environmental laboratory testing was undertaken by Chemtest and RPS Mountainhead on behalf of PGL. The Laboratory test results were presented in **APPENDIX B**. A summary of tests undertaken are detailed below.

### SUMMAR OF LABORATOR TESTING UNDERTAKEN – SEDIMENT SAMPLES

SEDIMENT		
Type	No.	Remarks
Grading analysis	8	3No. hydrometer analysis
WAC (inclusive of Dibutyl Tin and Tributyl Tin)	30	See <b>APPENDIX B</b>
Marine Suite (inclusive of CrVI)	17	See <b>APPENDIX B</b>

---

## 4 SEA BED CONDITIONS

The sea bed was generally characterised by Marine Beach Deposits silts, gravels and sands. No in-situ standard penetration testing was undertaken. Particle distribution analysis undertaken on bulk samples recovered from depths between 1.0m and 2.3m below sea bed level show that the beach deposits range from very gravelly SILT with high cobble content to slightly silty slightly sandy Cobbles.

In some locations at the sea bed level the granular material was dominant and with a lack of cohesive materials resulting in no suitable sample being recovered for sediment sampling. These instances were previously detailed in section 3.3.

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## 5 SUMMAR

1. Nine (9) boreholes were advanced to depths of between 0.8m and 34.0m below the sea bed.
2. The sea bed was characterised by fine-grained and coarse Beach Marine Deposits of Silt, Sands, Gravels and Cobbles.
3. Records of sea bed conditions encountered (i.e. sediment deposits) can be found on the exploratory logs and photographic records presented in **APPENDIX A** of this factual report.
4. Environmental samples (ES) were recovered and analysed as outlined in Section 3.4. The sediment samples were generally analysed for WAC suite inclusive of TBT and DBT and, or the Marine Suite inclusive of Cr VI. The data is presented in **APPENDIX B** of this factual report.
5. Thirty (30) sediment samples were analysed by Chemtest Laboratory on behalf of PGL for WAC analysis including Tributyl Tin and Dibutyl Tin. Seventeen sediment samples were analysed for the Marine Suite inclusive of Cr VI by RPS Laboratory in Mountainhead on behalf of PCL. The data is presented in **APPENDIX B** of this factual report.
6. Geotechnical bulk disturbed samples (B) were taken to allow for grading analysis. The data is presented in **APPENDIX B** of this factual report.
7. An exploratory location plan has been produced and is presented in **APPENDIX C** of this factual report.

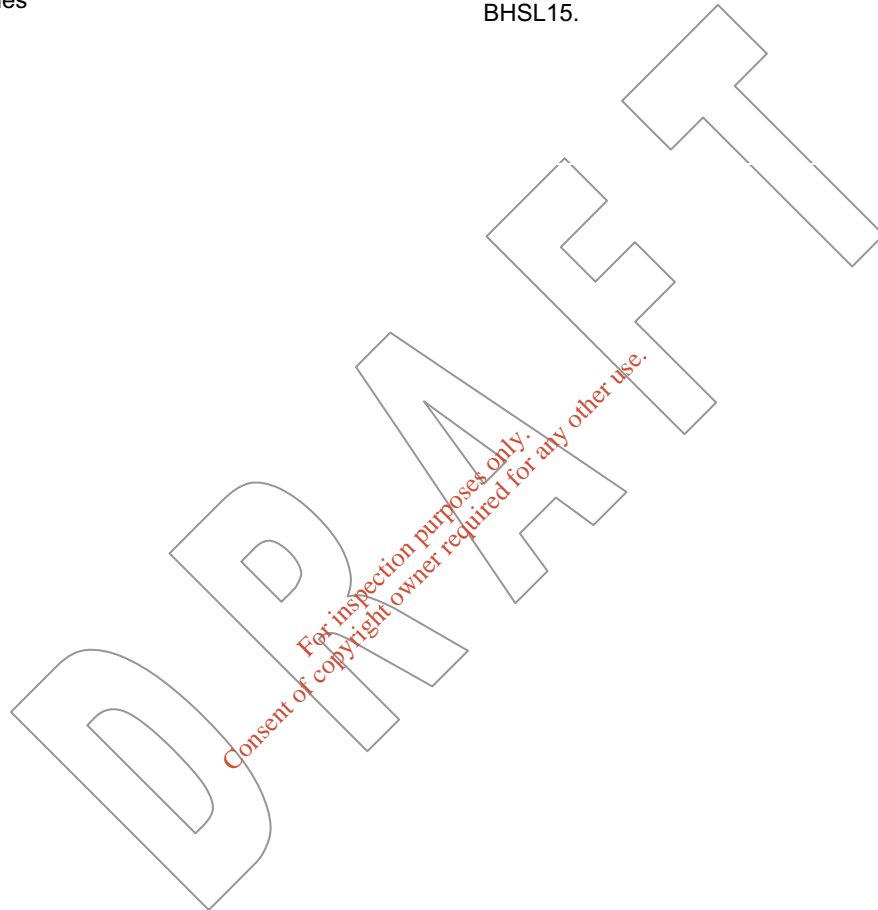
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**APPENDIX A**

**EXPLORATOR HOLE RECORDS**

Boreholes

BHSL01, BHSI02, BHSL03, BHSL06,  
BHSL07, BHSL08, BHSL11, BHSL14 and  
BHSL15.





# 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 - disturbed  
B Bulk sample - disturbed  
D Jar Sample - disturbed  
W Water Sample  
CBR California Bearing Ratio mould sample  
ES 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  
lf Fracture Spacing in mm (Minimum/Average/Maximum) NI - non intact, NR - no recovery  
AZCL Assumed Zone of Core Loss  
NI Non intact

## 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<sub>u</sub> Undrained Shear Strength (kN/m<sup>2</sup>)  
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



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**Drilled By**  
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**Borehole No**  
**BHSL01**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.</b> P14127	<b>Co-ords:</b> 98968E - 48436N	<b>Hole Type</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 07/01/2015	<b>Level:</b> 0.50 mOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00	ES				SILT.		
		0.30	ES						
		1.00	B		-0.40	0.90	Cobbles with sand, gravel and silt content.		
				1.20	-0.70	1.20	End of Borehole at 1.20 m		

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Water	Depth (m)	Type	Results	Casing	Level	Depth

<b>Groundwater:</b> Struck: -    Rose to: -    After: -    Sealed: -    Comment: Hole drilled below sea level.			<b>Hole Information:</b> Hole Depth: 1.20m    Hole Diameter: 200    Casing Diameter: 200mm			<b>Chiselling:</b> Depths (m): 1.20 to 1.20    Time (hhmm): 0100    Tool: Chisel		
---	--	--	---	--	--	---	--	--

<b>Remarks:</b> Hole terminated 1.20m below sea level. Level taken at start of drilling.	<b>Shift Data:</b> <table border="1"> <tr> <th>Groundwater</th> <th>Shift (dd/mm/yyyy)</th> <th>Casing depth</th> <th>Remarks</th> </tr> <tr> <td>-</td> <td>07/01/2015</td> <td>-</td> <td>Start of shift</td> </tr> <tr> <td>-</td> <td>07/01/2015</td> <td>0.90m</td> <td>End of Borehole</td> </tr> </table>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks	-	07/01/2015	-	Start of shift	-	07/01/2015	0.90m	End of Borehole
Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks										
-	07/01/2015	-	Start of shift										
-	07/01/2015	0.90m	End of Borehole										

<b>Equipment &amp; Methods:</b> Dando 2000.
---

# Photographic Record- Grab Samples



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Borehole No  
**BHSL02**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 99014E - 48461N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 07/01/2015	<b>Level:</b> 0.00 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples		In Situ Testing		Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results						
		0.00	ES						Silty very sandy GRAVEL	
		1.00 1.00	ES B				-1.30	1.30	Slightly sandy gravelly SILT	
		2.00 2.00 2.00 2.10	ES ES B B			2.30	-2.10 -2.30	2.10 2.30	Slightly sandy very silty GRAVEL  End of Borehole at 2.30 m	

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Water	Depth (m)	Type	Results	Casing	Level	Depth
-------	-----------	------	---------	--------	-------	-------

<b>Groundwater:</b> Struck -    Rose to -    After -    Sealed -    Comment: Hole drilled below sea level.				<b>Hole Information:</b> Hole Depth: 2.30m    Hole Diameter: 200    Casing Diameter: 200mm			<b>Chiselling:</b> Depths (m) to -    Time (hhmm) -    Tool -		
---	--	--	--	---	--	--	--	--	--

<b>Remarks:</b> Hole terminated 2.30m below sea level. Grab sample G.L taken at start of drilling.	<b>Shift Data:</b>	Groundwater: -	Shift (dd/mm/yyyy): 07/01/2015 to 07/01/2015	Casing depth: 2.30m	Remarks: Start of shift, End of Borehole
--	--------------------	----------------	--	---------------------	--

**Equipment Methods:** Dando 2000.



# Photographic Record- Grab Samples



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Borehole No  
**BHSL03**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 99056E - 48482N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 06/01/2015	<b>Level:</b> 0.95 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		1.00	ES			-0.25	1.20	Silty GRAVEL.	
		2.00 2.00	ES B		2.20	-1.25	2.20	Slightly silty very sandy GRAVEL with Cobble content.	
							2.20	End of Borehole at 2.20 m	

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Water	Depth (m)	Type	Results	Casing	Level	Depth
-------	-----------	------	---------	--------	-------	-------

<b>Groundwater:</b> Struck: -    Rose to: -    After: -    Sealed: -    Comment: Hole drilled below sea level.				<b>Hole Information:</b> Hole Depth: 2.20m    Hole Diameter: 200    Casing Diameter: 200mm			<b>Chiselling:</b> Depths (m): 2.20 to 2.20    Time (hhmm): 0100    Tool: Chisel		
---	--	--	--	---	--	--	---	--	--

<b>Remarks:</b> Hole terminated 2.20m below sea level. G.L taken at start of drilling.	<b>Shift Data:</b>	Groundwater: -	Shift (dd/mm/yyyy): 06/01/2015	Casing depth: -	Remarks: Start of shift
			06/01/2015		End of Borehole

**Equipment & Methods:** Dando 2000.



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Borehole No  
**BHSL06**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 98956E - 48469N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 07/01/2015	<b>Level:</b> -0.08 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00 0.00	ES ES				Slightly gravelly SILT.		
		1.00 1.00 1.00	ES ES B		-1.38	1.30	Very silty SAND and GRAVEL.		
		2.00 2.00 2.00 2.30	ES ES B B	2.30	-2.18 -2.38	2.10 2.30	Silty very gravelly SAND.  End of Borehole at 2.30 m		

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Water	Depth (m)	Type	Results	Casing	Level	Depth			
<b>Groundwater:</b> Struck    Rose to    After    Sealed    Comment -           -           -           Hole drilled below sea level.				<b>Hole Information:</b> Hole Depth    Hole Diameter    Casing Diameter 2.30m           200                   200mm			<b>Chiselling:</b> Depths (m)    Time (hhmm)    Tool 2.30 to 2.30    0100            Chisel		

<b>Remarks:</b> Hole terminated 2.30m below sea level. Barge taken as start of drilling.	<b>Shift Data:</b>												
	<table border="1"> <tr> <th>Groundwater</th> <th>Shift (dd/mm/yyyy)</th> <th>Casing depth</th> <th>Remarks</th> </tr> <tr> <td>-</td> <td>07/01/2015</td> <td>-</td> <td>Start of shift</td> </tr> <tr> <td>-</td> <td>07/01/2015</td> <td>2.30m</td> <td>End of Borehole</td> </tr> </table>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks	-	07/01/2015	-	Start of shift	-	07/01/2015	2.30m	End of Borehole
Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks										
-	07/01/2015	-	Start of shift										
-	07/01/2015	2.30m	End of Borehole										

**Equipment & Methods:** Dando 2000.



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Borehole No  
**BHSL07**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 98990E - 48497N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 06/01/2015	<b>Level:</b> -0.08 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		1.00	ES			-1.38	1.30	SILT.	[Pattern]
		2.00	ES					Silty coarse angular GRAVEL with sea shells.	[Pattern]
		3.00	ES						[Pattern]
		4.00	ES		4.00	-4.08	4.00	End of Borehole at 4.00 m	[Pattern]

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Water	Depth (m)	Type	Results	Casing	Level	Depth

<b>Groundwater:</b> Struck: - Rose to: - After: - Sealed: - Comment: Hole drilled below sea level.	<b>Hole Information:</b> Hole Depth: 4.00m Hole Diameter: 200 Casing Diameter: 200mm	<b>Chiselling:</b> Depths (m) to: - Time (hhmm): - Tool: -
---	---	---

<b>Remarks:</b> Hole terminated at 4.00m below sea level. Barge level taken at start of drilling.	<b>Shift Data:</b> Groundwater: - Shift (dd/mm/yyyy): 06/01/2015 to 06/01/2015 Casing depth: 4.00m Remarks: Start of shift, End of Borehole
---	---

<b>Equipment &amp; Methods:</b> Dando 2000
--



# Photographic Record- Grab Samples



Number:

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**Borehole No**  
**BHSL08**  
 Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 99040E - 48529N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 06/01/2015	<b>Level:</b> 0.71 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00	ES				Very silty coarse GRAVEL.		
		1.00	ES						
		3.00	ES		-2.29	3.00	GRAVEL □ COBBLES.		
		4.00	ES		4.00	4.00	End of Borehole at 4.00 m		

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Water	Depth (m)	Type	Results	Casing	Level	Depth

<b>Groundwater:</b> Struck - Rose to - After - Sealed - Comment: Hole drilled below sea level.			<b>Hole Information:</b> Hole Depth: 4.00m, Hole Diameter: 200, Casing Diameter: 200mm			<b>Chiselling:</b> Depths (m) to: , Time (hhmm): , Tool:		
<b>Remarks:</b> Hole terminated 4.00m below sea level. Barge level taken at start of drilling.				<b>Shift Data:</b>				
<b>Equipment &amp; Methods:</b> Dando 2000.				Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks	
				-	06/01/2015	0.00m	Start of shift	
				-	06/01/2015	4.00m	End of Borehole	





Number:

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**Borehole No**  
**BHSL11**  
 Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.</b> P14127	<b>Co-ords:</b> 98966E - 48533N	<b>Hole Type</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 05/01/2015	<b>Level:</b> 0.04 mOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00	ES				SILT.		
		1.00	ES		-1.16	1.20	Silty GRAVEL with sea shells.		
		2.00	ES		2.00	-1.96	End of Borehole at 2.00 m		

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Water	Depth (m)	Type	Results	Casing	Level	Depth	Chiselling:	Time (hhmm)	Tool
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	
-	-	-	Hole drilled below sea level.		2.00m	200	200mm	to	

<b>Remarks:</b> Hole terminated 2.00m below sea level. Barge level taken at start of drilling.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	05/01/2015	-	Start of shift
		-	05/01/2015	2.00m	End of Borehole

**Equipment & Methods:** Dando 2000.



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**Borehole No**  
**BHSL14**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 99011E - 48573N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 06/01/2015	<b>Level:</b> -0.82 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00	ES				SILT		
		1.00	ES		-1.72	0.90	Silty GRAVEL and COBBLES.		
		2.00	ES		2.10	-2.92	2.10		
							End of Borehole at 2.10 m		

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Water	Depth (m)	Type	Results	Casing	Level	Depth	Chiselling:	Time (hhmm)	Tool	
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
-	-	-	-	Hole drilled below sea level.	2.10m	200	200mm	2.10 to 2.10	0100	Chisel

<b>Remarks:</b> Hole terminated 2.10m below sea level. Barge level taken at start of borehole.	<b>Shift Data:</b>												
	<table border="1"> <tr> <th>Groundwater</th> <th>Shift (dd/mm/yyyy)</th> <th>Casing depth</th> <th>Remarks</th> </tr> <tr> <td>-</td> <td>06/01/2015</td> <td>-</td> <td>Start of shift</td> </tr> <tr> <td>-</td> <td>06/01/2015</td> <td>2.10m</td> <td>End of Borehole</td> </tr> </table>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks	-	06/01/2015	-	Start of shift	-	06/01/2015	2.10m	End of Borehole
Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks										
-	06/01/2015	-	Start of shift										
-	06/01/2015	2.10m	End of Borehole										

**Equipment & Methods:** Dando 2000.



# Photographic Record- Grab Samples



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Number:

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**Project No**  
**Engineer**

Bantry Bay  
P14127  
Malachy Walsh □ Partners



Priority Geotechnical Ltd.  
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Fax: 021 4638690  
www.prioritygeotechnical.ie

**Drilled By**  
JC  
**Logged By**  
DMC

**Borehole No**  
**BHSL15**  
Sheet 1 of 1

<b>Project Name:</b> Bantry Inner Harbour	<b>Project No.:</b> P14127	<b>Co-ords:</b> 99028E - 48611N	<b>Hole Type:</b> Cable
<b>Client:</b> Port of Cork Company	<b>Dates:</b> 05/01/2015	<b>Level:</b> 0.85 mOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.80 0.80	ES ES		0.80	0.05	0.80	Grey gravelly SILT and cobbles.  End of Borehole at 0.80 m	

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<b>Groundwater:</b> Struck: - Rose to: - After: - Sealed: - Comment: Hole drilled below sea level.	<b>Hole Information:</b> Hole Depth: 0.80m Hole Diameter: 200 Casing Diameter: 200mm	<b>Chiselling:</b> Depths (m): 0.80 to 0.80 Time (hhmm): 0100 Tool: Chisel
<b>Remarks:</b> Hole terminated at 0.80m below sea level.	<b>Shift Data:</b>	
<b>Equipment &amp; Methods:</b> Dando 2000.	Groundwater: - Shift (dd/mm/yyyy): 05/01/2015 Casing depth: 0.80m	Remarks: Start of shift End of Borehole



---

## APPENDIX B

### LABORATOR RESULTS

#### PARTICLE SIZE DISTRIBUTION

#### SEDIMENT ANALYSIS:

- WAC SUITE (INCLUSIVE OF TRIBUTYL TIN   
DIBUTYL TIN)
- MARINE SUITE (INCLUSIVE OF CHROMIUM VI)

DRAFT

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## KEY TO SYMBOLS - LABORATORY TEST RESULT

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 <sub>3</sub>	% - Total Sulphate Content (acid soluble)	
SO <sub>3</sub>	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	
Y <sub>b</sub>	Bulk Density	
Y <sub>d</sub>	Dry Density	
Ps	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 <sub>3</sub>	Cell Pressure	
σ <sub>1</sub> -σ <sub>3</sub>	Deviator Stress	
c	Cohesion	
c <sub>e</sub>	Effective Cohesion Intercept	
φ	Angle of Shearing Resistance - Degrees	
φ <sub>e</sub>	Effective Angle of Shearing Resistance	
ε <sub>f</sub>	Strain at Failure	
*	Failed under 1 <sup>st</sup> Load	
**	Failed under 2 <sup>nd</sup> Load	
#	Unstable	
##	Excessive Strain	
p <sub>o</sub>	Effective Overburden Pressure	
m <sub>v</sub>	Coefficient of Volume Decrease	
c <sub>v</sub>	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	

Key sheet



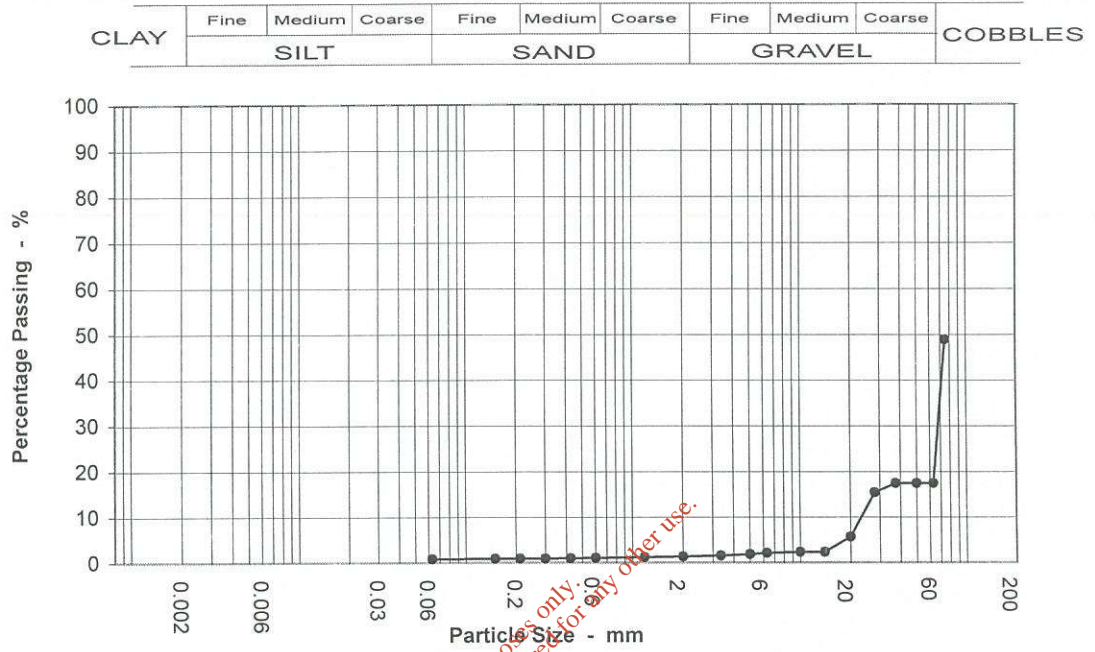


# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	P14127
Borehole / Pit No	BHSL01
Sample No	3
Depth	1.00 m
Sample type	B

<b>Location</b>	Bantry Inner Harbour
<b>Soil Description</b>	Slightly sandy slightly silty gravelly COBBLES



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	49		
63	17		
50	17		
37.5	17		
28	15		
20	6		
14	2		
10	2		
6.3	2		
5	2		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	1		
0.15	1		
0.063	1		

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

Sample Proportions	
Cobbles	82.5
Gravel	16.2
Sand	0.5
Silt & Clay	0.8

Grading Analysis	
D100	90.000
D60	78.272
D10	23.540
Uniformity Coefficient	3

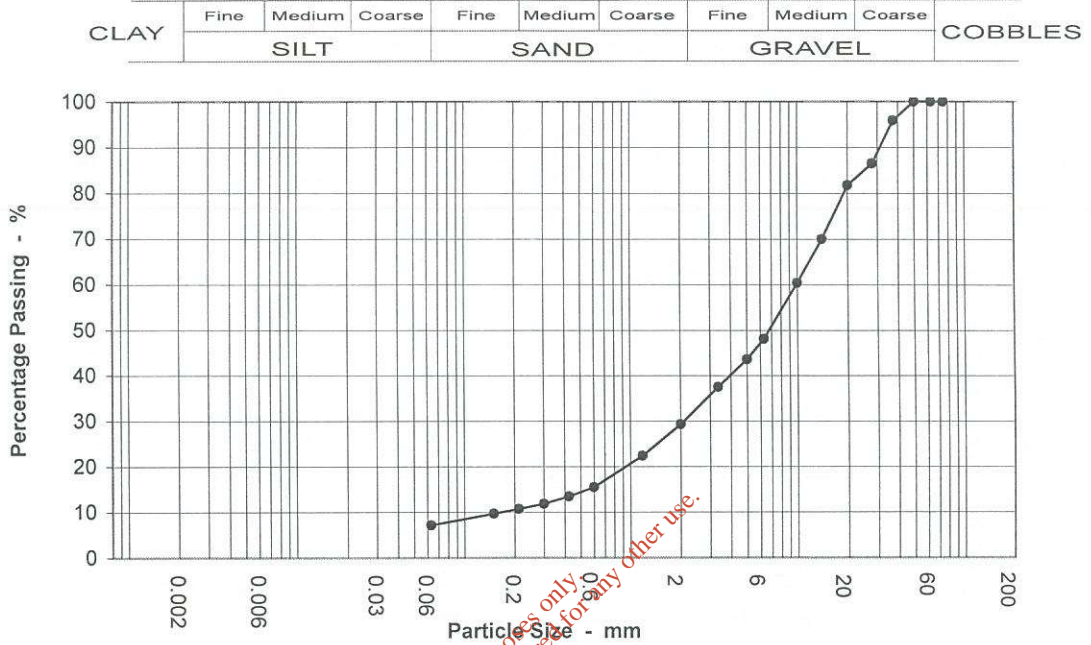


# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	P14127
Borehole / Pit No	BHSL02
Sample No	6
Depth	1.00 m
Sample type	B

Location	Bantry Inner Harbour
Soil Description	Silty very sandy GRAVEL



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	96		
28	86		
20	82		
14	70		
10	60		
6.3	48		
5	44		
3.35	37		
2	29		
1.18	22		
0.6	15		
0.425	13		
0.3	12		
0.212	11		
0.15	10		
0.063	7		

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

Sample Proportions	
Cobbles	0.0
Gravel	70.7
Sand	22.2
Silt & Clay	7.1

Grading Analysis	
D100	50.000
D60	9.880
D10	0.170
Uniformity Coefficient	58





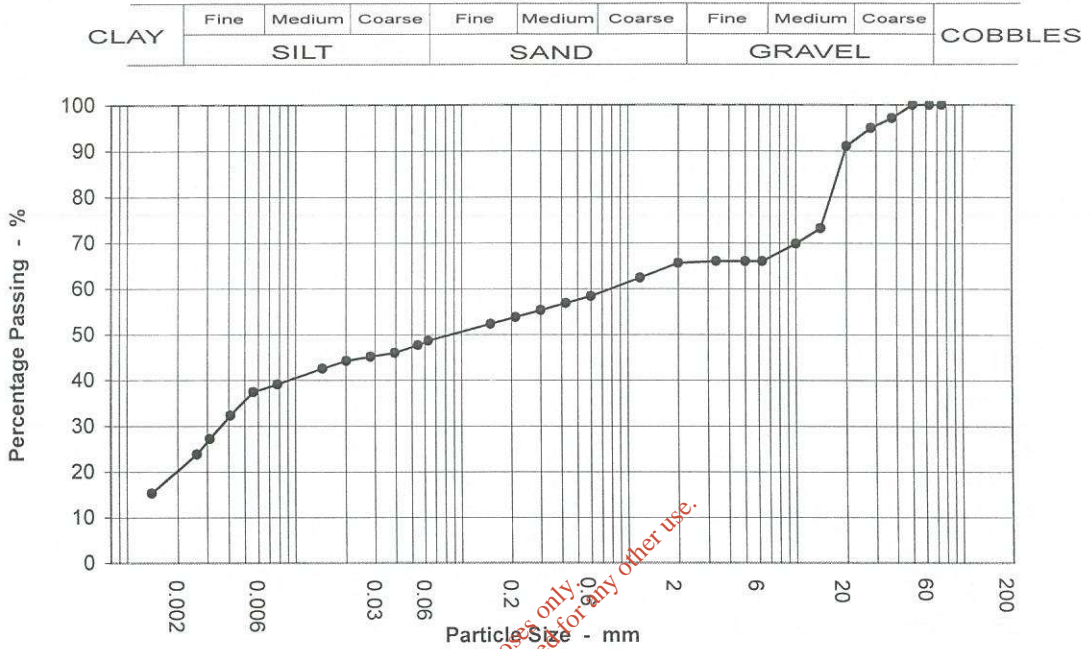
# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	P14127
Borehole / Pit No	BHSL02
Sample No	5
Depth	2.00 m
Sample type	B

Location **Bantry Inner Harbour**

Soil Description **Slightly sandy gravelly SILT**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.054	48
90	100	0.039	46
75	100	0.028	45
63	100	0.020	44
50	100	0.015	43
37.5	97	0.008	39
28	95	0.006	37
20	91	0.004	32
14	73	0.003	27
10	70	0.003	24
6.3	66	0.001	15
5	66		
3.35	66		
2	66		
1.18	62		
0.6	58		
0.425	57		
0.3	55		
0.212	54		
0.15	52		
0.063	49		

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

Sample Proportions	
Cobbles	0.0
Gravel	34.5
Sand	17.2
Silt	28.7
Clay	19.6

Grading Analysis	
D100	50.000
D60	0.839
D10	
Uniformity Coefficient	N/A





# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

**Job Ref** P14127

Borehole / Pit No BHSL03

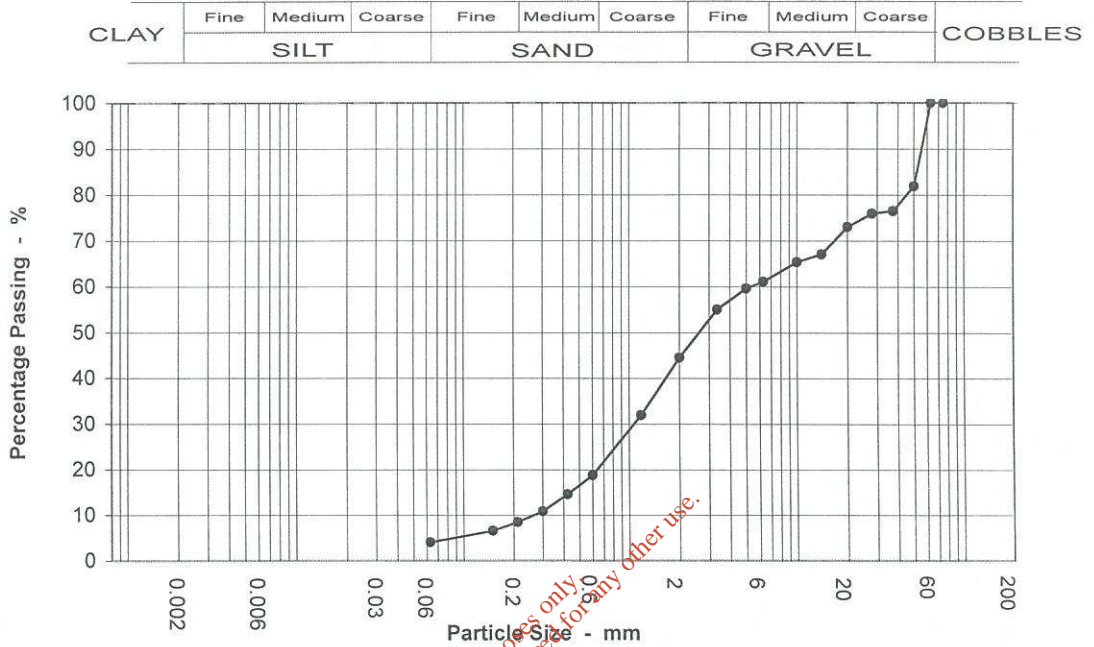
**Location** Bantry Inner Harbour

Sample No 3

Depth 2.00 m

**Soil Description** Slightly silty very sandy GRAVEL with low cobble content

Sample type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	82		
37.5	77		
28	76		
20	73		
14	67		
10	65		
6.3	61		
5	60		
3.35	55		
2	45		
1.18	32		
0.6	19		
0.425	15		
0.3	11		
0.212	8		
0.15	7		
0.063	4		

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

Sample Proportions	
Cobbles	4.2
Gravel	51.3
Sand	40.5
Silt & Clay	4.1

Grading Analysis	
D100	63.000
D60	5.326
D10	0.269
Uniformity Coefficient	20









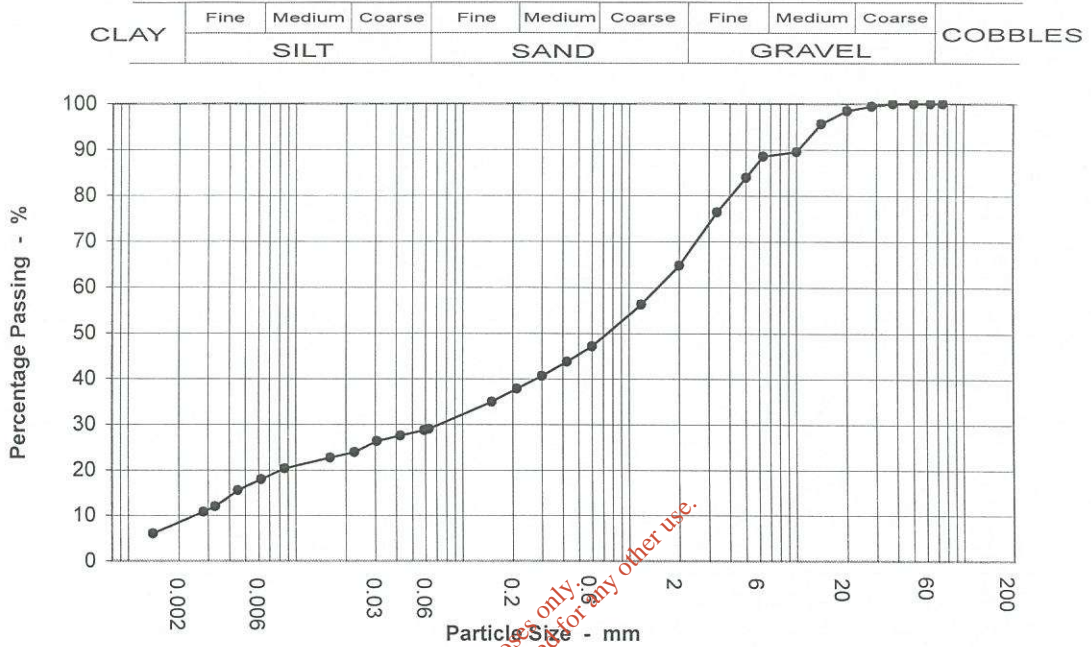
# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	P14127
Borehole / Pit No	BHSL06
Sample No	8
Depth	2.00 m
Sample type	B

Location: Bantry Inner Harbour

Soil Description: Very silty SAND and GRAVEL



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	29
90	100	0.043	28
75	100	0.031	26
63	100	0.022	24
50	100	0.016	23
37.5	100	0.009	20
28	99	0.006	18
20	98	0.005	16
14	96	0.003	12
10	89	0.003	11
6.3	89	0.001	6
5	84		
3.35	76		
2	65		
1.18	56		
0.6	47		
0.425	44		
0.3	41		
0.212	38		
0.15	35		
0.063	29		

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

Sample Proportions	
Cobbles	0.0
Gravel	35.3
Sand	35.9
Silt	20.8
Clay	8.0

Grading Analysis	
D100	37.500
D60	1.542
D10	0.003
Uniformity Coefficient	600



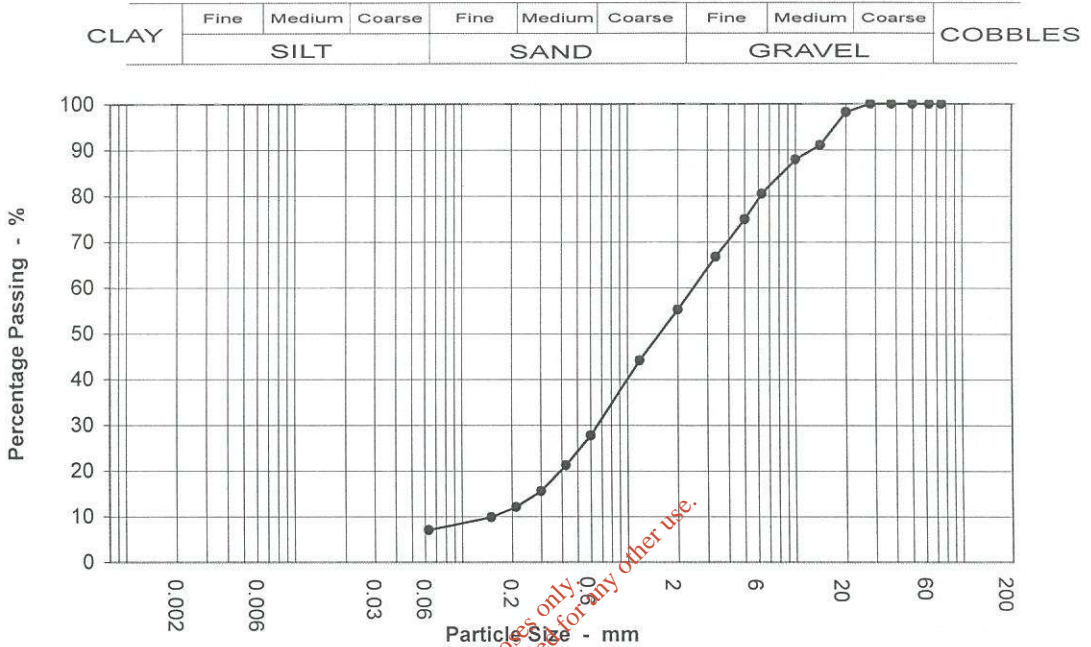
# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>P14127</b>
Borehole / Pit No	BHSL06
Sample No	9
Depth	2.30 m
Sample type	B

Location: **Bantry Inner Harbour**

Soil Description: **Silty very gravelly SAND**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	91		
10	88		
6.3	80		
5	75		
3.35	67		
2	55		
1.18	44		
0.6	28		
0.425	21		
0.3	16		
0.212	12		
0.15	10		
0.063	7		

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

Sample Proportions	
Cobbles	0.0
Gravel	44.8
Sand	48.2
Silt & Clay	7.0

Grading Analysis	
D100	28.000
D60	2.560
D10	0.154
Uniformity Coefficient	17

# Final Report

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**Report Number:** 15-00655 Issue-1

**Initial Date of Issue:** 21-Jan-15

**Client:** Priority Geotechnical Ltd

**Client Address:** Unit 12  
Owenacurra Business Park  
Midleton  
County Cork  
Ireland

**Contact(s):** Colette Kelly

**Project:** P14127 - Bantry

**Quotation No.:**

**Date Received:** 14-Jan-15

**Order No.:** 7462

**Date Instructed:** 14-Jan-15

**No. of Samples:** 52

**Results Due:** 20-Jan-15

**Turnaround:  
(Weekdays)** 5

**Date Approved:** 21-Jan-15

**Approved By:**



**Details:** Keith Jones, Technical Manager

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**Results Summary - Water**

Client: Priority Geotechnical Ltd	Chemtest Job No.:	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655
Quotation No.:	Chemtest Sample ID.:	88953	88954	88955	88956	88957	88958	88959	88960	88961	88962	88963	88964	88965	88966	88967	88968	88969	88970
Order No.: 7462	Client Sample Ref.:	SL14-SL14.0	SL11.0	SL11.1	SL11.2	SL11.2	SL15.1	SL15.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.2	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1	SL03-SL03.1
	Client Sample ID.:	L8	L10	L10	L2	L8	L2	L8	L2	L8	L2	L2	L8	L2	L8	L2	L2	L2	L2
	Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Top Depth (m):	0.00	0.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00
	Bottom Depth(m):																		
	Date Sampled:	06-Jan-15	05-Jan-15	05-Jan-15	05-Jan-15	05-Jan-15	05-Jan-15	05-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15
	Accred.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	SOP	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730
	Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	LOD	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Determinand																			
Dibutyl Tin		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Tributyl Tin		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

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**Results Summary - Water**

Client: Priority Geotechnical Ltd		<b>Chemtest Job No.:</b>		15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655	15-00655
Quotation No.:		<b>Chemtest Sample ID.:</b>		88963	88964	88965	88966	88967	88968	88969	88970	88971	88972
Order No.: 7462		Client Sample Ref.:		SL03-SL03.2	SL05-SL05.1	SL05-SL05.1	SL7-SL7.1	SL7-SL7.1	SL7-SL7.2	SL7-SL7.2	SL7-SL7.3	SL7-SL7.3	SL7-SL7.4
		<b>Client Sample ID.:</b>		L8	L2	L8	L2	L8	L2	L8	L2	L8	L2
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):		2.00	0.00	0.00	1.00	1.00	2.00	2.00	3.00	3.00	4.00
		Bottom Depth(m):											
		Date Sampled:		06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15	06-Jan-15
<b>Determinand</b>		<b>Accred.</b>		<b>SOP</b>	<b>Units</b>	<b>LOD</b>							
Dibutyl Tin		N		1730	µg/l	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Tributyl Tin		N		1730	µg/l	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

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**Project: P14127 - Bantry**

Client: Priority Geotechnical Ltd	Chemtest Job No.:	15-00655
Quotation No.:	Chemtest Sample ID.:	88973
Order No.: 7462	Client Sample Ref.:	SL7-SL7.4
	Client Sample ID.:	L8
	Sample Type:	WATER
	Top Depth (m):	4.00
	Bottom Depth(m):	
	Date Sampled:	06-Jan-15
	Accred.	SOP
	Units	µg/l
	LOD	0.001
Determinand		
Dibutyl Tin	N	1730
Tributyl Tin	N	1730
		µg/l
		0.001
		< 0.001
		< 0.001

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## Report Information

### Key

---

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### Sample Deviation Codes

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### Sample Retention and Disposal

---

All soil samples will be retained for a period of 60 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:  
[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

**Report Number:** 15-00369 Issue-1

**Initial Date of Issue:** 22-Jan-15

**Client:** Priority Geotechnical Ltd

**Client Address:** Unit 12  
Owenacurra Business Park  
Midleton  
County Cork  
Ireland

**Contact(s):** Colette Kelly

**Project:** P14127- Bantry

**Quotation No.:** Q14-02376

**Order No.:** 7462

**No. of Samples:** 30

**Turnaround:  
(Weekdays)** 7

**Date Approved:** 22-Jan-15

**Approved By:**

**Details:** Darrell Hall, Laboratory Director

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**Date Received:** 12-Jan-15

**Date Instructed:** 12-Jan-15

**Results Due:** 20-Jan-15









## Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87527 Sample Ref: Sample ID: SL11.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 05-Jan-2015						Landfill Waste Acceptance Criteria Limits	
Determinand	SOP	Accred.	Units	Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%	2.8	3	5	6
Loss on Ignition	2610	U	%	9.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg	12	100	--	--
pH	2010	U		8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.036	--	To evaluate	To evaluate
<b>Eluate Analysis</b>			<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.017	0.17	0.5	2	25
Barium	1450	U	0.01	< 0.50	20	100	300
Cadmium	1450	U	0.001	< 0.010	0.04	1	5
Chromium	1450	U	0.05	0.5	0.5	10	70
Copper	1450	U	0.003	< 0.050	2	50	100
Mercury	1450	U	0.0013	0.013	0.01	0.2	2
Molybdenum	1450	U	0.067	0.67	0.5	10	30
Nickel	1450	U	0.004	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.010	0.5	10	50
Antimony	1450	U	0.002	0.022	0.06	0.7	5
Selenium	1450	U	0.028	0.28	0.1	0.5	7
Zinc	1450	U	0.033	< 0.50	4	50	200
Chloride	1220	U	2200	22000	800	15000	25000
Fluoride	1220	U	1.1	11	10	150	500
Sulphate	1220	U	360	3600	1000	20000	50000
Total Dissolved Solids	1020	N	4400	44000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	N	4.7	< 50	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	56

## Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87528 Sample Ref: Sample ID: SL11.1 Top Depth(m): 1.00 Bottom Depth(m): Sampling Date: 05-Jan-2015						Landfill Waste Acceptance Criteria Limits	
Determinand	SOP	Accred.	Units	Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%	2.8	3	5	6
Loss on Ignition	2610	U	%	7.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg	21	100	--	--
pH	2010	U		8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.081	--	To evaluate	To evaluate
<b>Eluate Analysis</b>			<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.01	0.1	0.5	2	25
Barium	1450	U	0.026	< 0.50	20	100	300
Cadmium	1450	U	0.001	< 0.010	0.04	1	5
Chromium	1450	U	0.045	0.45	0.5	10	70
Copper	1450	U	0.003	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.048	0.48	0.5	10	30
Nickel	1450	U	0.002	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.010	0.5	10	50
Antimony	1450	U	0.012	0.12	0.06	0.7	5
Selenium	1450	U	0.015	0.15	0.1	0.5	7
Zinc	1450	U	0.011	< 0.50	4	50	200
Chloride	1220	U	1300	13000	800	15000	25000
Fluoride	1220	U	0.53	5.3	10	150	500
Sulphate	1220	U	57	570	1000	20000	50000
Total Dissolved Solids	1020	N	2400	24000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	N	7.2	72	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	41



## Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87543 Sample Ref: Sample ID: SL9-SL9.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 06-Jan-2015						Landfill Waste Acceptance Criteria Limits	
Determinand	SOP	Accred.	Units	Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%	3.6	5	6	
Loss on Ignition	2610	U	%	10	--	10	
Total BTEX	2760	U	mg/kg	< 0.01	--	--	
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	--	--	
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	--	--	
Total (of 17) PAHs	2700	N	mg/kg	5.6	--	--	
pH	2010	U		8	>6	--	
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	To evaluate	To evaluate	
<b>Eluate Analysis</b>			<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.018	0.18	0.5	2	25
Barium	1450	U	0.007	< 0.50	20	100	300
Cadmium	1450	U	0.000	< 0.010	0.04	1	5
Chromium	1450	U	0.071	0.71	0.5	10	70
Copper	1450	U	0.004	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.063	0.63	0.5	10	30
Nickel	1450	U	0.004	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.010	0.5	10	50
Antimony	1450	U	0.002	0.021	0.06	0.7	5
Selenium	1450	U	0.024	0.24	0.1	0.5	7
Zinc	1450	U	0.026	< 0.50	4	50	200
Chloride	1220	U	1800	18000	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	250	2500	1000	20000	50000
Total Dissolved Solids	1020	N	3600	36000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	N	4.4	< 50	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	45

# Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87545 Sample Ref: Sample ID: SL12-SL12.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 06-Jan-2015		Determinand		SOP	Accred.	Units	Landfill Waste Acceptance Criteria						
							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill				
Total Organic Carbon							2625	U	%	2.7	3	5	6
Loss on Ignition							2610	U	%	7.7	--	--	10
Total BTEX							2760	U	mg/kg	< 0.01	6	--	--
Total PCBs (7 congeners)							2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)							2670	U	mg/kg	< 10	500	--	--
Total (of 17) PAHs							2700	N	mg/kg	8.7	100	--	--
pH							2010	U		8	--	>6	--
Acid Neutralisation Capacity							2015	N	mol/kg	0.008	--	To evaluate	To evaluate
<b>Eluate Analysis</b>										<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic							1450	U	0.018	0.18	0.5	2	25
Barium							1450	U	0.007	< 0.50	20	100	300
Cadmium							1450	U	0.001	< 0.010	0.04	1	5
Chromium							1450	U	0.08	0.8	0.5	10	70
Copper							1450	U	0.005	0.05	2	50	100
Mercury							1450	U	< 0.0005	< 0.005	0.01	0.2	2
Molybdenum							1450	U	0.079	0.79	0.5	10	30
Nickel							1450	U	0.004	< 0.050	0.4	10	40
Lead							1450	U	< 0.001	< 0.010	0.5	10	50
Antimony							1450	U	0.002	0.02	0.06	0.7	5
Selenium							1450	U	0.023	0.23	0.1	0.5	7
Zinc							1450	U	0.034	< 0.50	4	50	200
Chloride							1220	U	2000	20000	800	15000	25000
Fluoride							1220	U	1	10	10	150	500
Sulphate							1220	U	320	3200	1000	20000	50000
Total Dissolved Solids							1020	N	3700	37000	4000	60000	100000
Phenol Index							1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon							1610	N	< 2.5	< 50	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	

# Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87546 Sample Ref: Sample ID: SL13-SL13.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 06-Jan-2015						Landfill Waste Acceptance Criteria	
Determindand	SOP	Accred.	Units	Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%	1.8	3	5	6
Loss on Ignition	2610	U	%	8.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.004	--	To evaluate	To evaluate
<b>Eluate Analysis</b>			<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.023	0.23	0.5	2	25
Barium	1450	U	0.13	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.010	0.04	1	5
Chromium	1450	U	0.093	0.93	0.5	10	70
Copper	1450	U	0.007	0.069	2	50	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.037	0.37	0.5	10	30
Nickel	1450	U	0.005	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.010	0.5	10	50
Antimony	1450	U	0.001	0.011	0.06	0.7	5
Selenium	1450	U	0.03	0.3	0.1	0.5	7
Zinc	1450	U	0.035	< 0.50	4	50	200
Chloride	1220	U	2600	26000	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	370	3700	1000	20000	50000
Total Dissolved Solids	1020	N	5000	50000	4000	60000	100000
Phenol Index	1920	U	0.12	1.2	1	-	-
Dissolved Organic Carbon	1610	N	3.8	< 50	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	

# Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87550 Sample Ref: Sample ID: SC2-2.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 07-Jan-2015		SOP		Accred.		Units		Landfill Waste Acceptance Criteria		
Determinand								Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U		%			2.5	3	5	6
Loss on Ignition	2610	U		%			7.6	--	--	10
Total BTEX	2760	U		mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U		mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U		mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N		mg/kg			15	100	--	--
pH	2010	U					7.1	--	>6	--
Acid Neutralisation Capacity	2015	N		mol/kg			0.005	--	To evaluate	To evaluate
<b>Eluate Analysis</b>							<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U		0.019			0.19	0.5	2	25
Barium	1450	U		0.13			< 0.50	20	100	300
Cadmium	1450	U		0.001			< 0.010	0.04	1	5
Chromium	1450	U		1.1			1.1	0.5	10	70
Copper	1450	U		0.008			0.077	2	50	100
Mercury	1450	U		< 0.0005			< 0.005	0.01	0.2	2
Molybdenum	1450	U		0.05			0.5	0.5	10	30
Nickel	1450	U		0.004			< 0.050	0.4	10	40
Lead	1450	U		< 0.001			< 0.010	0.5	10	50
Antimony	1450	U		0.003			0.033	0.06	0.7	5
Selenium	1450	U		0.021			0.21	0.1	0.5	7
Zinc	1450	U		0.035			< 0.50	4	50	200
Chloride	1220	U		1600			16000	800	15000	25000
Fluoride	1220	U		0.88			8.8	10	150	500
Sulphate	1220	U		230			2300	1000	20000	50000
Total Dissolved Solids	1020	N		3100			31000	4000	60000	100000
Phenol Index	1920	U		< 0.030			< 0.30	1	-	-
Dissolved Organic Carbon	1610	N		< 2.5			< 50	500	800	1000

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	



## Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87554 Sample Ref: Sample ID: SC06-6.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 07-Jan-2015		SOP		Accred.		Units		Landfill Waste Acceptance Criteria			
Determinand	Total Organic Carbon	Loss on Ignition	Total BTEX	Total PCBs (7 congeners)	TPH Total WAC (Mineral Oil)	Total (of 17) PAHs	pH	Acid Neutralisation Capacity	Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill
	2625	2610	2760	2815	2670	2700	2010	2015	3	5	6
									--	--	10
									6	--	--
									1	--	--
									500	--	--
									100	--	--
									--	>6	--
									--	To evaluate	To evaluate
									<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
<b>Eluate Analysis</b>									<b>10:1 Eluate mg/kg</b>		
Arsenic	1450	U	0.013	U	0.13	0.5	2	25			
Barium	1450	U	0.005	U	< 0.50	20	100	300			
Cadmium	1450	U	< 0.0001	U	< 0.010	0.04	1	5			
Chromium	1450	U	0.073	U	0.73	0.5	10	70			
Copper	1450	U	0.004	U	< 0.050	2	50	100			
Mercury	1450	U	< 0.0005	U	< 0.005	0.01	0.2	2			
Molybdenum	1450	U	0.041	U	0.41	0.5	10	30			
Nickel	1450	U	0.003	U	< 0.050	0.4	10	40			
Lead	1450	U	< 0.001	U	< 0.010	0.5	10	50			
Antimony	1450	U	0.002	U	0.021	0.06	0.7	5			
Selenium	1450	U	0.016	U	0.16	0.1	0.5	7			
Zinc	1450	U	0.024	U	< 0.50	4	50	200			
Chloride	1220	U	1600	U	16000	800	15000	25000			
Fluoride	1220	U	1.1	U	11	10	150	500			
Sulphate	1220	U	250	U	2500	1000	20000	50000			
Total Dissolved Solids	1020	N	3100	U	31000	4000	60000	100000			
Phenol Index	1920	U	< 0.030	U	< 0.30	1	-	-			
Dissolved Organic Carbon	1610	N	< 2.5	U	< 50	500	800	1000			

<b>Solid Information</b>	
Dry mass of test portion/kg	0.09
Moisture (%)	

# Results Summary - Single Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369  
 Chemtest Sample ID: 87555  
 Sample Ref:  
 Sample ID: SC06-6.1  
 Top Depth(m): 1.00  
 Bottom Depth(m):  
 Sampling Date: 07-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	1.8	5	6
Loss on Ignition	2610	U	%	8.3	--	10
Total BTEX	2760	U	mg/kg	< 0.01	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	--	--
Total (of 17) PAHs	2700	N	mg/kg	19	--	--
pH	2010	U		7.5	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.002	To evaluate	To evaluate
<b>Eluate Analysis</b>			<b>10:1 Eluate mg/l</b>	<b>10:1 Eluate mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	0.017	0.17	2	25
Barium	1450	U	0.018	< 0.50	100	300
Cadmium	1450	U	0.002	< 0.010	1	5
Chromium	1450	U	0.12	1.2	10	70
Copper	1450	U	0.006	0.062	50	100
Mercury	1450	U	< 0.0005	< 0.005	0.2	2
Molybdenum	1450	U	0.1	1	10	30
Nickel	1450	U	0.004	< 0.050	10	40
Lead	1450	U	< 0.001	< 0.010	10	50
Antimony	1450	U	0.007	0.067	0.7	5
Selenium	1450	U	0.022	0.22	0.5	7
Zinc	1450	U	0.02	< 0.50	50	200
Chloride	1220	U	1500	15000	15000	25000
Fluoride	1220	U	0.88	8.8	150	500
Sulphate	1220	U	86	860	20000	50000
Total Dissolved Solids	1020	N	2800	28000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	-	-
Dissolved Organic Carbon	1610	N	9.1	91	800	1000

Solid Information	
Dry mass of test portion/kg	0.09
Moisture (%)	

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87529  
**Sample Ref:**  
**Sample ID:** SL11.2  
**Top Depth(m):** 2.00  
**Bottom Depth(m):**  
**Sampling Date:** 05-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.98	3	6
Loss on Ignition	2610	U	%	2.8	--	10
Total BTEX	2760	U	mg/kg	< 0.01	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	100	--
pH	2010	U		8.4	--	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.05	--	To evaluate
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	0.014	< 0.050	0.054	0.5
Barium	1450	U	0.03	< 0.50	< 0.50	20
Cadmium	1450	U	0.0002	< 0.010	< 0.010	0.04
Chromium	1450	U	0.022	< 0.050	0.11	0.5
Copper	1450	U	0.007	< 0.050	< 0.050	2
Mercury	1450	U	< 0.0005	< 0.001	< 0.005	0.01
Molybdenum	1450	U	0.091	0.18	0.25	0.5
Nickel	1450	U	0.002	< 0.050	< 0.050	0.4
Lead	1450	U	< 0.001	< 0.010	< 0.010	0.5
Antimony	1450	U	0.013	0.026	0.044	0.06
Selenium	1450	U	0.018	0.035	0.055	0.1
Zinc	1450	U	0.015	< 0.50	< 0.50	4
Chloride	1220	U	1600	3100	3400	800
Fluoride	1220	U	0.59	1.2	1.8	10
Sulphate	1220	U	190	370	430	1000
Total Dissolved Solids	1020	N	3000	5900	7700	4000
Phenol Index	1920	U	< 0.030	< 0.30	< 0.50	1
Dissolved Organic Carbon	1610	N	4.1	< 50	< 50	500

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	17

Leachate Test Information	
Leachant volume 1st extract/l	0.315
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.27

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87530  
**Sample Ref:**  
**Sample ID:** SL15.1  
**Top Depth(m):** 1.00  
**Bottom Depth(m):**  
**Sampling Date:** 05-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.49	3	6
Loss on Ignition	2610	U	%	1.9	--	10
Total BTEX	2760	U	mg/kg	< 0.01	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	100	--
pH	2010	U		8.9	--	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	0.009	< 0.050	0.5	25
Barium	1450	U	0.029	< 0.50	20	300
Cadmium	1450	U	< 0.0001	< 0.010	0.04	5
Chromium	1450	U	0.025	< 0.050	0.5	70
Copper	1450	U	0.009	< 0.050	2	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	2
Molybdenum	1450	U	0.012	< 0.050	0.5	30
Nickel	1450	U	0.004	< 0.050	0.4	40
Lead	1450	U	< 0.001	< 0.010	0.5	50
Antimony	1450	U	0.003	< 0.010	0.06	5
Selenium	1450	U	0.019	0.038	0.1	7
Zinc	1450	U	0.015	< 0.50	4	200
Chloride	1220	U	1300	2600	800	25000
Fluoride	1220	U	0.74	2	10	500
Sulphate	1220	U	180	370	1000	50000
Total Dissolved Solids	1020	N	2400	5800	4000	100000
Phenol Index	1920	U	< 0.030	< 0.50	1	-
Dissolved Organic Carbon	1610	N	5.4	< 50	500	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.327
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.163



## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87531  
**Sample Ref:**  
**Sample ID:** SL03-SL03.1  
**Top Depth(m):** 1.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.95	3	6
Loss on Ignition	2610	U	%	3.1	--	10
Total BTEX	2760	U	mg/kg	< 0.01	6	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	100	--
pH	2010	U		8.4	--	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.005	--	To evaluate
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	0.016	< 0.050	0.5	25
Barium	1450	U	0.029	< 0.50	20	300
Cadmium	1450	U	0.0002	< 0.010	0.04	5
Chromium	1450	U	0.037	0.071	0.5	70
Copper	1450	U	0.015	< 0.050	2	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	2
Molybdenum	1450	U	0.11	0.24	0.5	30
Nickel	1450	U	0.014	< 0.050	0.4	40
Lead	1450	U	0.003	< 0.010	0.5	50
Antimony	1450	U	0.003	< 0.010	0.06	5
Selenium	1450	U	0.022	0.042	0.1	7
Zinc	1450	U	0.026	< 0.50	4	200
Chloride	1220	U	2000	3700	800	25000
Fluoride	1220	U	0.7	2.3	10	500
Sulphate	1220	U	350	650	1000	50000
Total Dissolved Solids	1020	N	3800	8500	4000	100000
Phenol Index	1920	U	< 0.030	< 0.50	1	-
Dissolved Organic Carbon	1610	N	6.5	< 50	500	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	24

Leachate Test Information	
Leachant volume 1st extract/l	0.295
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.231

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87532  
**Sample Ref:**  
**Sample ID:** SL03-SL03.2  
**Top Depth(m):** 2.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria					
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill			
Total Organic Carbon	2625	U	%		0.21	3	6		
Loss on Ignition	2610	U	%		1.8	--	10		
Total BTEX	2760	U	mg/kg		< 0.01	6	--		
Total PCBs (7 congeners)	2815	U	mg/kg		< 0.10	1	--		
TPH Total WAC (Mineral Oil)	2670	U	mg/kg		< 10	500	--		
Total (of 17) PAHs	2700	N	mg/kg		< 2.0	100	--		
pH	2010	U			8.8	--	--		
Acid Neutralisation Capacity	2015	N	mol/kg		0.081	--	To evaluate		
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>8:1 mg/l</b>	<b>2:1 mg/kg</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.011	< 0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.02	0.004	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.032	0.04	0.063	0.17	0.5	10	70
Copper	1450	U	0.016	0.003	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.023	0.003	< 0.050	0.061	0.5	10	30
Nickel	1450	U	0.002	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.019	0.002	0.038	0.043	0.1	0.5	7
Zinc	1450	U	0.015	0.003	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1800	94	3600	3700	800	15000	25000
Fluoride	1220	U	0.25	0.087	< 1.0	1.1	10	150	500
Sulphate	1220	U	270	17	530	580	1000	20000	50000
Total Dissolved Solids	1020	N	3300	390	6500	8600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	14

Leachate Test Information	
Leachant volume 1st extract/l	0.321
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.283

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87533  
**Sample Ref:**  
**Sample ID:** SL05-SL05.1  
**Top Depth(m):** 0.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Deterinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria					
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill			
Total Organic Carbon	2625	U	%		0.67	3	5	6	
Loss on Ignition	2610	U	%		4.2	--	--	10	
Total BTEX	2760	U	mg/kg		< 0.01	6	--	--	
Total PCBs (7 congeners)	2815	U	mg/kg		< 0.10	1	--	--	
TPH Total WAC (Mineral Oil)	2670	U	mg/kg		< 10	500	--	--	
Total (of 17) PAHs	2700	N	mg/kg		14	100	--	--	
pH	2010	U			8.1	--	>6	--	
Acid Neutralisation Capacity	2015	N	mol/kg		0.002	--	To evaluate	To evaluate	
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>8:1 mg/l</b>	<b>2:1 mg/kg</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
Arsenic	1450	U	0.024	0.003	< 0.050	0.061	0.5	2	25
Barium	1450	U	0.024	0.013	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0002	< 0.001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.053	0.027	0.1	0.22	0.5	10	70
Copper	1450	U	0.037	0.004	0.07	0.052	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.098	0.008	0.18	0.21	0.5	10	30
Nickel	1450	U	0.002	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.003	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.034	0.003	0.064	0.07	0.1	0.5	7
Zinc	1450	U	0.032	0.006	< 0.50	< 0.50	4	50	200
Chloride	1220	U	3000	200	5600	5900	800	15000	25000
Fluoride	1220	U	1.1	0.19	2.1	3.2	10	150	500
Sulphate	1220	U	460	34	870	930	1000	20000	50000
Total Dissolved Solids	1020	N	5600	580	11000	13000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	7.3	< 2.5	< 50	< 50	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	29

Leachate Test Information	
Leachant volume 1st extract/l	0.279
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.245

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87534  
**Sample Ref:**  
**Sample ID:** SL7-SL7.1  
**Top Depth(m):** 1.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria			
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%		2.4	3	6
Loss on Ignition	2610	U	%		3.3	--	10
Total BTEX	2760	U	mg/kg		<0.01	6	--
Total PCBs (7 congeners)	2815	U	mg/kg		<0.10	1	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg		<10	500	--
Total (of 17) PAHs	2700	N	mg/kg		10	100	--
pH	2010	U			8.3	--	--
Acid Neutralisation Capacity	2015	N	mol/kg		<0.002	--	To evaluate
<b>Eluate Analysis</b>					<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	2:1 mg/l	8:1 mg/l	2:1 mg/kg	8:1 mg/l	
Barium	1450	U	0.016	0.004	<0.050	0.053	2
Cadmium	1450	U	0.022	0.013	<0.50	<0.50	100
Chromium	1450	U	0.0002	<0.001	<0.010	<0.010	1
Copper	1450	U	0.041	0.016	0.08	0.19	10
Mercury	1450	U	0.021	0.003	<0.050	<0.050	50
Molybdenum	1450	U	<0.0005	<0.0005	<0.001	<0.005	0.2
Nickel	1450	U	0.17	0.019	0.32	0.39	10
Lead	1450	U	0.002	<0.001	<0.050	<0.050	10
Antimony	1450	U	<0.001	<0.001	<0.010	<0.010	10
Selenium	1450	U	0.009	0.002	0.017	0.027	0.7
Zinc	1450	U	0.021	0.003	0.041	0.051	0.5
Chloride	1450	U	0.021	0.005	<0.50	<0.50	50
Fluoride	1220	U	2000	140	3900	4000	200
Sulphate	1220	U	0.95	0.18	1.9	2.9	15000
Total Dissolved Solids	1020	N	300	23	590	620	150
Phenol Index	1920	U	3800	450	7400	9200	20000
Dissolved Organic Carbon	1610	N	<0.030	<0.030	<0.30	<0.50	60000
			<2.5	<2.5	<50	<50	800

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	20

Leachate Test Information	
Leachant volume 1st extract/l	0.307
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.246



## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87535  
**Sample Ref:**  
**Sample ID:** SL7-SL7.2  
**Top Depth(m):** 2.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.5	5	6
Loss on Ignition	2610	U	%	1.7	--	10
Total BTEX	2760	U	mg/kg	< 0.01	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	--	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	--	--
pH	2010	U		8.6	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.029	To evaluate	To evaluate
<b>Eluate Analysis</b>			<b>2:1 mg/l</b>	<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	0.009	< 0.050	0.5	25
Barium	1450	U	0.021	< 0.50	20	300
Cadmium	1450	U	0.0002	< 0.010	0.04	5
Chromium	1450	U	0.026	0.052	0.5	70
Copper	1450	U	0.012	< 0.050	2	100
Mercury	1450	U	< 0.0005	< 0.005	0.01	2
Molybdenum	1450	U	0.12	0.24	0.5	30
Nickel	1450	U	0.006	< 0.050	0.4	40
Lead	1450	U	< 0.001	< 0.010	0.5	50
Antimony	1450	U	0.007	0.013	0.06	5
Selenium	1450	U	0.01	0.02	0.1	7
Zinc	1450	U	0.017	< 0.50	4	200
Chloride	1220	U	860	1700	800	25000
Fluoride	1220	U	0.52	1	10	500
Sulphate	1220	U	220	440	1000	50000
Total Dissolved Solids	1020	N	1900	3800	4000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-
Dissolved Organic Carbon	1610	N	< 2.5	< 50	500	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	7.1

Leachate Test Information	
Leachant volume 1st extract/l	0.337
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.26

## Results Summary - 2 Stage WAC

Project: P14127- Bantry

**Chemtest Job No:** 15-00369  
**Chemtest Sample ID:** 87536  
**Sample Ref:**  
**Sample ID:** SL7-SL7.3  
**Top Depth(m):** 3.00  
**Bottom Depth(m):**  
**Sampling Date:** 06-Jan-2015

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.68	3	6
Loss on Ignition	2610	U	%	1.5	--	10
Total BTEX	2760	U	mg/kg	< 0.01	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	< 0.10	1	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	< 10	500	--
Total (of 17) PAHs	2700	N	mg/kg	< 2.0	100	--
pH	2010	U		8.7	--	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate
<b>Eluate Analysis</b>				<b>Cumulative 10:1 mg/kg</b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>	
Arsenic	1450	U	2:1 mg/l	< 0.050	0.5	25
Barium	1450	U	mg/l	< 0.50	20	300
Cadmium	1450	U	< 0.0001	< 0.010	0.04	5
Chromium	1450	U	0.014	< 0.050	0.5	70
Copper	1450	U	0.008	< 0.050	2	100
Mercury	1450	U	< 0.0005	< 0.001	0.01	2
Molybdenum	1450	U	0.017	< 0.050	0.5	30
Nickel	1450	U	0.011	< 0.050	0.4	40
Lead	1450	U	< 0.001	< 0.010	0.5	50
Antimony	1450	U	0.006	0.011	0.06	5
Selenium	1450	U	0.006	0.012	0.1	7
Zinc	1450	U	0.007	< 0.50	4	200
Chloride	1220	U	230	550	800	25000
Fluoride	1220	U	0.79	2.4	10	500
Sulphate	1220	U	59	130	1000	50000
Total Dissolved Solids	1020	N	840	2400	4000	100000
Phenol Index	1920	U	< 0.030	< 0.50	1	-
Dissolved Organic Carbon	1610	N	< 2.5	< 50	500	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.5

Leachate Test Information	
Leachant volume 1st extract/l	0.344
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.268