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MAINTENANCE DREDGING  
BUNCRANA HARBOUR  
PERMIT NO. S0011-02

ANNUAL ENVIRONMENTAL REVIEW  
2017 DREDGING CAMPAIGN

DONEGAL COUNTY COUNCIL

23 APRIL 2018

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BUNCRANA HARBOUR  
PERMIT NO. S0011-02

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DONEGAL COUNTY COUNCIL

23 APRIL 2018

161106	MMCG	AT	CD	Final	DOE&DCC	1	30/04/2018
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MAINTENANCE DREDGING, BUNCRANA HARBOUR  
ANNUAL ENVIRONMENTAL REVIEW – 2017 CAMPAIGN

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1.0 INTRODUCTION

- 1.1 The most recent maintenance dredging campaign at Buncrana was carried out from 09/06/2017 to 01/07/2017 and 03/08/2107 to 07/08/2017 under Permit No. S0011-02. Condition 6.7 of this permit requires an *Annual Environmental Report* be submitted. The permit allows for the removal of up to 20,000 tonnes of recently deposited sand from the critical launch route of the lifeboat, to a deeper area of low usage and low deposition adjacent to the harbour by plough dredging annually.

2.0 REGISTER OF LOADING AND DUMPING AT SEA ACTIVITIES

Date	Total Quantity removed (Metric Tonnes)
9 June 2017 – 1 July 2017 Period 1	5,874
3 August - 7 August 2017 Period 2	1,014
Total 2017	6,888

Table 1 – Summary of Quantity Removed (Assumed 2T/m<sup>3</sup>)

See Attachments 2.1, 2.2, 2.3 and 2.4 for Pre and Post-Loading Hydrographic Surveys.

3.0 OSPAR DUMPING REPORT

See Attachment 3.1 – OSPAR Report

#### 4.0 REPORTED INCIDENTS SUMMARY

There were no reported incidents during the 2017 dredging campaign.

## 5.0 COMPLAINTS SUMMARY

There were no complaints recorded during the 2017 dredging campaign.

## 6.0 MARINE MAMMAL MONITORING

See Attachment 6.1 – Marine Mammal Observations Report Buncrana Harbour Dredging Operations 2017, submitted by Donegal County Council. The common seal was the only recorded marine mammal during observations. No mitigation measures were applicable to operations during the timeframe of observations. The pre-start observations did not record marine mammal activity.

## 7.0 ACCIDENT PREVENTION & EMERGENCY RESPONSE PROCEDURE

See Attachments:

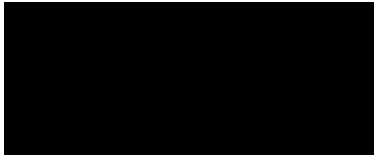
7.1 – Dredging Contractor Safety Statement

7.2 – Donegal County Council Bunrana Dredging Health & Safety Plan

7.3 – Donegal County Council Bunrana Dredging Risk Assessment

8.0 ANNUAL STATEMENT OF MEASURES

The risks associated with the small scale maintenance dredge are low. Donegal County Council, as a Public Body, have the necessary financial measures in place to comply with the licence. A summary of Statement of Measures is presented at Attachment 8.1.



Campbell Davis  
Director  
**Doran Consulting**  
Our ref: cd/161106/at



Alistair Toner  
Chartered Engineer  
**Doran Consulting**

**Attachment 2.1**

Hydrographic Survey Pre-Dredge Period 1 - 30 May 2017

Inishowen Technology Ltd.  
Umricam,  
Buncrana,  
County Donegal,  
Republic of Ireland.

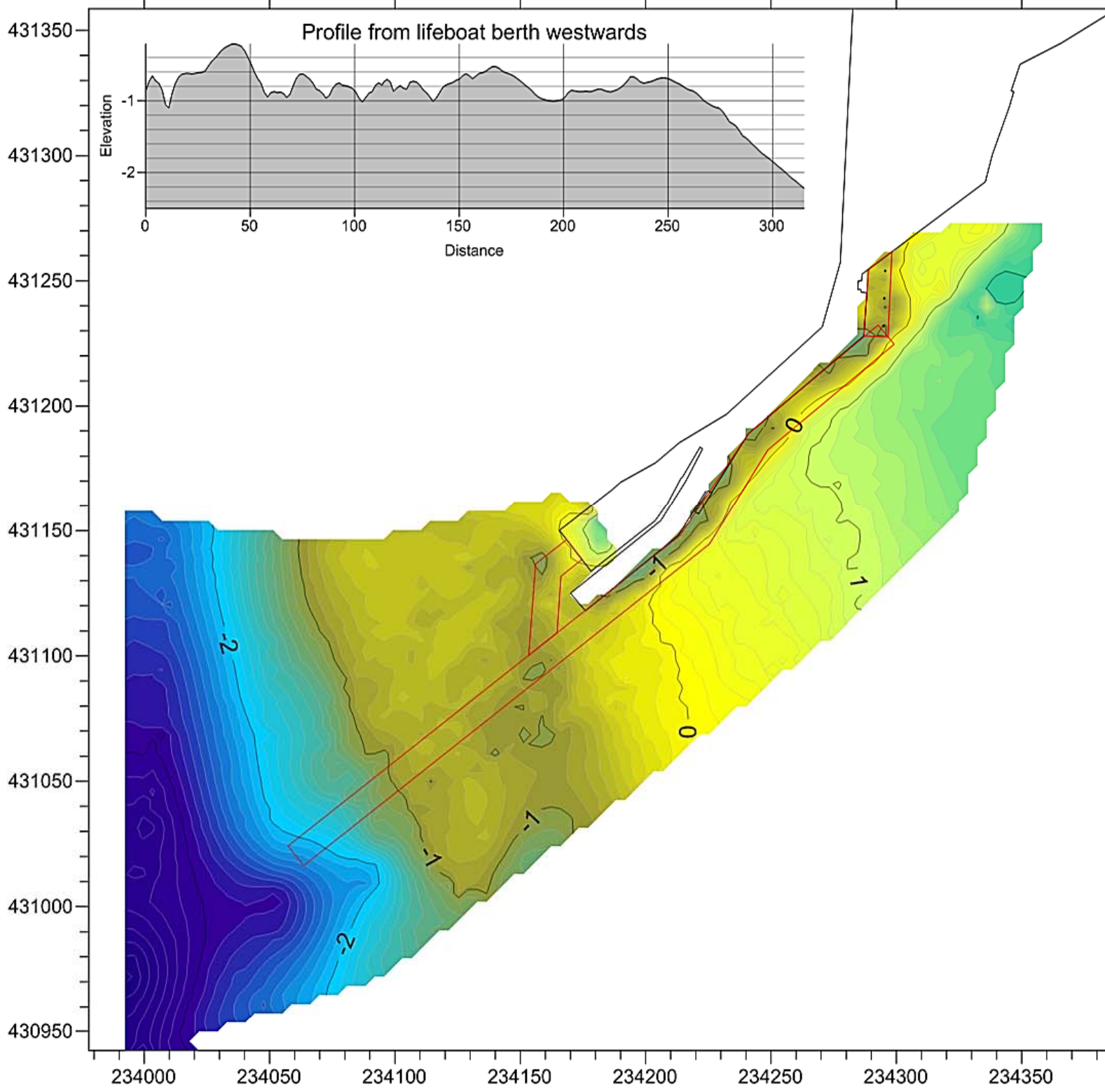
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Inishowen  
Technology  
Ltd

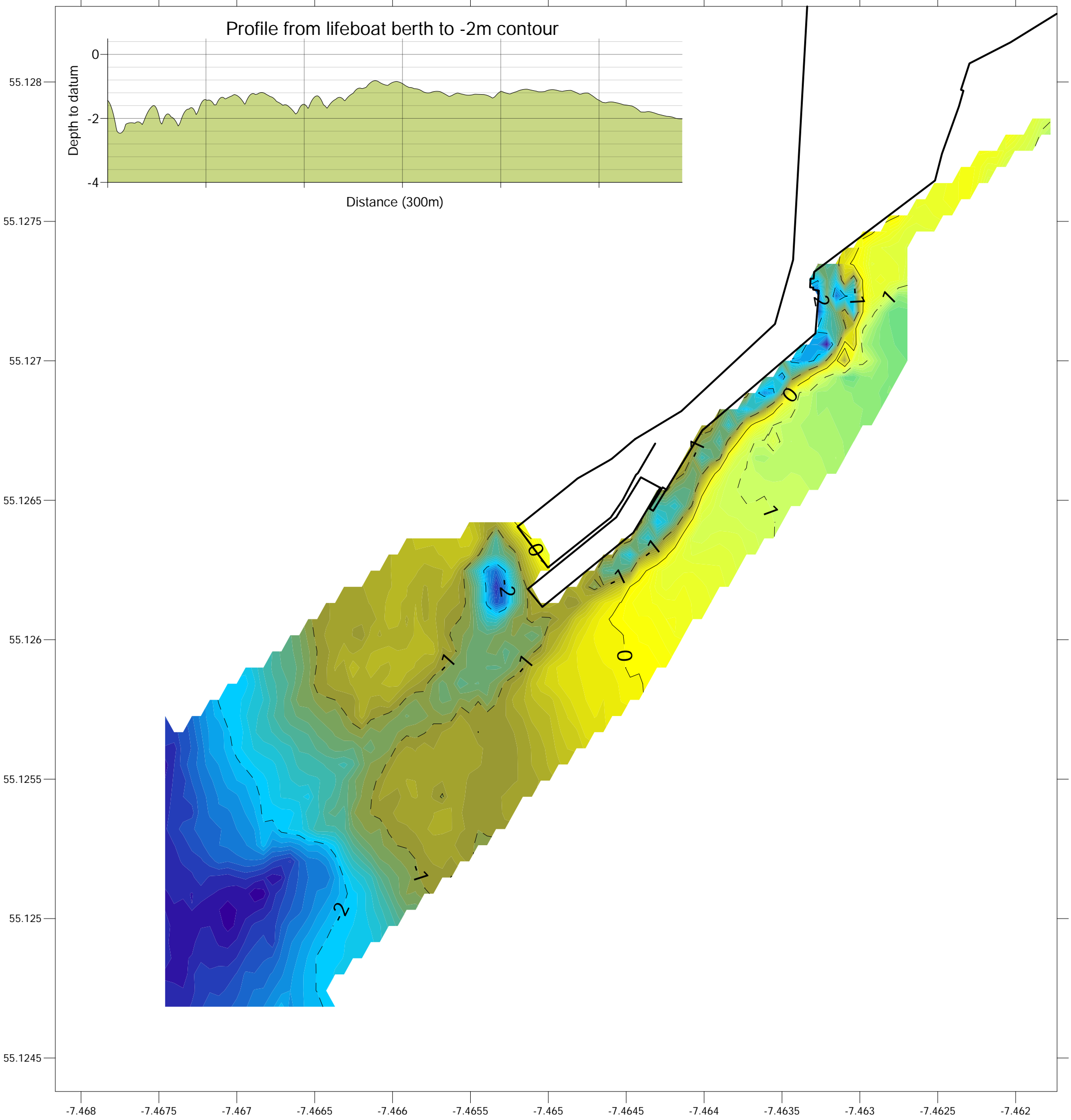


Survey: Buncrana Pier	30MAY17
Depth Datum: Tidal Gauge	Datum: WGS84



**Attachment 2.2**


Hydrographic Survey Post-Dredge Period 1 - 02 July 2017



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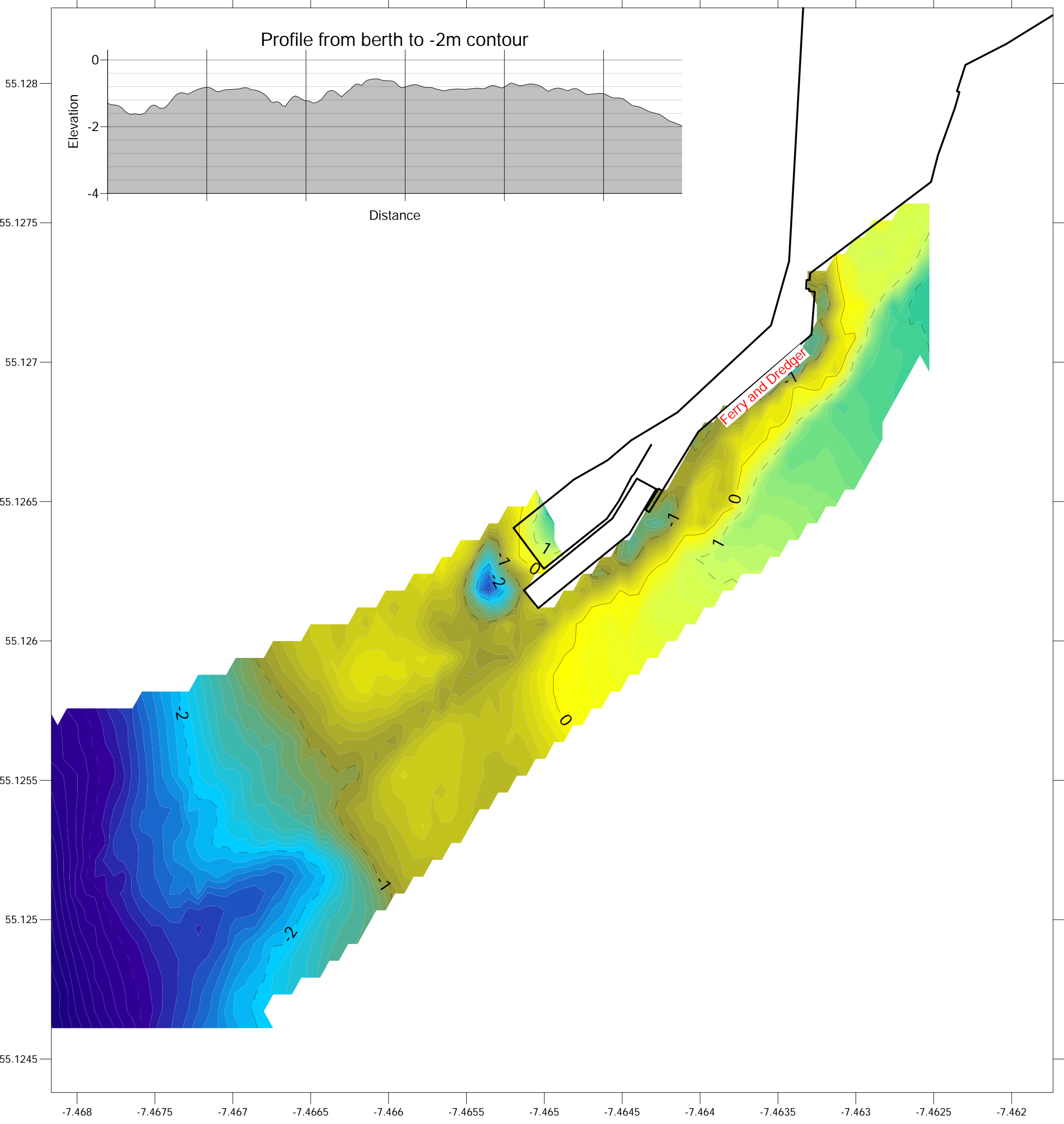
www.iotech.ie



Survey: Buncrana Pier	02JUL17
Depth Datum: Tidal Gauge	Datum: WGS84

**Attachment 2.3**

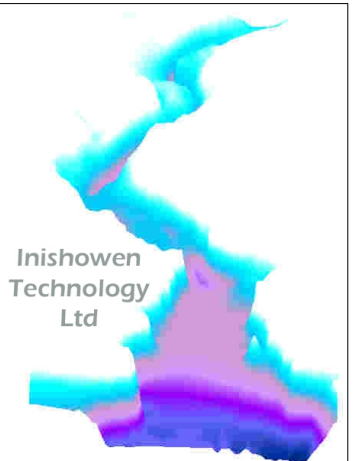
Hydrographic Survey Pre-Dredge Period 2 - 31 July 2017



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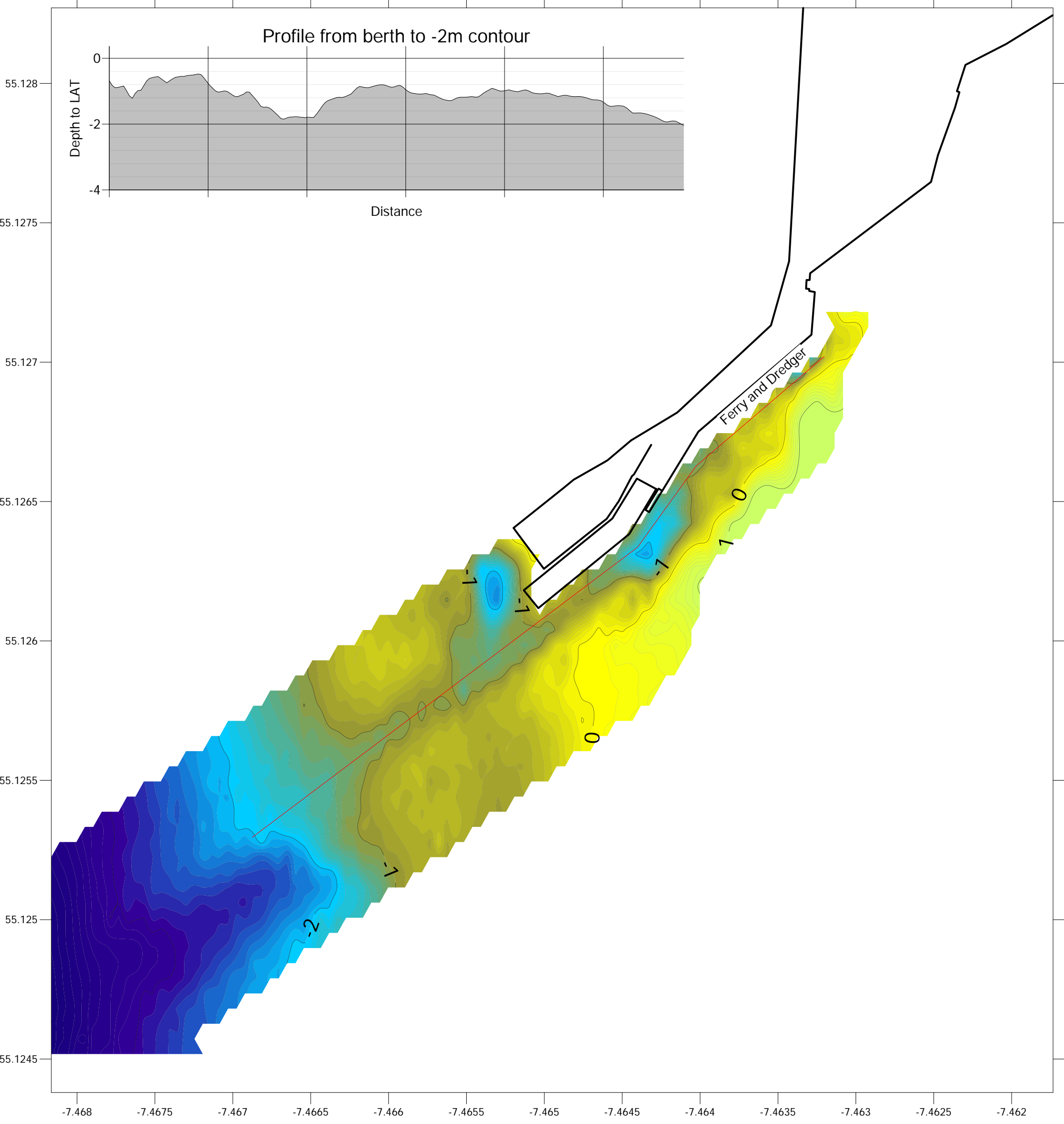
www.iotech.ie



Survey: Buncrana Pier	31JUL17
Depth Datum: Tidal Gauge	Datum: WGS84

**Attachment 2.4**


Hydrographic Survey Post-Dredge Period 2 - 09 August 2017



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Survey: Bunrana Pier	09AUG17
Depth Datum: Tidal Gauge	Datum: WGS84

**Attachment 3.1**  
OSPAR Report

**S0011 - 02 OSPAR RETURN 2016**

**Additional comments**

<b>Permit No.</b>	S0011-02	
<b>Date of issue</b>	Aug-14	
<b>Location of Dredging</b>	Buncrana Harbour	
<b>Amount permitted (tonnes)</b>	20000 tonnes (anually)	
<b>Capital or maintenance?</b>	Maintenance	
<b>Outline coordinates for dredging area (Dec deg WGS84)</b>	Latitude: 55.126122 Longitude: -7.4652529	
<b>Date of dredging (from - to)</b>	09/06/2017 - 08/08/2017	
<b>Method of dredging</b>	Plough Dredging	
<b>Dumpsite</b>	Deep channel approx 160m from Buncrana Pier	

**WASTES DUMPED**

If permit relates to dredge sediments please complete section A. Otherwise, complete section B

**A. DREDGED SEDIMENTS**

(a) Specification of waste (e.g. mud, silt, sand etc.)	Sand/Silt	
(b) Derived from harbour, estuary or open water?	Harbour	
(c) Total quantity of wastes dumped (tonnes)?	6,888 tonnes	
(d) Details of any chemical, toxicity and/or other testing carried out on these sediments. (Reports to be attached as separate documents. Include report references, date of analysis, contractors.)	Refer to attached	
(e) Please provide a map of the area dredged with chemical analysis sampling stations indicated. Please include details of quantities dredged from specific areas.	Refer to attached	
(g) What monitoring has taken place and by whom? Please attach report.	Refer to attached	
(f) Other relevant information	n/a	

**B. OTHER WASTES**

(a) Specification of waste	n/a	
(b) Derived from harbour, estuary, open water or other (please specify)?	n/a	
(c) Total quantity of wastes dumped (tonnes)	n/a	
(d) Details of any chemical, toxicity and/or other testing carried out on this waste (reports to be attached as separate documents)	n/a	
(e) Please provide a map of the area dredged with chemical analysis sampling stations indicated. Please provide details of specific areas and quantities dredged.	n/a	
(f) What monitoring has taken place and by whom? Please attach report.	n/a	
Other relevant information	n/a	

**c. DUMPING AREA :**

**Note: EACH INDIVIDUAL DUMPSITE REQUIRES SEPARATE ENTRY**

**Dumpsite 1**

(a) Location	Deep channel approximately 160m from Buncrana Pier	
Co-ordinates (minimum of 4):	Longitude (decimal degrees)	
(i) 55° 07.84' N	07° 28.22' W	Coordinates as per DaS permit Conditions Schedule A.2
(ii) 55° 07.54' N	07° 28.22' W	
(iii) 55° 07.54' N	07° 28.22' W	
(iv) 55° 07.52' N	07° 28.15' W	
(v) 55° 07.52' N	07° 28.15' W	

(b) Depth (metres)	Approx -3.0m CD	
(c) Distance from coast (km)	Approx 160m from Buncrana Pier	
(d) Tidal flows		
Direction (degrees)	Not available	
Maximum speed (m/s knots)	Not available	
(e) Method of dumping (if more than one vessel involved, give the range of loads and discharge conditions)	Plough Dredging	
(i) Vessel(s) load (tonnes)	Approximately 6 tonnes	
(ii) Manner of discharge from vessel	Plough Dredging out to deeper channel	
(iii) Rate of discharge (te/day)	Approximately tonnes	
(iv) Speed of vessel while dumping (m/s or knots)	n/a plough dredging	
(f) Amount of material dumped	6,888 tonnes	
(g) Type of material (%gravel /	Refer to attached Report	

(h) sand / mud)  
 Other relevant information (e.g. residual water movements): 

None
------

**Dumpsite 2**

(a) Location 

--

Co-ordinates (minimum of 4):  
 Latitude (decimal degrees) Longitude (decimal degrees)


(b) Depth (metres) 

--

(c) Distance from coast (km) 

--

(d) Tidal flows  
 Direction (degrees) 

--

  
 Maximum speed (m/s knots) 

--

(e) Method of dumping (if more than one vessel involved, give the range of loads and discharge conditions) 

--

(i) Vessel(s) load (tonnes) 

--

(ii) Manner of discharge from vessel 

--

(iii) Rate of discharge (te/day) 

--

(iv) Speed of vessel while dumping (m/s or knots) 

--

(f) Amount of material dumped 

--

(g) Type of material (%gravel / sand / mud) 

--

(h) Other relevant information (e.g. residual water movements): 

--

**Dumpsite 3**

(a) Location 

--

Co-ordinates (minimum of 4):  
 Latitude (decimal degrees) Longitude (decimal degrees)


(b) Depth (metres) 

--

(c) Distance from coast (km) 

--

(d) Tidal flows  
 Direction (degrees) 

--

  
 Maximum speed (m/s knots) 

--

(e) Method of dumping (if more than one vessel involved, give the range of loads and discharge conditions) 

--

(i) Vessel(s) load (tonnes) 

--

(ii) Manner of discharge from vessel 

--

(iii) Rate of discharge (te/day) 

--

(iv) Speed of vessel while dumping (m/s or knots) 

--

(f) Amount of material dumped 

--

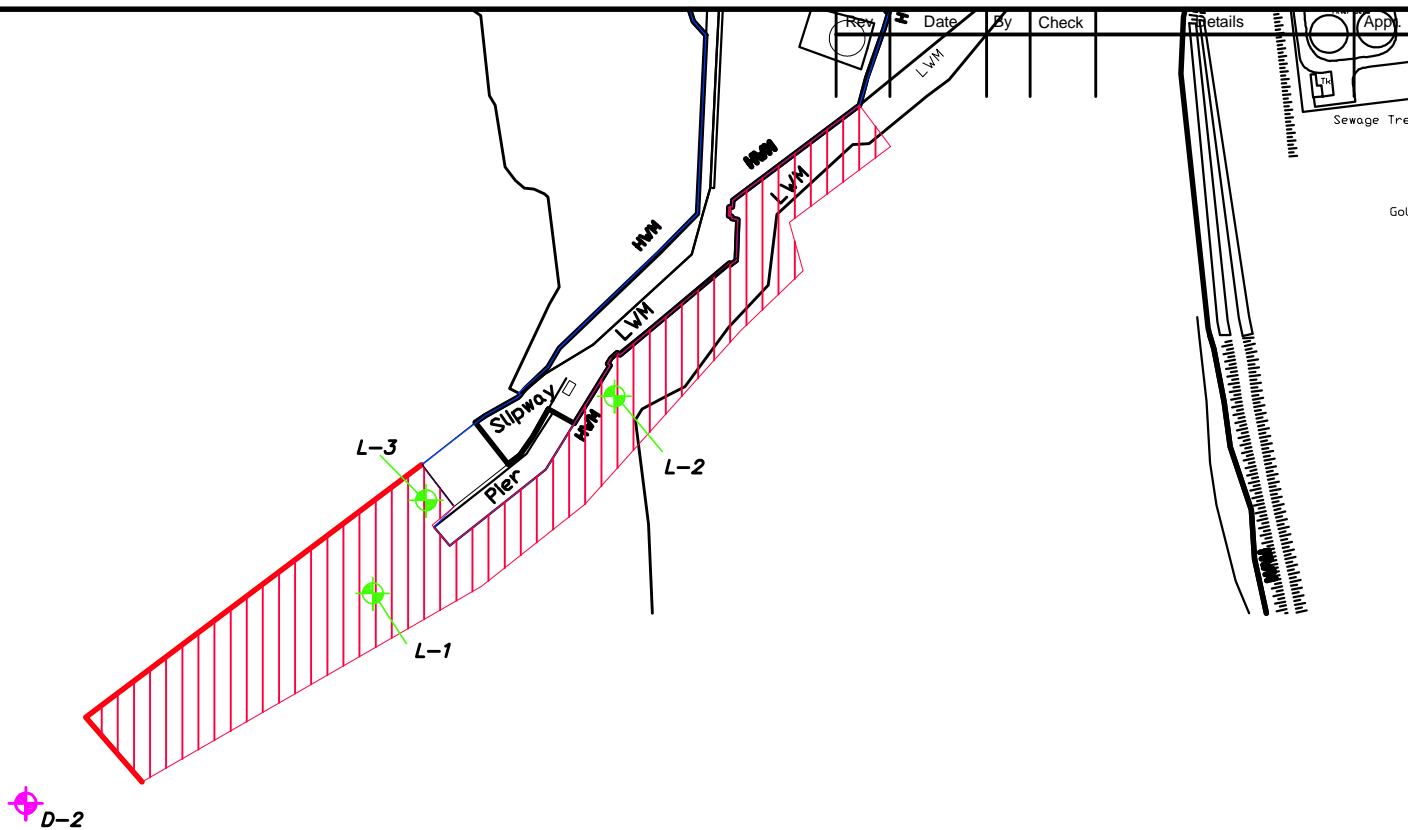
(g) Type of material (%gravel / sand / mud) 

--

(h) Other relevant information (e.g. residual water movements): 

--

**Attachment 3.2**  
Monitoring Points



 *Approximate Extent of Dredge Area*

 *Extent of Pier*

 *Monitoring Point (Load Area)*

 *Monitoring Point (Dump Area)*

*Please note the location of monitoring points are approximate only*

**Attachment 3.3**  
Certificate of Analysis

## Certificate of Analysis

**Report No.:** 14-35430

**Issue No.:** 1  
**Date of Issue** 3/3/2014

**Customer Details:** Darren O'Mahony  
Causeway Geotech Ltd  
8 Drumahiskey Road  
Ballymoney  
Co. Antrim  
BT53 7QL

**Order No.:** Not given

**Customer Reference:** 13-455

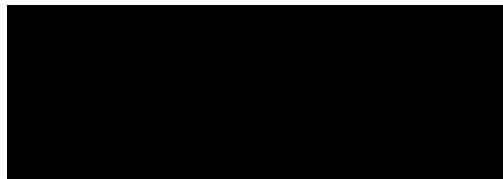
**Quotation Reference:** 140123/06

**Description:** 3 sediment samples in plastic bags

**Date Received:** 24/1/2014

**Test Methods:** Details available on request (refer to SOP code against relevant result/s)

**Notes:** None



**Approved By:** Marco Lattughi, Operational Director

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.  
Observations and interpretations are outside of the scope of UKAS accreditation.  
Results reported herein relate only to the items supplied to the laboratory for testing.



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## Results Summary - Solids, Total Organic Carbon, Organotins & Density

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No.:** Not given

Determinand	CAS No	Codes	SOP	Units	Result	Recovery %	Customer Sample No		
							Customer Sample ID	Certified Reference Material	L1-1
dry solids (at 105°C)			In house	%	n/a	n/a	7.465692 W	7.464025 W	7.465034 W
dry solids (assisted air-drying at <30°C)			208	% w/w	n/a	n/a	55.125675 N	55.126607 N	55.126342 N
moisture content (at 105°C)			In house	% wet/w	n/a	n/a	239430	239431	239432
carbonate % dry matter			In house	%	n/a	n/a	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
total organic carbon*		S		%	n/a	n/a	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
total petroleum hydrocarbons by GCFID (C10 - C40)			In house	mg/kg	n/a	n/a	Surface	Surface	Surface
dibutyltin (DBT) cation	1002-53-5		In house	mg/kg	0.35	78	//	//	//
tributyltin (TBT) cation	56573-85-4		In house	mg/kg	0.63	88			
density (on dry solid)			In house	g/cm3	n/a	n/a			

Dibutyltin and tributyltin results have been dry weight corrected



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## Results Summary - Metals

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No.:** Not given

						<b>Customer Sample No</b>				
						<b>Standard Reference Material</b>	<b>L1-1</b>	<b>L1-2</b>	<b>L1-3</b>	
Customer Sample ID							7.465692 W 55.125675 N	7.464025 W 55.126607 N	7.465034 W 55.126342 N	
RPS Sample No							239430	239431	239432	
<b>Sample Type</b>						<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	
Sample Location						<b>SRM-2702</b>	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour	
Sample Depth (m)							Surface	Surface	Surface	
Sampling Date							/ /	/ /	/ /	
Sampling Time										
<b>Determinand</b>	<b>CAS No</b>	<b>Codes</b>	<b>SOP</b>	<b>Mass</b>	<b>Units</b>	<b>Result</b>	<b>Recovery %</b>			
aluminium*	7429-90-5	SI	ICP-MS	27	mg/kg	74900	89.1	26000	27200	24500
arsenic*	7440-38-2	SI	ICP-MS	75	mg/kg	49.6	91.3	9.50	11.0	9.10
cadmium*	7440-43-9	SI	ICP-MS	111	mg/kg	1.13	138	< 0.10	0.14	0.11
chromium*	7440-47-3	SI	ICP-MS	52	mg/kg	350	99.4	11.0	17.0	11.0
copper*	7440-50-8	SI	ICP-MS	65	mg/kg	Not certified	n/a	3.90	8.50	5.40
lead*	7439-92-1	SI	ICP-MS	208	mg/kg	143	108	8.50	14.0	8.90
lithium*	7439-93-2	SI	ICP-MS	7	mg/kg	Not certified	n/a	5.80	12.0	9.10
manganese*	7439-95-5	SI	ICP-MS	55	mg/kg	1617	92	388	445	418
mercury*	7439-97-6	SI	AFS	202	mg/kg	0.427	95.4	< 0.05	0.05	< 0.05
nickel*	7440-02-0	SI	ICP-MS	60	mg/kg	71	94.2	5.60	8.80	5.80
zinc*	7440-66-6	SI	ICP-MS	65	mg/kg	448	92.3	25.0	42.0	29.0



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## Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls (ICES 7)

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No.:** Not given

**Customer Sample No**

Customer Sample ID  
 RPS Sample No  
**Sample Type**  
 Sample Location  
 Sample Depth (m)  
 Sampling Date  
 Sampling Time

Certified Reference Material	L1-1						
	7.465692 W	55.125675 N					
239430							
SEDIMENT	SEDIMENT						
	Buncrana Harbour						
	Surface						
NIST-1944	/	/					
Determinand	CAS No	Codes	SOP	Units	Result	Recovery %	
hexachlorobenzene (HCB)	118-74-1		In house	mg/kg			< 0.001
alpha-hexachlorocyclohexane (alpha-HCH)	319-84-6		In house	mg/kg			< 0.001
beta-hexachlorocyclohexane (beta-HCH, beta-BHC)	319-85-7		In house	mg/kg			< 0.001
delta-hexachlorocyclohexane (delta-HCH)	319-86-8		In house	mg/kg			< 0.001
gamma-hexachlorocyclohexane (lindane)	58-89-9		In house	mg/kg			< 0.001
2,4,4'-trichlorobiphenyl (PCB congener 28)	7012-37-5		319	mg/kg	134	84	< 0.0002
2,2',5,5'-tetrachlorobiphenyl (PCB congener 52)	35693-99-3		319	mg/kg	71.5	90	< 0.0002
2,2',4,5,5'-pentachlorobiphenyl (PCB congener 101)	37680-73-2		319	mg/kg	66.8	91	< 0.0002
2,3',4,4',5-pentachlorobiphenyl (PCB congener 118)	31508-00-6		319	mg/kg	58.6	101	< 0.0002
2,2',3,4,4',5-hexachlorobiphenyl (PCB 138)	35065-28-2		319	mg/kg	74.5	120	< 0.0002
2,2',4,4',5,5'-hexachlorobiphenyl (PCB 153)	35065-27-1		319	mg/kg	60.7	82	< 0.0002
2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB 180)	35065-29-3		319	mg/kg	50.5	114	< 0.0002

OCL and PCB results have been dry weight corrected



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## Results Summary - Polycyclic Aromatic Hydrocarbons (EPA 16 PAHs)

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No:** Not given

**Customer Sample No**

Customer Sample ID  
 RPS Sample No  
**Sample Type**  
 Sample Location  
 Sample Depth (m)  
 Sampling Date  
 Sampling Time

Determinand	CAS No	Codes	SOP	Mass	Units	Certified Reference Material		AQC spike	L1-1
						Result	Recovery %	Recovery %	7.465692 W 55.125675 N
naphthalene	91-20-3	GC-MS	304	128	mg/kg	Not certified	n/a	104	< 0.02
acenaphthylene	208-96-8	GC-MS	304	152	mg/kg	Not certified	n/a	88	< 0.02
acenaphthene	83-32-9	GC-MS	304	154	mg/kg	Not certified	n/a	94	< 0.02
fluorene	86-73-7	GC-MS	304	166	mg/kg	Not certified	n/a	100	< 0.02
phenanthrene	85-01-8	GC-MS	304	178	mg/kg	4.9	93	114	< 0.02
anthracene	120-12-7	GC-MS	304	178	mg/kg	Not certified	n/a	96	< 0.02
fluoranthene	206-44-0	GC-MS	304	202	mg/kg	7.84	88	115	< 0.02
pyrene	129-00-0	GC-MS	304	202	mg/kg	7.86	81	115	< 0.02
benzo(a)anthracene	56-55-3	GC-MS	304	228	mg/kg	4.39	93	114	< 0.02
chrysene	218-01-9	GC-MS	304	228	mg/kg	4.42	91	111	< 0.02
benzo(b)fluoranthene	205-99-2	GC-MS	304	252	mg/kg	6.04	101	110	< 0.02
benzo(k)fluoranthene	207-08-9	GC-MS	304	252	mg/kg	1.98	86	105	< 0.02
benzo(a)pyrene	50-32-8	GC-MS	304	252	mg/kg	3.7	86	109	< 0.02
indeno(1,2,3-c,d)pyrene	193-39-5	GC-MS	304	276	mg/kg	2.67	96	95	< 0.02
dibenzo(a,h)anthracene	53-70-3	GC-MS	304	278	mg/kg	0.698	92	91	< 0.02
benzo(g,h,i)perylene	191-24-2	GC-MS	304	276	mg/kg	2.75	97	98	< 0.02

PAH results have been dry weight corrected

## Results Summary - PSA Size Class & Statistics

Report No.: **14-35430**

Customer Reference 13-455

Order No: Not given

				L1-1	L1-2	L1-3
Customer Sample No				7.465692W	7.464025W	7.465034W
Customer Sample ID				55.125675N	55.126607N	55.126342N
RPS Sample No				239430	239431	239432
Sample Type				SEDIMENT	SEDIMENT	SEDIMENT
Sample Location				Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)				Surface	Surface	Surface
Sampling Date				//	//	//
Sampling Time						
Sediment	mm	phi φ	Units			
Very coarse gravel	>32<64	<-5>-6	%	0.00	0.00	0.00
Coarse gravel	>16<32	<-4>-5	%	0.00	0.00	0.00
Medium gravel	>8<16	<-3>-4	%	0.00	0.00	0.00
Fine gravel	>4<8	<-2>-3	%	0.11	0.00	0.00
Very fine gravel	>2<4	<-1>-2	%	0.25	0.00	0.07
Very coarse sand	>1<2	<0>-1	%	0.39	0.00	0.06
Coarse sand	>0.5<1	<1>0	%	0.00	0.59	0.00
Medium sand	>0.25<0.5	<2>1	%	23.61	26.65	23.61
Fine sand	>0.125<0.25	<3>2	%	65.40	51.34	60.93
Very fine sand	>0.0625<0.125	<4>3	%	9.98	9.88	9.72
Very coarse silt	>0.03125<0.0625	<5>4	%	0.00	1.56	0.45
Coarse silt	>0.015625<0.03125	<6>5	%	0.00	3.91	2.31
Medium silt	>0.007813<0.015625	<7>6	%	0.02	2.77	1.05
Fine silt	>0.003906<0.007813	<8>7	%	0.18	2.28	1.24
Very fine silt	>0.001953<0.003906	<9>8	%	0.05	0.95	0.56
Clay	<0.001953	>9	%	0.00	0.08	0.00
Statistics*	Mean (phi)			2.35	2.48	2.39
	Sorting			0.543	1.16	0.831
	Skewness			0.018	0.366	0.265
	Kurtosis			0.974	2.12	1.81
	% Silt/Clay		%	0.25	11.55	5.61
	Textural Group**			Slightly Gravelly Sand	Muddy Sand	Slightly Gravelly Sand

\* Folk & Ward

\*\* GRADISTAT classification system (Blott, S. J. & Pye, K., 2001)



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## Results Summary - PSA Results

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No:** Not given

Customer Sample No	L1-1	L1-2	L1-3
Customer Sample ID	7.465692W 55.125675N	7.464025W 55.126607N	7.465034W 55.126342N
RPS Sample No	239430	239431	239432
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)	Surface	Surface	Surface
Sampling Date	//	//	//
Sampling Time			

Determinand	CAS No	Codes	SOP	Units	L1-1	L1-2	L1-3
sample type*		S			Unimodal, Moderately Well Sorted	Unimodal, Poorly Sorted	Unimodal, Moderately Sorted
textural group (GRADISTAT)*		S			Slightly Gravelly Sand	Muddy Sand	Slightly Gravelly Sand
sediment name*		S			Slightly Very Fine Gravelly Fine Sand	Coarse Silty Fine Sand	Slightly Very Fine Gravelly Fine Sand
arithmetic mean (method of moments)*		S		um	226	200	203
arithmetic sorting (method of moments)*		S		um	229	110	117
arithmetic skewness (method of moments)*		S		um	13.5	0.502	10.7
arithmetic kurtosis (method of moments)*		S		um	231	4.07	263
geometric mean (method of moments)*		S		um	196	148	168
geometric sorting (method of moments)*		S		um	1.56	2.71	2.12
geometric skewness (method of moments)*		S		um	-0.131	-2.10	-2.82
geometric kurtosis (method of moments)*		S		um	20.2	7.32	13.4
logarithmic mean (method of moments)*		S		phi	2.35	2.76	2.57



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## Results Summary - PSA Results

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
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Customer Sample No	L1-1	L1-2	L1-3
Customer Sample ID	7.465692W 55.125675N	7.464025W 55.126607N	7.465034W 55.126342N
RPS Sample No	239430	239431	239432
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)	Surface	Surface	Surface
Sampling Date	/ /	/ /	/ /
Sampling Time			

Determinand	CAS No	Codes	SOP	Units	L1-1	L1-2	L1-3
logarithmic sorting (method of moments)*		S		phi	0.641	1.44	1.09
logarithmic skewness (method of moments)*		S		phi	0.131	2.10	2.82
logarithmic kurtosis (method of moments)*		S		phi	20.2	7.32	13.4
mean (Folk and Ward method - um)*		S		um	196	180	190
sorting (Folk and Ward method - um)*		S		um	1.46	2.24	1.78
skewness (Folk and Ward method - um)*		S		um	-0.018	-0.366	-0.265
kurtosis (Folk and Ward method - um)*		S		um	0.974	2.12	1.81
mean (Folk and Ward method - phi)*		S		phi	2.35	2.48	2.39
sorting (Folk and Ward method - phi)*		S		phi	0.543	1.16	0.831
skewness (Folk and Ward method - phi)*		S		phi	0.018	0.366	0.265
kurtosis (Folk and Ward method - phi)*		S		phi	0.974	2.12	1.81
mean description (Folk and Ward method)*		S			Fine Sand	Fine Sand	Fine Sand
sorting description (Folk and Ward method)*		S			Moderately Well Sorted	Poorly Sorted	Moderately Sorted
skewness description (Folk and Ward method)*		S			Symmetrical	Very Fine Skewed	Fine Skewed



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## Results Summary - PSA Results

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**Customer Reference:** 13-455  
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RPS Sample No	239430	239431	239432
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)	Surface	Surface	Surface
Sampling Date	//	//	//
Sampling Time			

Determinand	CAS No	Codes	SOP	Units			
kurtosis description (Folk and Ward method)*		S			Mesokurtic	Very Leptokurtic	Very Leptokurtic
MODE 1 - um*		S		um	213	213	213
MODE 2 - um*		S		um			
MODE 3 - um*		S		um			
MODE 1 - phi*		S		phi	2.25	2.25	2.25
MODE 2 - phi*		S		phi			
MODE 3 - phi*		S		phi			
D10 - um*		S		um	124	31.4	102
D50 - um*		S		um	196	190	191
D90 - um*		S		um	320	337	318
(D90/D10) - um*		S		um	2.58	10.7	3.11
(D90 - D10) - um*		S		um	196	306	216
(D75/D25) - um*		S		um	1.67	1.97	1.74
(D75 - D25) - um*		S		um	99.5	128	105
D10 - phi*		S		phi	1.64	1.57	1.65



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## Results Summary - PSA Results

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No:** Not given

Customer Sample No	L1-1	L1-2	L1-3
Customer Sample ID	7.465692W 55.125675N	7.464025W 55.126607N	7.465034W 55.126342N
RPS Sample No	239430	239431	239432
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)	Surface	Surface	Surface
Sampling Date	/ /	/ /	/ /
Sampling Time			

Determinand	CAS No	Codes	SOP	Units	L1-1	L1-2	L1-3
D50 - phi*		S		phi	2.35	2.39	2.39
D90 - phi*		S		phi	3.01	4.99	3.29
(D90/D10) - phi*		S		phi	1.83	3.18	1.99
(D90 - D10) - phi*		S		phi	1.37	3.42	1.64
(D75/D25) - phi*		S		phi	1.37	1.50	1.40
(D75 - D25) - phi*		S		phi	0.738	0.976	0.802
% gravel*		S		%	0.36	0.0	0.07
% sand*		S		%	99.39	88.46	94.32
% mud*		S		%	0.25	11.54	5.61
% very coarse gravel (>32<64mm or <-5>-6phi)*		S		%	0.00	0.0	0.0
% coarse gravel (>16<32mm or <-4>-5phi)*		S		%	0.00	0.0	0.0
% medium gravel (>8<16mm or <-3>-4phi)*		S		%	0.00	0.0	0.0
% fine gravel (>4<8mm or <-2>-3phi)*		S		%	0.11	0.0	0.0
% very fine gravel (>2<4mm or <-1>-2phi)*		S		%	0.25	0.0	0.07
% very coarse sand (>1<2mm or <0>-1phi)*		S		%	0.39	0.0	0.06



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## Results Summary - PSA Results

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No:** Not given

Customer Sample No	L1-1	L1-2	L1-3
Customer Sample ID	7.465692W 55.125675N	7.464025W 55.126607N	7.465034W 55.126342N
RPS Sample No	239430	239431	239432
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour
Sample Depth (m)	Surface	Surface	Surface
Sampling Date	//	//	//
Sampling Time			

Determinand	CAS No	Codes	SOP	Units	L1-1	L1-2	L1-3
% coarse sand (>0.5<1mm or <1>0phi)*		S		%	0.00	0.59	0.0
% medium sand (>0.25<0.5mm or <2>1phi)*		S		%	23.61	26.65	23.61
% fine sand (>0.125<0.25mm or <3>2phi)*		S		%	65.40	51.34	60.93
% very fine sand (>0.0625<0.125mm or <4>3phi)*		S		%	9.98	9.88	9.72
% very coarse silt (>0.03125<0.0625mm or <5>4phi)*		S		%	0.0	1.56	0.45
% coarse silt (>0.015625<0.03125mm or <6>5phi)*		S		%	0.0	3.91	2.31
% medium silt (>0.007813<0.015625mm or <7>6phi)*		S		%	0.02	2.77	1.05
% fine silt (>0.003906<0.007813mm or <8>7phi)*		S		%	0.18	2.28	1.24
% very fine silt (>0.001953<0.003906mm or <9>8phi)*		S		%	0.05	0.95	0.56
% clay (<0.001953mm or >9phi)*		S		%	0.0	0.08	0.0



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## Results Summary - PSA Wentworth Scale

**Report No.:** 14-35430  
**Customer Reference:** 13-455  
**Order No:** Not given

Customer Sample No	L1-1	L1-2	L1-3	
Customer Sample ID	7.465692W 55.125675N	7.464025W 55.126607N	7.465034W 55.126342N	
RPS Sample No	239430	239431	239432	
<b>Sample Type</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	<b>SEDIMENT</b>	
Sample Location	Buncrana Harbour	Buncrana Harbour	Buncrana Harbour	
Sample Depth (m)	Surface	Surface	Surface	
Sampling Date	/ /	/ /	/ /	
Sampling Time				
Parameter	Units			
Pebble	%	0.11	0.00	0.00
Granule	%	0.25	0.00	0.07
Very coarse sand	%	0.39	0.00	0.06
Coarse sand	%	0.00	0.59	0.00
Medium sand	%	23.61	26.65	23.61
Fine sand	%	65.40	51.34	60.93
Very fine sand	%	9.98	9.88	9.72
Silt Clay	%	0.25	11.55	5.61
<b>Total</b>	%	100.0	100.0	100.0



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**Report No.:** 14-35430  
Customer Reference: 13-455  
Order No: Not given

### Comments

Job	Description	Job Comments
14-35430	3 sediment samples in plastic bags	239430 Jar contents examined: Brown in colour, texture of sand, odour similar to salty water, no presence of animals. <input type="checkbox"/> <input type="checkbox"/> 239431 Jar contents examined: Dark grey in colour, texture of sand with a large amount of algal material, odour of fish, no presence of animals. <input type="checkbox"/> <input type="checkbox"/> 239432 Jar contents examined: Brown in colour, texture of sand with small amount of algal material, no strong odour, no presence of animals.



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## Report Information

Results for soil/sediment samples are expressed on a dry weight basis unless otherwise stated.

### Key to Report Codes

S	Subcontracted to approved laboratory
SI	Subcontracted to internal RPS Group Laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample

### Sample Retention and Disposal

Samples will generally\* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue of this report
Waters	1 month from the issue date of this report
Other Liquids	2 months from the issue date of this report
Solids (including sediments)	2 months from the issue date of this report

\*Sample retention may be subject to agreement with the customer for particular projects

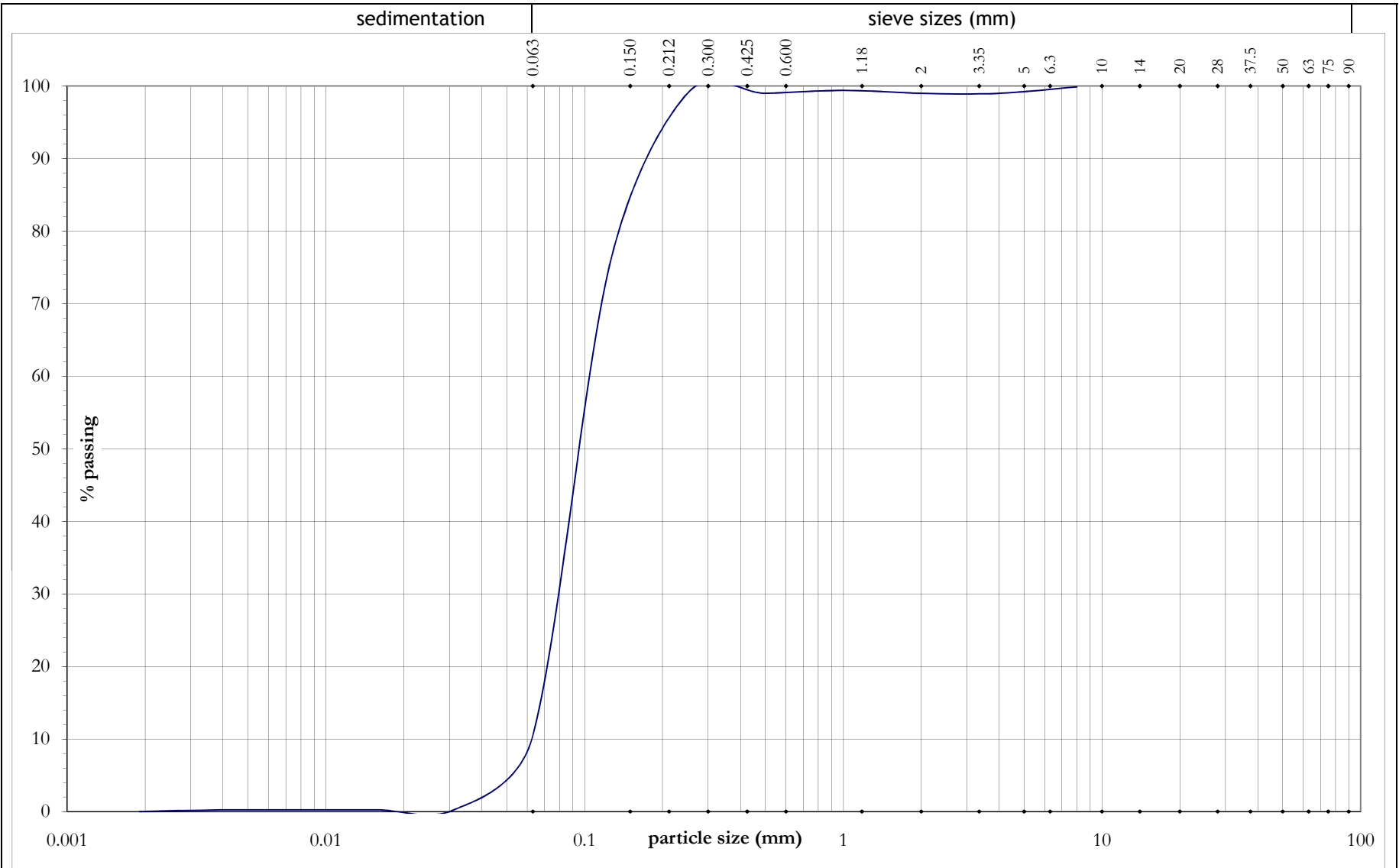
### Analytical Methods

PAH's and PCB's	GCMS analysis following extraction of the wet sediment with hexane:acetone by ultrasonic and equilibrium extraction. Extract cleaned-up with alumina and activated copper.
Total Hydrocarbons	GCFID analysis following extraction of the wet sediment with dichloromethane:methanol by ultrasonic extraction and subsequent partitioning with water. Extract cleaned-up with silica and activated copper.
Metals	ICP-MS analysis following microwave assisted digestion in hydrofluoric acid of the dried (<30°C) and ground sediment from the <2mm fraction
TOC	Combustion and infrared analysis following carbonate removal with hydrochloric acid
Carbonate Content	Gravimetric analysis of a dri portion of the sediment following carbonate removal with hydrochloric acid.
PSA	Wet and dry sieving followed by laser diffraction analysis
Density	Determination of density from the dry sediment by gravimetric analysis of a known volume of sediment
Moisture content and dry solids at 105°C	A portion of the wet sediment is dried at 105°C to constant weight
Dry solids at 30°C	A portion of the wet sediment is dried in a temperature controlled and hepa filtered cabinet <30°C
TBT and DBT	GCMS analysis following the extraction of the wet sediment and subsequent derivatisation

### Laboratories

RPS Letchworth	UKAS Test House 1663
RPS Manchester	UKAS Test House 0605
ESG Scientifics (TOC only)	UKAS Test House 0001
Thompson PSA only	

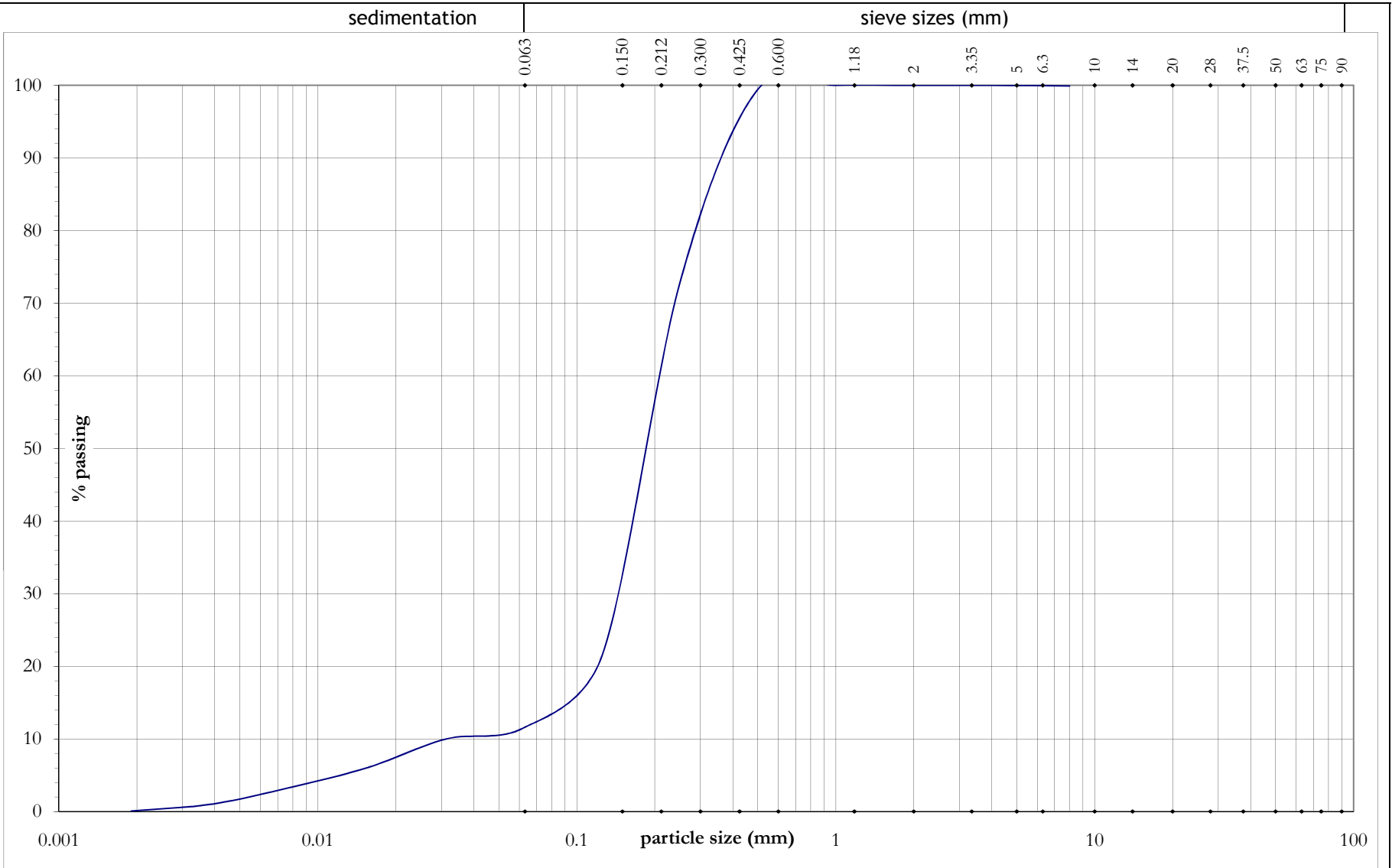
Particle size (mm)	% passing
8	100
4	99
2	99
1	99
0.5	99
0.25	99
0.125	75
0.0625	10
0.03125	0
0.015625	0
0.0078	0
0.0039	0
0.0019	0.0



Fines 10%	fine	medium	coarse	fine	medium	coarse	Cobbles 0%
	Sand 89%			Gravel 1%			

Project:	Plough Dredging at Buncrana Pier	Exploratory Hole No.:	L1-1	Sample			
				Type	No.	at (m)	to (m)
Job No.:	13-455			0			

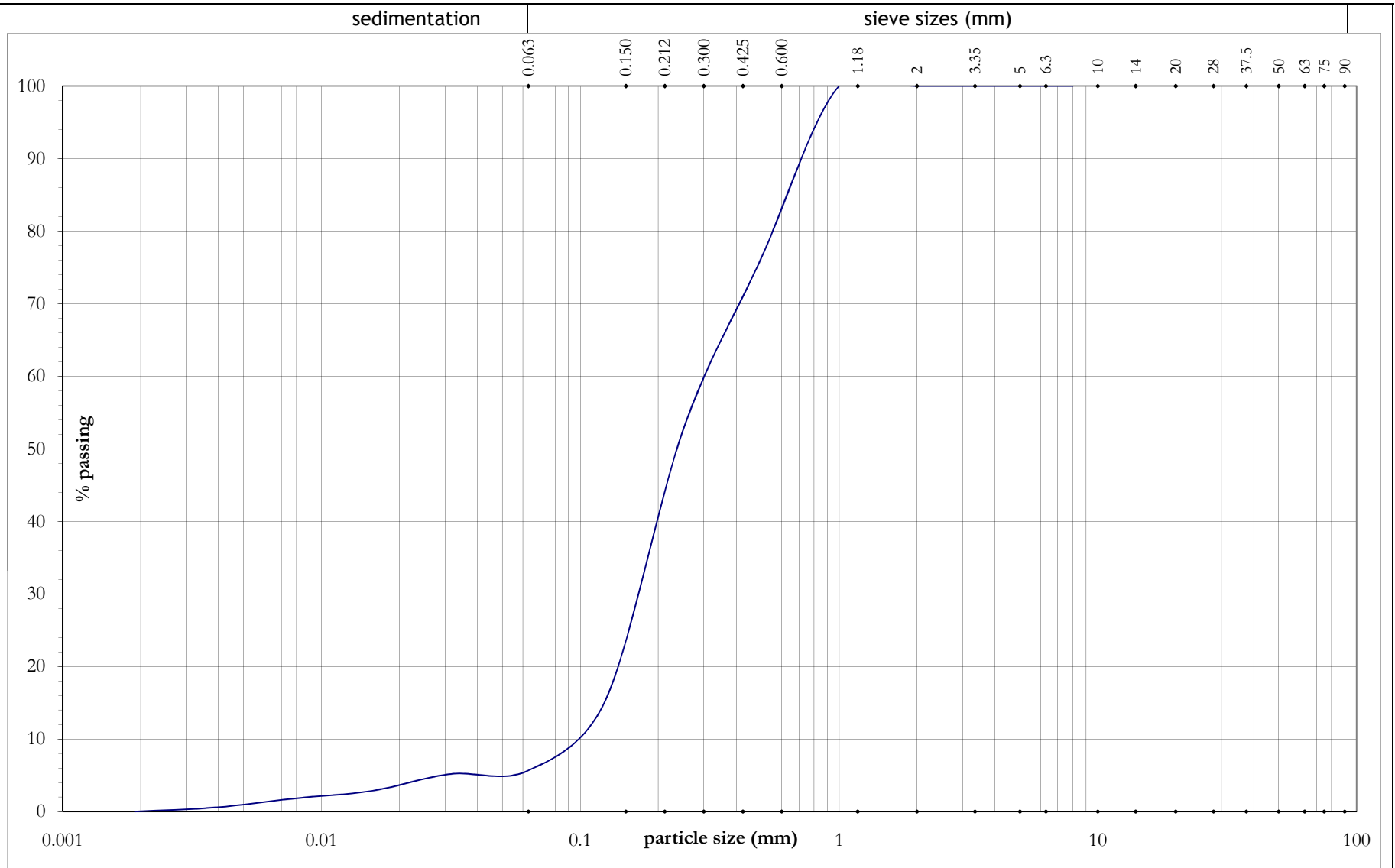
Particle size (mm)	% passing
8	100
4	100
2	100
1	100
0.5	99
0.25	73
0.125	21
0.0625	12
0.03125	10
0.015625	6
0.0078	3
0.0039	1
0.0019	0.1



Fines 12%	fine	medium	coarse	fine	medium	coarse	Cobbles 0%
	Sand 88%			Gravel 0%			

Project:	Plough Dredging at Buncrana Pier	Exploratory Hole No.:	L1-2	Sample			
				Type	No.	at (m)	to (m)
Job No.:	13-455			0			

Particle size (mm)	% passing
8	100
4	100
2	100
1	100
0.5	76
0.25	53
0.125	15
0.0625	6
0.03125	5
0.015625	3
0.0078	2
0.0039	1
0.0019	0.0



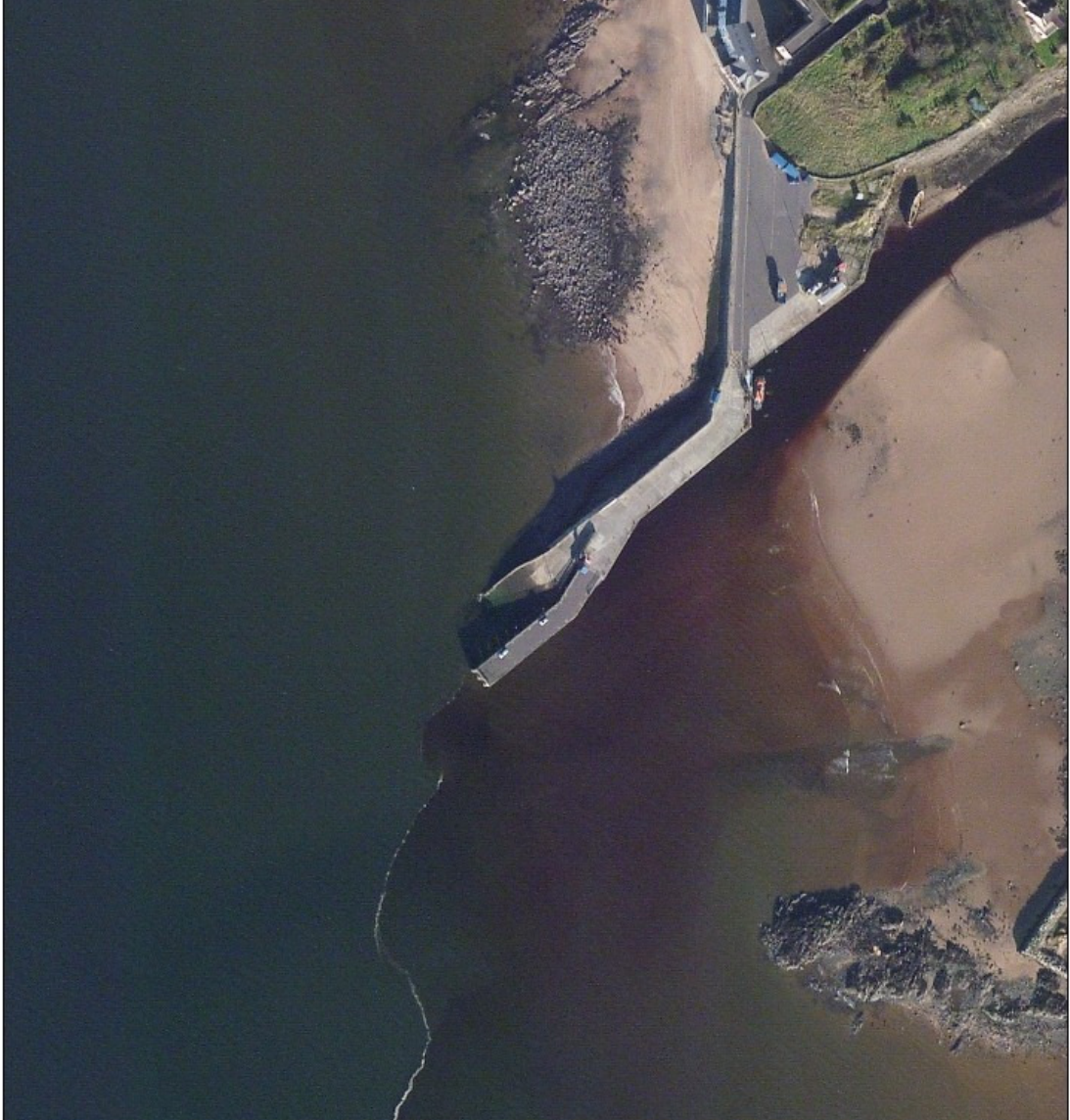
Fines 6%	fine	medium	coarse	fine	medium	coarse	Cobbles
	Sand 94%			Gravel 0%			0%

Project:	Plough Dredging at Buncrana Pier	Exploratory Hole No.:	L1-3	Sample			
				Type	No.	at (m)	to (m)
Job No.:	13-455			0			

**Attachment 6.1**

Marine Mammal Observations Report Buncrana Harbour Dredging Operations  
2017

Marine Mammal Observations Report  
Buncrana Harbour Dredging Operations  
2017



August 2017



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## 1.0 Executive Summary

Assistant Engineer Eamonn Porter was asked by Donegal County Council to complete Marine Mammal Observations during dredging operations at Buncrana Harbour in Co. Donegal. Buncrana Harbour lies on the eastern shore of Lough Swilly (Lat: 55.126683 Long: -7.4642015).

Maintenance dredging was carried out to allow safe access to the RNLI Lifeboat and other vessels that use Buncrana Harbour. The three year dredging permit will allow annual dredging to aid access to the Harbour. The permit will allow up to 20,000 tonnes of dredged material to be removed from the Pier vicinity and dumped at an appropriate location approximately 160m from the end of the pier.

Marine Mammal Observations were carried out by observers trained in JNCC methods of Marine Mammal Observation.

Results of the observations recorded only one species of marine mammal (common seal) on 11 sightings through the observation period. No marine mammals were detected prior to start-up of marine dredging operations and all sightings were recorded during on-going vessel operation. No mitigation was necessary during the observation period.

## 2.0 Introduction

### 2.1 Marine Mammal Observations

Assistant Engineer Eamonn Porter was tasked by Donegal County Council to complete Marine Mammal Observations during dredging operations at Buncrana Harbour in Co. Donegal. Observations were carried out to adhere to Condition 4 (4.5) of the Environmental Protection Agency (EPA) dumping at sea permit to allow dredging within the Lough Swilly SAC area and adjacent to Buncrana Harbour. Observations were carried out in June and July 2017 in accordance with JNCC Marine Mammal Observation guidelines (JNCC 2010).

Eamonn Porter completed all marine mammal observations and is trained to JNCC level in Marine Mammal Observer methods.

### 2.2 Dredging at Buncrana Harbour

Maintenance dredging is to be carried out over a three year period to allow safe access to the RNLI Lifeboat and other vessels that use Buncrana Harbour. A three year dumping at sea permit was obtained to allow dredging and dumping of recently deposited material alongside Buncrana Harbour. The three year dredging permit allows annual dredging to aid access to the Harbour. The permit will allow up to 20,000 tonnes of dredged material to be removed from the Pier vicinity and dumped at an appropriate location approximately 160m from the end of the pier.



Photo 1 Lough Swilly Marine Dredging Vessel, The Trojan

The dump site, located approximately 160m from the end of the pier is a large deep channel with enough capacity to hold the dredged material. Lough Swilly has strong tidal currents that are associated with its relatively shallow sections and tide flow; this will aid dispersal of the dredged material evenly within the Lough Swilly area.



Photo 2 Dredger at dump site location approximately 160m from Buncrana Harbour.

It was proposed that that the following method will be put into place for each maintenance dredging campaign:

- A plough dredger will be employed annually on an "as required" basis, to remove recently deposited sand from the harbour approach and berthing area.
- An average of approximately 15,000 to 20,000 tonnes of recently deposited sand will be removed annually.
- The material will be plough dredged to the agreed dump site.
- Pre and post dredge surveys of the dredge and dump sites will be undertaken and details submitted to the Environmental protection Agency (EPA), in addition to dredging logs detailing the co-ordinates of the dump site and the quantity removed.

The following figures are based on previous plough dredging campaigns at Buncrana Harbour:

- Per shift - approximately  $125\text{m}^3/\text{day}$  based on  $2\text{t}/\text{m}^3 = 250$  tonnes;
- Per week - approximately  $560\text{m}^3/\text{week}$  based on  $2\text{t}/\text{m}^3 = 1120$  tonnes sand;
- Per month - approximately  $2,000\text{m}^3/\text{month}$  based on  $2\text{t}/\text{m}^3 = 4,000$  tonnes.

### 2.3 Marine Mammal Risk Assessment

This report and accompanying Marine Mammal Observations were carried out to adhere to condition 6.2 of the Buncrana Harbour Marine Mammal Risk Assessment (July 2017 DCC) which stated:

*For dredging, the guidance requires that a qualified Marine Mammal Observer (MMO) be appointed to monitor for marine mammals and to log all relevant events using standardised forms. Unless information specific to the location*

and/or plan/project is otherwise available to inform the mitigation process (e.g. specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, dredging activity shall not commence if marine mammals are detected within a 500m radial distance of the dredging sound source, i.e., within the Monitored Zone.

## 2.4 Legislation and Regulations

Legal protection for marine mammals in Ireland began with the enactment of the Whale Fisheries Act in 1937, which gave effect in this jurisdiction to the International Convention for the Regulation of Whaling (1931). Thereafter the Wildlife Act, 1976 provided a legal framework for the conservation of Irish wildlife and their habitats, conferring specific protection on seals, whales, dolphins and porpoises. Under the 1976 Wildlife Act and its subsequent Amendments (2000, 2005, 2010 and 2012), it is an offence to hunt (except in some instances under license or Ministerial permit), injure (except when hunting under such license) or willfully interfere with, disturb or destroy the resting or breeding place of a protected species. With regard to the marine environment, the Wildlife Acts 1976 to 2012 currently extend in scope to waters within Ireland's Territorial Sea (i.e., within the 12 nautical mile limit from the baselines).

Lough Swilly is designated as an SAC (Special Area of Conservation) and SPA (Special Protection Area) under the EU Habitats Directive 92/43/EC and the Birds Directive 2009/147/EC. The purpose of these Directives is to promote the maintenance of biodiversity within the designated site and maintain biodiversity at and where necessary to a favourable conservation status of flora, fauna and habitats of European importance. Marine mammals are subject to special conditions because of their status as Annex II species under the Habitats Directive. Activities have complied with section 5 of the Dumping at Sea Acts 1996 to 2009.

## 2.5 Favourable Conservation Status

The concept of *favourable conservation status* is central to the EC Habitats Directive. Article 2 within the directive sets out the aim and states that:

*"Measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild flora and fauna of community interest."*

Habitats and species of '*Community Interest*' are the habitats listed on Annex 1 and the species listed on Annex I, IV and V of the directive. These species include selected marine mammal species.

The objective of the Habitats Directive and the species and habitats that are defined within the Directive to achieve favourable conservation status.

Definitions of Conservation Status and Favourable Conservation Status:

'Conservation status' for habitats is defined in Article 1(e) as:

*Conservation status of natural habitats means the sum of influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical*

*species within the territory referred to in Article 2. It will be seen from this definition that 'Conservation Status' is seen as the result of influences which include the present state of the habitat, together with current environmental and human influences (both positive and negative), that may influence its long-term survival.*

The conservation status of natural habitats will be taken as 'favourable' when:

- *its natural range and areas it covers within that range are stable or increasing, and*
- *the species structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable as defined in Article 1(i).*

The emphasis here has moved to the contemporary state of the habitat together with a supporting environment capable of maintaining it in the long-term.

Conservation status for species is defined in Article 1(i) as:

- *Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article*
- *Similar remarks apply here as to habitats above. Attention is drawn to the reference to populations of a species, implying that more than one population is likely to be concerned here. This is, potentially, an important point.*
- The conservation status of species will be taken as 'favourable' when:
  - a. population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
  - b. the natural range of the species is neither being reduced for the foreseeable future, and*
  - c. there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

## **2.6 Environmental Protection Agency (EPA) Dumping at Sea Permit**

A permit was granted by the EPA to allow the dumping at sea of dredged material arising from maintenance dredging at Buncrana Harbour by Donegal County Council over a three year period. Under the permit a maximum of 20,000 tonnes of dredged material may be dumped by plough dredging annually, up to a total maximum of 60,000 tonnes. The material shall be plough dredged out to a large area of deep channel located 160m from the end of Buncrana Harbour. The permit holder is required to manage the permitted activities to ensure the protection of the marine environment and to submit reports on the dumping activities and monitoring results to the Agency.

## **2.7 Appropriate Assessment Screening**

A screening for Appropriate Assessment (AA) was undertaken to assess, in view of best scientific knowledge and conservation objectives of the designated sites, if the proposed activity, individually or in combination with other plans or projects is likely to have an effect on a European site(s). Attention was paid to Lough Swilly SAC and Lough Swilly SPA.

The Agency (EPA) considered that the proposed activity is not directly connected with or necessary to the management of the site conservation objectives and thus cannot be excluded from Appropriate Assessment.

A Natura Impact Statement (NIS) was submitted to the Agency in May 2017 which assessed the impact of the proposed activities on the Lough Swilly SAC and SPA having specific regard to the conservation objectives of the qualifying habitats and species for which the sites are designated. The NIS noted that the proposed plough/dredging/dumping activities is small scale and will be undertaken within the close confines of the harbour, the material being removed is uncontaminated and the clean dredged sand will disperse evenly within Lough Swilly in accordance with natural sediment transport processes. No significant impacts are predicted to habitats within the SAC. The NIS notes that the Crana and Mill rivers that run into the harbour area are likely to hold populations of Otter (*Lutra Lutra*) and they may use the area around the harbour for foraging. The NIS states that if dredging is to be carried out during daylight hours then disturbance to Otter must be avoided and impacts are predicted to be unlikely. The NIS predicted no impact to qualifying features of the Lough Swilly SPA due to the distance of the proposed activity from the various habitats supporting the protected bird species and the clean nature of the material to be plough dredged and its even dispersal within Lough Swilly.

The Agency was satisfied that the Appropriate Assessment had identified all aspects of the proposed activity which can, by themselves or in combination with other plans or projects affect the conservation objectives of a European Site, in particular Lough Swilly SAC and SPA.

## **2.8 Marine Mammal Risk Assessment Report Mitigation (June 2014)**

Further to the AA a Marine Mammal Risk Assessment (MMRA) was carried out. The aim of the assessment was to evaluate the risk to marine mammals from the proposed plough/dredging/dumping at sea activities. The risk assessment was completed in accordance with the approach outlined in 'Guidance to Manage Risk to Marine mammals from Man-made Sound sources in Irish Waters' (2014 Department of Heritage, Culture and the Gaeltacht). Mitigation measures were provided in section 6.2 of the report, as detailed in section 1.2.

*For dredging, the guidance requires that a qualified and experienced Marine Mammal Observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms. Unless information specific to the location and/or plan/projects is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, dredging activity shall not commence if marine mammals are detected within a 500m radial distance of the dredging sound source, i.e. within the Monitored Zone.*

## **2.9 Pre-start Monitoring**

*Dredging activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where affective visual monitoring, as determined by the MMO is not possible, the sound producing activities shall be postponed until effect visual monitoring is possible.*

*An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break. It shall only proceed on positive conformation with the MMO.*

*In waters up to 200m deep, the MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Sound-producing activity shall not commence until at least 30minutes have elapsed with no marine mammals detected in the Monitored Zone by the MMO.*

*The prescribed Pre-Start Monitoring shall subsequently be followed immediately by the normal dredging operations. The delay between the end of Pre-Start Monitoring and the necessary full dredging output must be minimised.*

## **2.10 Objective of the Marine Mammal Observations at Buncrana Harbour**

The objectives of the Marine Mammals Observations and report is to document marine mammals in compliance with conditions detailed above (EPA and MMRA). The Marine Mammal Observations and report has been completed in accordance with approach and methods outlined in Guidance to Manage Risk to Marine Mammals from Man-Made Sound Sources in Irish waters (2014 Department of heritage, Culture and Gaeltacht) and JNCC Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys (August 2010).

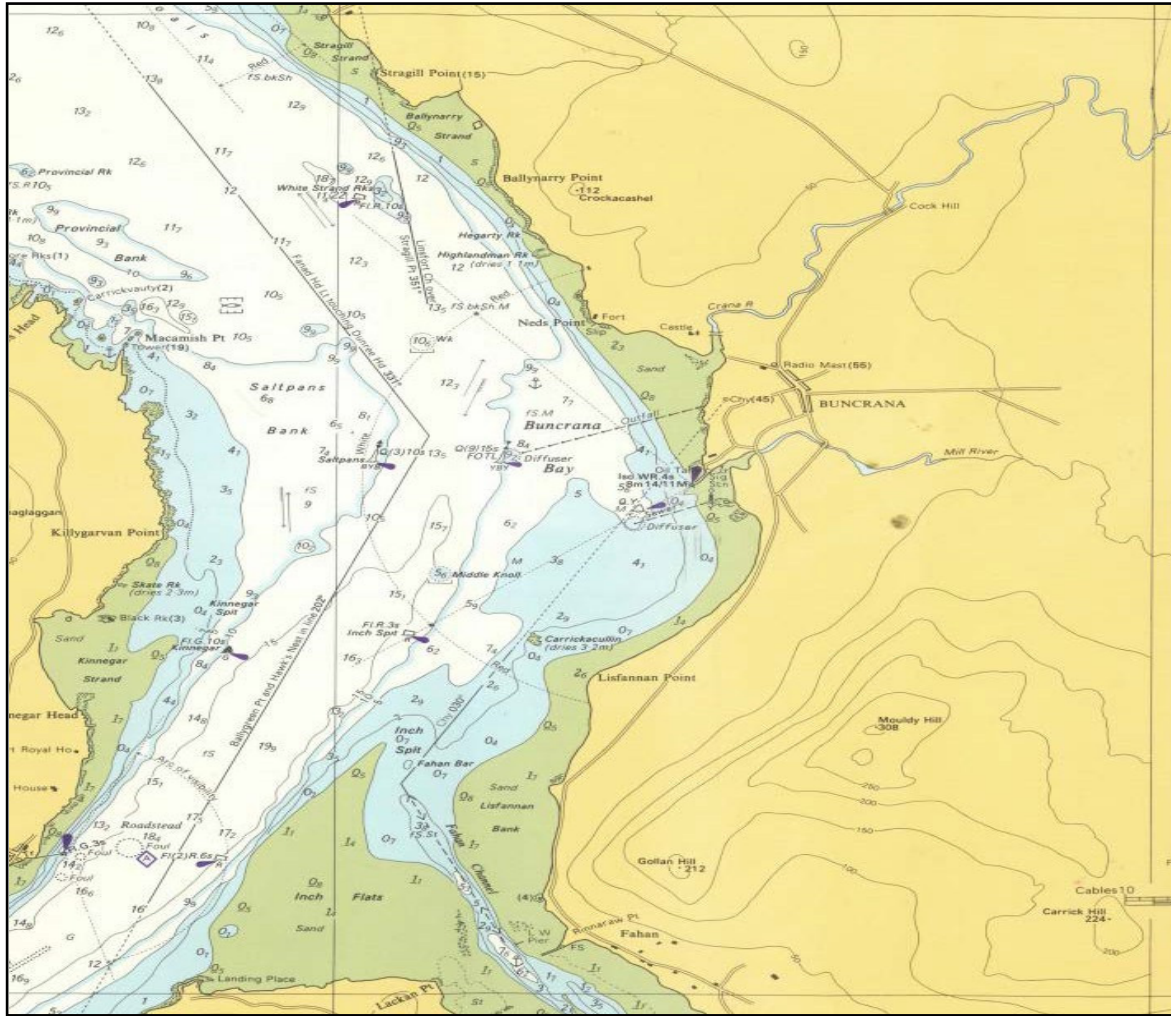
## **3.0 The Receiving Environment**

### **3.1 Location**

Buncrana Harbour lies on the eastern shore of Lough Swilly (Lat: 55.126683 Long: -7.4642015). The Harbour is located at the mouth of the river Mill. The pier is used as a RNLI berth for the Lough Swilly Life boat and has also been used in the Buncrana to Rathmullan passenger/car ferry. The car ferry has been operational during the dredging and the dredging has had no impact on the timetable of the ferry.

Buncrana harbour is affected by strong currents and sedimentation that builds up around the harbour over time from deposition from Lough Swilly and the Mill river during times of flooding. Strong currents that flow within the Lough Swilly catchment move sand and sediment within the berthing area in and around the harbour. There is also a large sand bank adjacent to the berthing area and approach channel that can be seen at low tide.

Figure 1 Buncrana Harbour Location



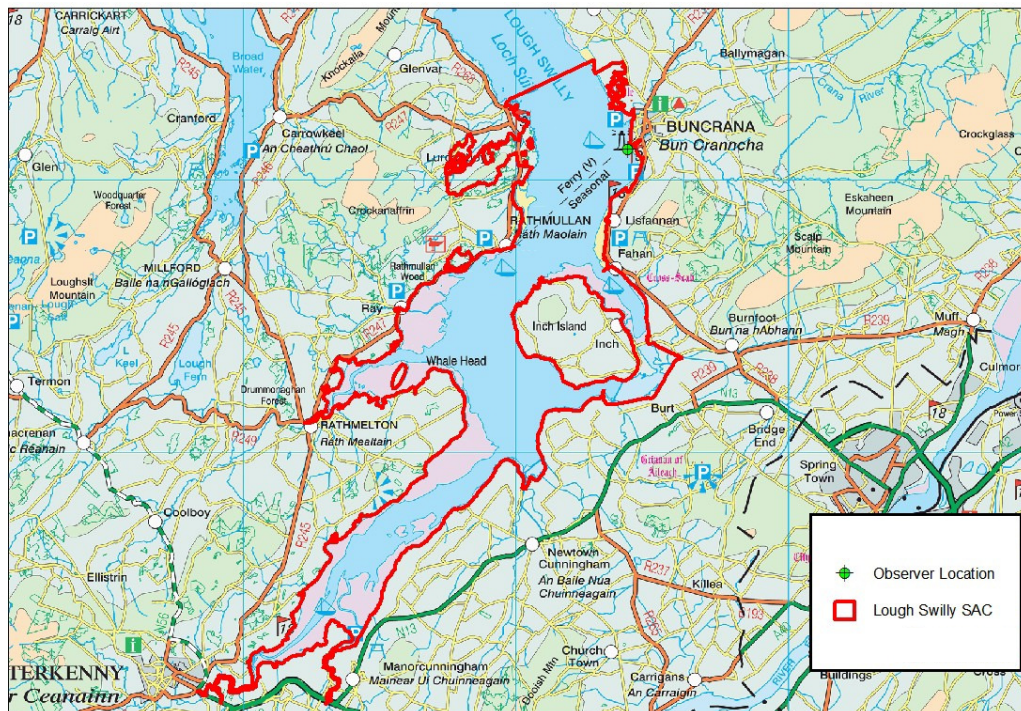
### 3.2 Lough Swilly SAC and SPA

Lough Swilly is an estuarine sea inlet situated in north Co. Donegal. It borders the Inishowen Peninsula to the West and encompasses Inch Island. The extent of the SAC/SPA from South of Letterkenny to slightly North of Buncrana (central Lat 55.072471 Long -7.5462341). The site at low tide has extensive sand and mudflats are exposed, especially at the mouths of the Swilly and Lennan rivers. The site is estuarine in character, with shallow water and intertidal sand and mudflats being the dominant habitats.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive:

- [1130] Estuaries
- [1150] Coastal Lagoons
- [1330] Atlantic Salt Meadows
- [91A0] Old Oak Woodlands
- [1355] Otter (*Lutra lutra*)

Figure 2 Lough Swilly SAC and Observer Location



The Lough Swilly Special Protection Area (SPA) comprises the inner part of The Lough Swilly SPA (overlapping SAC boundary) and extends from just below Letterkenny north to Rathmullan and, except in the area between Farsetmore and Blanket Nook on the southern side of Lough Swilly, the site is bounded by the High Water Mark; its seaward boundary is the Low Water Mark. Between Farsetmore and Blanket Nook a series of improved pasture and arable fields of importance to geese and swans are included. The site includes sections of the estuaries of the River Swilly, the River Leannan and the Isle Burn and the predominant habitat is a series of extensive sand and mud flats which are exposed at low tide – both estuaries and sand/mud flats are listed on Annex I of the E.U. Habitats Directive. Other habitats represented on the site are salt marshes, lakes which are lagoonal in character (at Blanket Nook), rivers and streams, sand and shingle beaches, lowland wet, dry and improved grasslands, arable land, drainage ditches, reedbeds and scrub. The adjacent Inch Lough and Levels are included in a separate SPA.

Lough Swilly is an important site for waterfowl in autumn and winter. The shallow waters provide suitable habitat for grebes and diving duck, while the intertidal flats are used by an excellent diversity of wildfowl and waders. At high tide, the duck and wader species roost on the salt marshes and shorelines, with some species moving to the adjacent pasture and arable fields. In the three winters 1994/95 to 1996/97, 16 species occurred in nationally important numbers as follows (figures are average maximum counts for the 3 winters): Great Crested Grebe (274), Shelduck (646), Wigeon (1,673), Teal (1,381), Mallard (1,155), Shoveler (58), Scaup (143), Goldeneye (169), Red-breasted Merganser (103), Coot (335), Oystercatcher (1,459), Knot (327), Dunlin (7,995), Curlew (1,716), Redshank (1,080) and Greenshank (30). Other species which occur in regionally or locally important numbers, and at times may exceed the threshold for national importance, include Brent Goose, Pochard, Tufted Duck, Lapwing, Ringed Plover, Grey Plover, Bar-tailed Godwit (a species that is listed on Annex I of the E.U. Birds Directive) and Turnstone. The site is also an important area for the Great Northern Diver and the rare Slavonian Grebe, both Birds Directive Annex I species. Golden Plover, a species that is listed on Annex I of the E.U. Birds Directive, used the site regularly during winter (4 year mean of winter maximum 1994/95-1997/98 was 1,001 individuals). Source: Lough Swilly SPA Site Synopsis.

## **4.0 Marine Mammal Observation Objectives**

1. Marine mammal observations to be carried out to mitigate against any potential disturbance to Marine Mammals within the Buncrana Pier dredging operations area and within a 500m mitigation zone of dredging works.
2. Marine mammal observations to be undertaken by an experienced Marine Mammal Observers during daylight hours and all observations of Marine Mammals documented.
3. Document the number of animals of each species present in the vicinity of dredging being carried out within a 500m mitigation zone and no start to works if marine mammals are observed prior to works commencing within a 30 minute pre-start period.
4. Complete marine mammal observer report documenting timeframes, list of marine mammals observed and any mitigation measures carried out during operations.

## **5.0 Methods**

### **5.1 Data Search, Historical Records**

Baseline data of records of marine mammals has been sourced from the Joint Nature Conservation Committee (JNCC) 1980-2003 cetacean sightings dataset, Atlas of Cetacean distribution in the north-west European waters, the Atlas of mammals in Ireland and the NPWS seals database, held by the National Biodiversity Data Centre. Personal records from each MMO were also included within the results. Online records were sourced from the IWDG (Irish Whale and Dolphin Group) [www.iwdg.ie](http://www.iwdg.ie). Each MMO has previously completed casual and structured surveys of marine mammals and recorded Cetacean sightings while completing bird surveys of Lough Swilly.

### **5.2 MMO Personal Records (Lough Swilly)**

Personal records of Eamonn Porter, Noel Breslin and Peter Ward were also included. The author of this report Eamonn Porter is resident in Buncrana along Lough Swilly; he is an assistant engineer in the marine section of the Donegal County Council. Peter ward and Noel Breslin are both general operatives in the marine section of the Donegal county council and are very familiar with coastal surroundings.

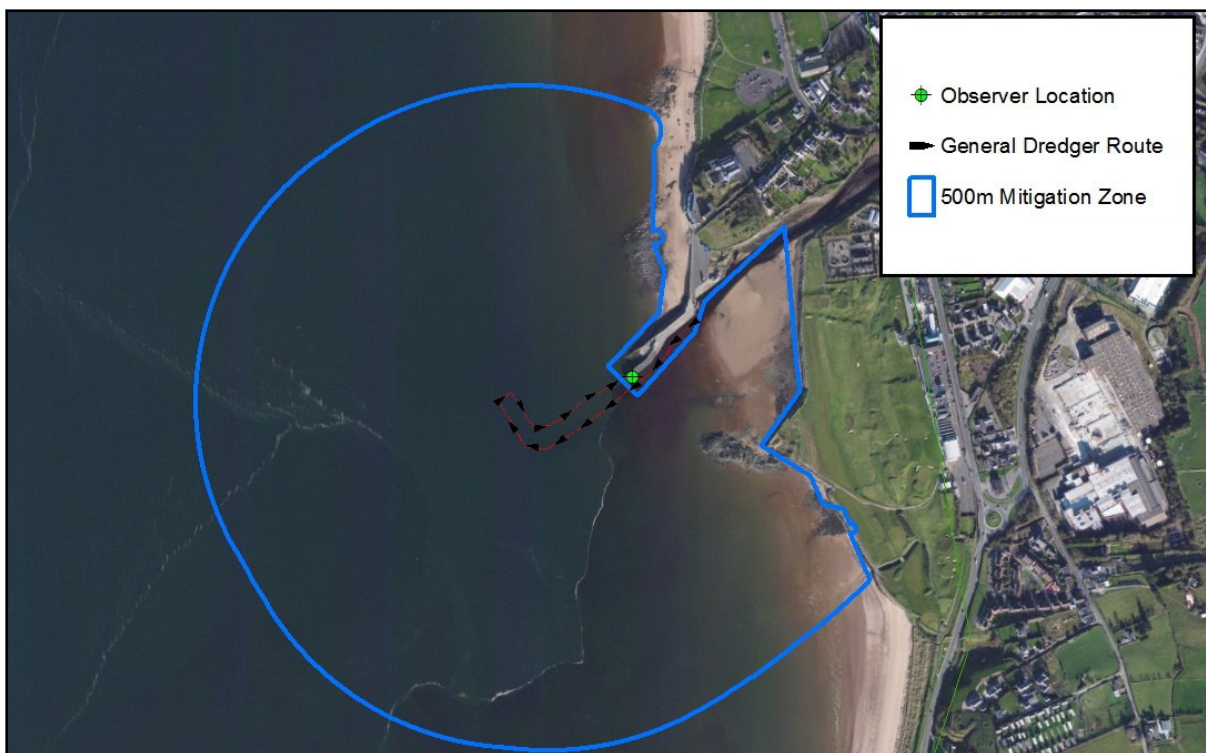
### **5.3 JNCC Methods and Recording Forms**

Each Marine Mammal Observer (MMO) carried out dedicated watches for marine animals during dredging operations during all daylight hours and completed the relevant JNCC recording forms. The pre-watch search was conducted over a period of 30 minutes before commencement of works. The MMO made a visual assessment to determine if any marine mammals are within 500 meters of the centre of dredging works area. Watches primarily carried out from the pier and surrounding beach (where accessible). Prior to beginning a watch, the time (UTC) and the

Weather conditions were recorded on the JNCC Location and Effort Form (Appendix B). Weather conditions such as Beaufort wind force, sea state and visibility were noted every hour and whenever a change in conditions occurred. The used definitions of Beaufort wind force and sea state are provided (Appendix B). In addition, the start and end times of marine animal watches and the start and end times. The primary observation technique used to spot marine animals was to scan the visible area of sea using the naked eye and scanning areas of interest with binoculars and a telescope (e.g. waves going against the prevailing direction, white water during calm periods, bird activity, bird transiting direction etc.). This technique gave both a wide field of view and the ability to have a sufficient range of 3 - 4 km in ideal conditions. Observations were carried out while dredging works were on-going, usual timing was 8:00 - 18:30.

Appropriate JNCC recording forms include: A Cover Page, records general information about the survey including details about the source. The effort form records the start and end times of watches by MMOs or monitoring by PAM operators, together with position and depth at the start and end of each watch. The source activity and weather conditions are recorded at hourly intervals. If source activity or weather conditions change, MMOs should start a new line on the form. A new line should be entered at least every hour, even if source activity or weather conditions do not change. Typically many lines would be entered on this form each observation day.

Figure 3 Dredger Route and 500m Monitoring Zone



The sightings form records information about each sighting or acoustic detection of marine mammals. One line would normally be for each sighting or acoustic detection (unless there were multiple species involved, in which case one line would be completed for each species in a sighting or detection but they would share the same sighting number or acoustic detection number). Where a marine mammal or group of marine mammals is detected both visually and acoustically care must be taken not to duplicate the record.

Marine mammal Observations were carried out from the 09th of July 2017 to 1st of August 2017 during all daylight hours when dredging activity was on-going. Survey schedule excluded weekends when dredging activity was not operational. Observations began before dawn and scheduled to begin before dredging operations began to

identify initial marine mammal activity within the vicinity of the dredging operations area and within a 500m monitoring zone.

The pier area was walked intermittently during observations to give the best view of the surrounding adjacent harbour area and 500m mitigation zone.

## **5.4 Observation and Recording Equipment**

Equipment Used:

- Swarovski 8.5 x 42 Binoculars
- Fuji Digital camera
- Stopwatch
- Mobile Phone to Communicate with Dredging Vessel

Details of watches and marine mammals sighted were recorded on standard JNCC recording forms. Watches were carried out from 30 minutes before dredging while all dredging activity was on-going until dredging activity was completed.

## **6.0 Results**

### **6.1 Desk Study**

Information taken from site MMRA and all relevant data checked for up to date records, up to date records and personal MMO records added further to information within the MMRA report.

From guidance it was ascertained that the habitat in Lough Swilly is suitable for the following marine mammal species:

- Fin Whale
- Sei Whale
- Minke Whale
- Humpback Whale
- Northern Bottlenose Whale
- Long-finned Pilot Whale
- Killer Whale
- Risso's Dolphin
- Common Bottlenose Dolphin
- Atlantic White-sided Dolphin
- White-beaked Dolphin
- Striped Dolphin
- Short-beaked common Dolphin
- Harbour Porpoise

- Harbour Seal
- Grey Seal

Data from the JNCC 1980-2003 cetacean sightings dataset, other marine sightings dataset, the Atlas of Mammals in Ireland and the NPWS seals database, held by the National Biodiversity Data Centre [www.biodiversityireland.ie](http://www.biodiversityireland.ie) (10 Jan 2015) show records of the following species within 50km of Lough Swilly:

- Minke Whale - nearest record approximately 10km offshore, north of Lough Swilly;
- Risso's Dolphin - nearest record approximately 40km offshore, east of Lough Swilly;
- Common Bottlenose Dolphin - nearest record approximately 15km west of Lough Swilly in Sheephaven Bay;
- Harbour Porpoise - nearest record approximately 10km offshore north of Lough Swilly;
- Harbour/Common Seal - Recent records within 5km of Bunrana harbour at Fahan and Rathmullen;
- Grey Seal - nearest records along the coastline east and west of Lough Swilly at Insihowen, Glashagh Bay, Melmore Head, Mulroy Bay and Horn Head.

## 6.2 Timing

Marine Mammal Observation were carried out at Bunrana Harbour from the 9th of August to 1st of July 2017, including weekends and bank holidays.

## 6.3 Weather Conditions

Conditions were mostly good with visibility high during most observation days. There was only 2 days of particularly bad weather that may have made conditions for viewing marine mammals difficult but observation were still possible.

Table 2 Weather Conditions during the Observation Period

Date	Time	Wind Dir	Wind force (B,fort)	Sea State	Swell	Visibility	Sun Glare	Precipitation
09/06/2017	07:00-19:00	SW	2-3	c	o	g	n	n
10/06/2017	07:00-19:00	SW	3-4	c	o	g	wf	l
11/06/2017	07:45-19:40	S	6-7	r	m	m	n	h
12/06/2017	07:45-19:40	SE	3-4	s	o	g	n	n
13/06/2017	07:45-18:50	SE	4-5	s	o	g	n	n
14/06/2017	07:45-18:50	SE	5	s	o	g	n	l-n
15/06/2017	08:00-14.24	SW	3-4	c	o	m	n	l
16/06/2017	08:00-15:10	N	3-4	c	o	g	sf	n
17/06/2017	07:30-15:30	S-SE	1-2	s	o	g	vf	n
18/06/2017	08:00-17:20	SE	3	c	o	g	n	n
19/06/2017	07:45-18:30	SW	4-5	c	o	g	m	l
20/06/2017	08:00-19:10	NE	1-2	g	o	g	wf	n
21/06/2017	07:30-19:50	NE	2-3	c	o	g	n	n
22/06/2017	08:00-19:00	SE	4-5	c	o	g	n	n
23/06/2017	07:30-18:55	SW	6	c	o	g	n	l
24/06/2017	07:30-18:55	SW	2-3	s	o	g	vf	n
25/06/2017	07:30-19:00	SE	2	c	o	g	n	l
26/06/2017	07:30-19:00	SE	2	s	o	m	n	h
27/06/2017	07:30-19:00	SE	1-2	s	o	g	vf	h
28/06/2017	07:30-14:00	SE	4-5	c	o	m	n	m
29/06/2017	07:30-14:00	SW	4-5	s	o	g	n	l
30/06/2017	07:45-15:40	N-NE	1-2	s	o	g	vf	n
01/07/2017	07:30-17:15	SE	3-4	s	o	g	vf	n

**Sea state:** g = glassy (like mirror); s = slight (no/ few white caps); c = choppy (many white caps); r = rough (big waves, foam, spray)

**Swell:** o = low (< 2 m); m = medium (2-4 m); l = large (> 4 m)

**Visibility:** p = poor (< 1 km); m = moderate (1-5 km); g = good (> 5 km)

**Sun glare:** n = none; wf = weak forward; sf = strong forward; vf = variable forward; wb = weak behind; sb = strong behind; vb = variable behind

**Precipitation:** n = none; l = light rain; m = moderate rain; h = heavy rain; s = snow

## 6.4 Marine Mammal Observations

Table 3 Marine Mammals Observations Recorded During the Observation Period.

Sighting No.	Species	Date	Start/End time	Visual or Acoustic	Observer	Bearing/Range	No.	Ad/Juvenile	Dir. Of Travel	Action taken
1	Common Seal	23/06/17	9:21-9:21	Visual	EP	S 150m	1	Ad	SW	none

During the survey period a total of 1 incidents on marine mammals were observed during a total of 242.5 hours of observation. All of the marine mammal sightings were of Common Seal. No marine mammals were detected during the start up process of each survey day, no delay to the dredging activity was required or mitigation measures imposed to works being carried out. Pre source activity was delay because of marine mammal observations prior to start up of operations.

Figure 4 Locations of Marine Mammal Observations at Buncrana Harbour During On-going Dredging Works



## 7.0 Conclusion

Assistant Engineer Eamonn Porter was asked to complete appropriate Marine Mammal Observations of scheduled dredging activities at Buncrana harbour. MMOs were carried out each day of source activity and all day watches were completed during daylight hours with no period of activity not observed during the marine mammal observation timeframe. A total of 225 hours of marine mammal observations were complete when dredging operations came to a conclusion on the 01st of August 2017.

Common Seal (*Phoca vitulina*), was the only recorded marine mammal during observations. No mitigation measures were applicable to operations during the timeframe of observations, the pre-start observations did not record marine mammal activity and all recorded activity was during active source vessel operations.

Weather conditions were generally good with high visibility during the observation period. The sheltered area within Lough Swilly gave good weather conditions with limited swell and breaking waves to allow good observations of possible marine mammals within the observation monitoring zone and the wider Lough Swilly area.

## Appendix A

Table A.1 Daily Record of Marine Mammal Observations and Activity

Ref No.	Location	Platform	Date	Time	Total Hours	Observer	Visual Watch/ PAM	Magnification of Equipment	Height	PAM Used	MM Observed
S0011-02	Buncrana Harbour	Buncrana Pier	09/06/17	07:00-19:00	12	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	10/06/17	07:00-19:00	12	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	11/06/17	07:45-19:40	12	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	12/06/17	07:45-19:45	12	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	13/06/17	07:45-18:50	11	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	14/06/17	07:45-18:50	11	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	15/06/17	08:00-14:30	8.5	E.P	Visual	8.5 x 42,	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	16/06/17	08:00-15:10	9	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	17/06/17	07:30-15:30	8	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	18/06/17	08:00-17:20	9.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	19/06/17	07:45-18:30	11	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	20/06/17	08:00-19:10	11	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	21/06/17	07:30-19:50	12	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	22/06/17	08:00-19:00	12	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	23/06/17	07:30-19:00	11.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	24/06/17	07:30-19:00	11.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	25/06/17	07:30-19:00	11.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	26/06/17	07:30-19:00	11.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	27/06/17	07:30-19:00	11.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	28/06/17	07:30-14:00	6.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	29/06/17	07:30-14:00	6.5	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	30/06/17	07:45-17:40	7	E.P	Visual	8.5 x 42	3-6m	no	none
S0011-02	Buncrana Harbour	Buncrana Pier	01/07/17	09:00-17:00	8	E.P	Visual	8.5 x 42	3-6m	no	none

## Appendix B : MARINE MAMMAL RECORDING FORM - COVER PAGE

<b>Regulatory reference number</b> (e.g. DECC no., BOEM permit no., OCS lease no., etc.)	<b>Country</b>	<b>Location</b>	<b>Ship/ platform name</b>
<b>Client</b>	<b>Contractor</b>		<b>Survey type</b>
<b>Start date</b>	<b>End date</b>		<input type="checkbox"/> site <input type="checkbox"/> VSP <input type="checkbox"/> 2D <input type="checkbox"/> WAZ <input type="checkbox"/> 3D <input type="checkbox"/> piling <input type="checkbox"/> 4D <input type="checkbox"/> explosives <input type="checkbox"/> OBC <input type="checkbox"/> other <input type="checkbox"/> 4C

<b>Number of source vessels</b>	<b>Type of source</b> (e.g. airguns)	<b>Number of airguns</b> (only if airguns used)	<b>Source volume</b> (cu. in.)
<b>Source depth</b> (metres)	<b>Frequency</b> (range in which peak energy is emitted, in Hz)	<b>Intensity</b> (primary peak-to-peak amplitude in dB re. 1µPa or bar metres)	<b>Shot point interval</b> (metres)
<b>Method of soft start</b>			
<input type="checkbox"/> increase number of guns <input type="checkbox"/> increase frequency (where permitted) <input type="checkbox"/> increase pressure (where permitted) <input type="checkbox"/> increase number and frequency <input type="checkbox"/> increase number and pressure <input type="checkbox"/> other			

<b>Visual monitoring equipment used</b> (e.g. binoculars, big eyes, etc.)	<b>Magnification of optical equipment</b> (e.g. binoculars)	<b>Height of eye above water surface</b> (metres)	<b>How was distance of animals estimated?</b>
			<input type="checkbox"/> by eye <input type="checkbox"/> with laser rangefinder <input type="checkbox"/> with rangefinder stick/callipers <input type="checkbox"/> with reticle binoculars <input type="checkbox"/> by relating to object at known distance <input type="checkbox"/> other
<b>Number of dedicated MMOs</b>		<b>Training of MMOs</b>	
		<input type="checkbox"/> JNCC approved MMO training course for UK waters <input type="checkbox"/> PSO training course for the Gulf of Mexico <input type="checkbox"/> MMO training course for Irish waters <input type="checkbox"/> MMO training course for New Zealand waters <input type="checkbox"/> other <input type="checkbox"/> none	

<b>Was PAM used?</b>	<b>Number of PAM operators</b>
<input type="checkbox"/> yes <input type="checkbox"/> no	
<b>Description of PAM equipment</b>	





**Sea state:** g = glassy (like mirror); s = slight (no/ few white caps); c = choppy (many white caps); r = rough (big waves, foam, spray)  
**Swell:** o = low (< 2 m); m = medium (2-4 m); l = large (> 4 m)  
**Visibility:** p = poor (< 1 km); m = moderate (1-5 km); g = good (> 5 km)  
**Sun glare:** n = none; wf = weak forward; sf = strong forward; vf = variable forward; wb = weak behind; sb = strong behind; vb = variable behind  
**Precipitation:** n = none; l = light rain; m = moderate rain; h = heavy rain; s = snow

## MARINE MAMMAL RECORDING FORM - SIGHTINGS

<b>Regulatory reference number</b> (e.g. DECC no., BOEM permit no., OCS lease no., etc.)	<b>Ship/ platform name</b>	<b>Sighting number</b> (start at 1 for first sighting of survey)	<b>Acoustic detection number</b> (start at 500 for first detection of survey)
<b>Date</b>		<b>Time at start of encounter</b> (UTC, 24hr clock)	<b>Time at end of encounter</b> (UTC, 24hr clock)
<b>Were animals detected visually and/ or acoustically?</b> <input type="checkbox"/> visual <input type="checkbox"/> acoustic <input type="checkbox"/> both	<b>How were the animals first detected?</b> <input type="checkbox"/> visually detected by observer keeping a continuous watch <input type="checkbox"/> visually spotted incidentally by observer or someone else <input type="checkbox"/> acoustically detected by PAM <input type="checkbox"/> both visually and acoustically before operators/ observers informed each other		
<b>Observer's/ operator's name</b>	<b>Position</b> (latitude and longitude)	<b>Water depth</b> (metres)	
<b>Species/ species group</b>		<b>Description</b> (include features such as overall size; shape of head; colour and pattern; size, shape and position of dorsal fin; height, direction and shape of blow; characteristics of whistles/ clicks)	
<b>Bearing to animal</b> (when first seen or heard) (bearing from true north)	<b>Range to animal</b> (when first seen or heard) (metres)		
<b>Total number</b>	<b>Number of adults</b> (visual sightings only)	<b>Number of juveniles</b> (visual sightings only)	<b>Number of calves</b> (visual sightings only)
<b>Photograph taken</b> <input type="checkbox"/> yes <input type="checkbox"/> no			
<b>Behaviour</b> (visual sightings only)			
<b>Direction of travel</b> (relative to ship) <input type="checkbox"/> towards ship <input type="checkbox"/> away from ship <input type="checkbox"/> parallel to ship in same direction as ship <input type="checkbox"/> parallel to opposite direction to ship <input type="checkbox"/> crossing perpendicular ahead of ship		<input type="checkbox"/> variable <input type="checkbox"/> milling <input type="checkbox"/> stationary <input type="checkbox"/> other <input type="checkbox"/> unknown	<b>Direction of travel</b> (compass points) <input type="checkbox"/> N <input type="checkbox"/> W <input type="checkbox"/> NE <input type="checkbox"/> NW <input type="checkbox"/> E <input type="checkbox"/> variable <input type="checkbox"/> SE <input type="checkbox"/> stationary <input type="checkbox"/> S <input type="checkbox"/> unknown <input type="checkbox"/> SW
<b>Airgun (or other source) activity when animals first detected</b> <input type="checkbox"/> full power <input type="checkbox"/> not firing <input type="checkbox"/> soft start <input type="checkbox"/> reduced power (other than soft start)	<b>Airgun (or other source) activity when animals last detected</b> <input type="checkbox"/> full power <input type="checkbox"/> not firing <input type="checkbox"/> soft start <input type="checkbox"/> reduced power (other than soft start)	<b>Time animals entered mitigation/ exclusion zone</b> (UTC, 24hr clock)	<b>Time animals left mitigation/ exclusion zone</b> (UTC, 24hr clock)
		<b>Closest distance of animals from airguns (or other source)</b> (metres)	<b>Time of closest approach</b> (UTC, 24hr clock)

If seen during soft start give:	What action was taken? (according to requirements of guidelines/ regulations in country concerned)	Length of power-down and/ or shut-down (if relevant) (length of time until subsequent soft start, in minutes)	Estimated loss of production (if relevant) due to mitigating actions (km)
<b>First distance</b>	none required		
<b>Closest distance</b>	delay start of firing		
<b>Last distance</b>	shut-down of active source		
during soft start (metres)	power-down of active source		
	power-down then shut-down of active source		

## APPENDIX C

### References

1. Atlas of Cetacean distribution in the north-west European waters, IWDG (Irish Whale and Dolphin Group) [www.iwdg.ie](http://www.iwdg.ie).
2. Atlas of Mammals in Ireland <http://mammals.biodiversityireland.ie>
3. Guidance to Manage Risk to Marine Mammals from Man-Made Sound Sources in Irish waters, Department of heritage, Culture and Gaeltacht, January 2014.
4. JNCC 1980-2003 Cetacean sightings dataset.
5. JNCC Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys, August 2010.
6. NPWS seals database <http://www.gbif.org/dataset/eeaabe3b-e64a-4819-a007-2c3529eb4bf7>
7. Reid, J.B., Evans, P.G.H., & Northridge, S.P. (2003). 'Atlas of cetacean distribution in north-west European waters' (Online). <http://www.jncc.gov.uk>

**Attachment 7.1**  
Atlantic Towage Safety Statement 2017

Atlantic  
Towage

Safety Statement  
2017

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## 1.1 HEALTH AND SAFETY POLICY

1. In accordance with the Safety, Health and Welfare at Work Act 2005 & the Safety, Health and Welfare at Work [Construction] Regulations 2013 and the Safety Health and Welfare at Work [general applications] Regulations 2007 and 2010 amendments, it falls upon Atlantic towage, wherever reasonably practicable to ensure, the Health, Safety and welfare of its employees and associated personnel.
2. The provision of the above will be given equal priority with other obligations and duties.
3. Through every aspect of operations, including: planning, administration, purchasing, training and deployment, Health and Safety considerations will be prioritized.
4. It is the continuing obligation of all personnel associated with Atlantic Towage To operate in a safe manner and consider the safety of those around them.
5. It is the continuing responsibility of the company to ensure the provision and maintenance of the following:
  - a) a safe and healthy working environment
  - b) safe systems of work
  - c) plant and equipment designed and maintained to operate and function safely
  - d) supervision of operations by competent personnel (where appropriate)
  - e) instruction and training for all procedures, plant, equipment and operations
  - t) personal protective equipment (where appropriate)
  - g) medical and welfare facilities where necessary
6. Atlantic Towage will continually monitor the implementation of its health and safety policy and take all actions necessary to correct it and will abide by all relevant regulations and additions to regulations. The Company will review and revise its Health and Safety Statement as appropriate.
7. Atlantic Towage will promote good communication on health and safety issues, at all levels within the Company and Externally.
8. The Managing Director Shaun Harrington is ultimately responsible for the implementation of this policy.

Managing Director *Shaun Harrington*

## **1.2 IMPLEMENTATION & MONITORING OF HEALTH AND SAFETY POLICY**

As part of Company policy and in accordance with the Safety Health and Welfare at Work Act 2005 and the Safety Health and Welfare at Work, Construction Regulations 2013, the Company will implement, continually monitor and review its performance in relation to Health and Safety.

This will enable the Company to maintain its high level of safety and to make continual improvements in policy.

In addition, this will promote good safety communication between all levels of personnel within the Company and lead to improved productivity whilst nurturing a safe environment

The following systems will be used to implement the Health and Safety policy: -

- a) Communication between the Client and the Company will include all safety implications and will prioritize safe working practices;
- b) All works will be subject to a risk assessment and method statement. This will be carried out and approved by the client, prior to work commencing;
- c) All equipment and plant will be maintained to the highest standards and accurate test/maintenance records will be held;
- d) All personnel will be inducted in to the Company and given a full safety briefing;
- e) Any additional/specialized training as required will be given;
- f) Any new/innovative system of work will be subject to testing and approval by relevant Department/Authorities.

The following systems will be used to monitor, review and amend Health and Safety systems: -

- a) Accurate records will be kept to fall events including:-accidents, injuries, near misses and dangerous occurrences;
- b) Any accidents, injuries, near misses and dangerous occurrences will be thoroughly investigated;
- c) External sources of Health and Safety information will be monitored. Any relevant changes in HSA policy will be added to the Company Safety Statement.
- d) Site Safety Audits will be carried out and recorded.
- e) Communication will be promoted through out the Company to ensure a free flow of information. This will be in the form of meeting, emails, memos, daily work diaries, site safety audits and toolbox talks.
- f) An annual review of the Company Health and Safety Statement will be carried out.

This will ensure that all relevant additions or changes are incorporated into the Company Policy.

### **1.3 DEFINITIONS**

Atlantic Towage will be referred to as the 'Company'

'Managing Director' refers to {Shaun Harrington} a person who represents Company. He is responsible for the planning and administration of a contract. In addition he is responsible for processing all Health and Safety issues raised by the Supervisor.

'Supervisor' refers to a person nominated by the Managing Director who is responsible for the daily management and safety of all personnel on site.

'Employee', 'Sub-contractor' and 'personnel' refers to all persons acting under the supervision of the Company, or who are in the employment of Company.

### **1.4 REGULATIONS and Acts**

The Safety Health and Welfare at Work Act 2005 & the Safety Health and Welfare at Work {construction} regs 2013.

The Safety Health and Welfare at Work {general applications} regs 2007 and 2010 amendment

The Safety Health and Welfare at Work Act 2005 [No 10 Of 2005]

### **1.5 COMPANY RESPONSIBILITIES**

Atlantic Towage recognizes its responsibilities under section 8 of the Safety Health and Welfare at Work Act 2005

It is the permanent role of the Company to provide the following for all personnel associated with the Company: -

- a) A safe and healthy working environment
- b) Safe systems of work
- c) Plant and equipment designed and maintained to operate and function safely
- d) Supervision of operations by competent personnel (where appropriate)

- e) Instruction and training for all procedures, plant, equipment and operations
- f) Personal protective equipment (where appropriate)
- g) Medical and welfare facilities where necessary

The monitoring of Health and Safety within the Company will be a continual process. It will involve all levels of personnel and the results will be recorded and audited.

Each contract will be assessed on an individual basis, and a comprehensive Risk assessment and Method statement will be drawn up.

Furthermore, when planning operations, all reasonable steps will be taken to 'engineer' risks and hazards out of an operation, in order to avoid dangerous procedures.

The Company will promote communication between all personnel on Health and Safety issues and consult the relevant personnel when changes are to be made to safe systems of work.

## **1.6 MANAGEMENT RESPONSIBILITIES**

Responsible for insuring that the company has prepared a safety statement relevant to their operation which complies with Section 20 of the Safety Health and Welfare at Work Act

- a) A safe and healthy working environment
- b) Safe systems of work
- c) Plant and equipment designed and maintained to operate and function safely
- d) Supervision of operations by competent personnel (where appropriate)
- e) Instruction and training for all procedures, plant, equipment and operations
- f) Personal protective equipment (where appropriate)
- g) Medical and welfare facilities where necessary

## **1.7 Managing Director RESPONSIBILITIES**

The Managing Director will be involved in the planning and administration of a project, from the tender stage, through to project completion.

The Managing Director will give all reasonable considerations to Health and Safety issues, during the planning phase of any project.

All safety issues raised by the Supervisor, or other personnel, will be addressed by the Managing Director and dealt with accordingly. This may include a revision to the risk assessment/method statement.

The Managing Director will pass any new, Health and Safety information onto the Supervisor and this will be incorporated into future planning.

The Managing Director will ensure that Health and Safety needs are met and that any additional requests from the Supervisor are addressed (where appropriate).

## **1.8 SUPERVISORS RESPONSIBILITIES**

Supervisors will at all times: -

- 1) Promote safe working practices in accordance with Company policy;
- 2) Ensure that all Company safety policies are implemented by the employee's
- 3) Note any accident, injuries, near misses or dangerous occurrences in the accident book and daily log;
- 4) Encourage an open forum of communication on Health and Safety issues;
- 5) Confirm that all personnel have the relevant certification and training;
- 6) Ensure that all personnel are fully briefed for the task(s) to be carried out;
- 7) Ensure all permits to work/isolation certificates etc. are in place;
- 8) Ensure all relevant authorities have been informed;
- 9) Perform a site risk assessment prior to any works being carried out;
- 10) Safe guard the public from injury/harm as a consequence of any Company activities;
- 11) Complete all necessary paperwork, including dive logs, confined spaces entry logs and daily worksheets etc.
- 12) Apply all reasonable environmental controls.

## **1.9 EMPLOYEE & SUB-CONTRACTOR RESPONSIBILITIES**

Section 13 of Safety Health and Welfare at Work Act 2005 sets out general duties of the employee

All persons engaged by the Company, in whatever capacity, must at all times:-

- 1) Work in a safe and reasonable way;
- 2) Comply with Company safety policy at all times;
- 3) Consider their own safety and welfare in the work place;
- 4) Consider the safety and welfare of those around them;
- 5) Bring to the attention of their supervisor any accidents, injuries, near misses or dangerous occurrences, no matter how seemingly insignificant;
- 6) Ensure that they have the appropriate qualification and certification for the tasks they are to carry out;
- 7) Ensure they are fully briefed prior to commencing work;
- 8) Discuss any safety issues with their supervisor;
- 9) Apply all reasonable environmental controls.

## **1.10 NEW EMPLOYEES AND SUB-CONTRACTORS**

A Company representative will induct all new personnel.

This induction will include a safety briefing and an overview of Company policy. All personnel will be subject to the Company approval system.

During the assessment period of the approval system, personnel will be subject to continual monitoring and close supervision.

## **1.11 ADMINISTRATION**

All Clients, Employees and Sub-contractors will be able to view the Safety Statement and a list of their responsibilities. The Client will make their own policy available.

A risk assessment will be carried out for each site.

The Client, prior to commencement of works, will approve Method statements.

A site/supervisors pack will be provided. This will contain all permits, notices, Risk Assessments, certificates, contact/emergency numbers and all related documentation.

The relevant authorities will be notified in respect of any 'Hot' works or the use of explosives etc. The necessary permits to work will be arranged.

All site activities will be logged. All materials and equipment entering or leaving the site will be logged.

## **2,1 SETTING UP SITES**

All relevant permits should be in place and the relevant authority's notified.

Welfare facilities (where appropriate) should be established at a convenient location clear of any site hazards.

The required number of certified First Aid personnel and first aid stations should be established on site.

Statutory notices should be displayed.

Plant and equipment should be strategically positioned to minimize potential hazards and any risk of fire. Breathing air compressor inlets should be positioned away from the source of fumes or contaminating substances.

Plant should be located as far as reasonably possible from flammable storage areas. All hoses, lines and cables etc. should be laid out in such a way as to reduce potential

trip hazards, strung overhead or under ramps as appropriate.

Vehicular and pedestrian access should not be combined unless it is unavoidable. Fire fighting equipment should be provided where appropriate.

Waste management and cleaning equipment should be provided where appropriate.

Storage facilities should be secure and records of all materials and equipment will be maintained.

## **2.2 PROTECTION OF THE PUBLIC**

All work sites should be made as secure as is reasonably possible to prevent public access.

Where access by the public cannot be prevented, personnel should be nominated to alert the public to the potentially hazardous areas and to move them away/around the works.

Any non-fixed site access i.e. ladders, gangways etc. should be removed at the end of the working day.

All plant/equipment should be secured and the keys removed at the end of the working day

## **2.3 ENVIRONMENTAL CONTROLS & WASTE MANAGEMENT**

As part of Company policy, it falls upon all personnel to consider the impact that any works may have on the environment. To this end, all projects should be planned to cause the minimum disruption to the local environment and due care will be taken in the disposal of waste.

Where practical, environment-friendly materials should be used i.e. vegetable based hydraulic oils.

All personnel have a clear duty to avoid contamination/pollution to the environment, either through careless handling/usage of materials, or deliberate action.

The Company will ensure that licensed waste disposal companies dispose of all waste materials.

Where pollution has occurred or is un-avoidable i.e. the cleaning or removal of hazardous/polluted substances.

The following steps should be taken:

- a) All spillages should be cleaned up promptly and disposed of correctly;
- b) All waste materials should be disposed of safely as work proceeds;
- c) All waste should be disposed of correctly and in accordance with environmental controls.

Skips and waste containers should only be filled with the appropriate materials and not over filled.

## **2.4 RISK ASSESSMENT**

The company recognizes under Section 19 of the Safety Health and Welfare at Work Act 2005 its responsibilities regarding risk assessments.

Management and Supervisors should carry out a risk assessment of all work activities/tasks and sites.

A generic risk assessment forms part of Company policy, however an additional risk assessment should be created for each individual site and task.

All personnel associated with the task/site will be required to read and sign the risk assessment and to abide by the controls set out therein.

**The risk assessment will serve to highlight the following:** - Identify

potential hazards

Indicate the potential risk

Set out controls to reduce/eliminate the potential risk

Indicate the level of actual risk to personnel after controls have been set-up

## **2.5 WORKING IN OCCUPIED AREAS**

When working in occupied areas, particular attention should be paid to the safety policy and the safety of the occupants.

Consideration of health hazards such as noise, fumes, electrical equipment, hot works, trip hazards etc., should be taken in respect of the occupants. They may not be aware of the dangers associated with the works being carried out.

Housekeeping should be given priority. Access, escape routes and other areas used by the occupants will be kept clear of any materials, tools and waste.

Any spillages should be cleared up immediately. Any works left unattended, should be clearly sign posted and well secured.

Any access to works (unattended or otherwise) should be restricted as far as is reasonably practical.

No tools or equipment should be left unattended or un-secure.

## **2.6 ACCIDENT REPORTING**

All accidents resulting in injury to any person(s) on site, or in any other work place, should be reported and logged in the accident book.

All near misses, dangerous occurrences, or incidences of unsafe practice should also be reported and logged.

All the above events, however minor, should be communicated to the project manager.

These reports, together with comments from the relevant person(s) should contribute to the revision of working practices and the improvement of safety.

In the event of a major or fatal injury to any person, or dangerous occurrence as defined by the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985, the Health and Safety Executive should be notified immediately.

If an employee of another Company is killed or injured, the above duty is on his/her employer. However in order for the Water Services Support Group to fulfill its legal requirements, the Project Manager or Supervisor should inform the health and Safety Executive.

Accident book records will be held for three years

## **2.7 HEALTH HAZARDS**

A survey should be carried out to establish if there are any health risks existing on a site where work is to be carried out.

In the absence of a survey, all reasonable efforts should be made to ensure that no risks to health are present. This may include contacting the land owner, or the contractor responsible for the site.

Any health hazards identified should be logged and a risk assessment drawn up.

A suitable method should then be devised to eliminate the risks, or reduce them to acceptable levels.

Any substance to be used on site should be assessed for its potential health hazards. Special precautions relating to specific products are given in the data sheets.

All available information, advice notices, should be obtained from the supplier and any relevant precautions taken.

If any works are to be carried out that may cause a health hazard i.e. paint spraying, grit blasting, concrete mixing, then suitable precautions should be drawn up on the risk assessment.

Where a health hazard exists, either onsite, as a substance, or through actions, suitable welfare facilities should be in place.

All appropriate PPE should be worn.

In addition, emergency action measures should be set-up. These may include: spill kits, fire extinguishers, eye wash kits/stations, washing stations, etc

## **2.8 NOISE**

All works should be planned to minimize noise pollution, both to personnel, the public and the environment at large.

All equipment and plant should be selected and maintained to minimize noise levels and all engine covers should be closed during running.

Where possible/necessary, alternative methods of work may be used to reduce or eliminate noise levels.

If noise levels exceed 85db's, ear protection should be made available.

If noise levels exceed 90db's ear protectors should be worn and the area clearly identified.

Where prolonged exposure is unavoidable, adequate breaks should be taken.

Where necessary, a suitable means of communication should be established. Particular attention should be paid to emergency alarms and signals.

## **2.9 HAND-ARM VIBRATION SYNDROME (HAVS)**

Personnel may be at risk from developing HAVS, or 'Vibration White finger' (VWF), through prolonged use of the following tools and equipment: -

- a) Concrete breakers
- b) Chipping hammers
- c) CP 9's
- d) Vibrating pokers
- e) Sanders
- f) Angle grinders
- g) Scabblers
- h) Needle guns

Signs and symptoms may include:

- a) Tingling and numbness in the fingers
- b) Discoloration of the fingers, white, then blue then red.
- c) Pain, tingling or numbness in the hands wrists and arms
- d) Loss of strength

In addition to the use of tools, symptoms can be triggered by cold or wet weather and can cause severe pain in the affected fingers.

## **2.10 LEPTOSPIROSIS (WEIL'S DISEASE)**

Personnel working in areas where there may be contact with rat's urine, or in and around water where rats may be present, face a potential risk of contracting Leptospirosis or 'Weil's Disease',

The infection can enter the body via damaged skin or by accidental ingestion through the eyes, nose or mouth.

The disease is a form of jaundice and can be fatal or result in permanent disability if not diagnosed and treated at an early stage.

Areas of risk include: - sewers, drains, water courses, canals, docks, derelict buildings, rubbish tips, farms and other locations where rat infestation is likely to occur.

Personnel working in likely contaminated areas should ensure that any cuts, abrasions or scratches are carefully cleaned with sterile wipes or soap and water, and covered with a water proof dressing.

After contact with raw water, the hands and forearms should be thoroughly washed with soap and water, especially before eating, drinking and smoking.

Personnel should also avoid rubbing their nose, mouth or eyes during work.

In its early stages Leptospirosis has 'influenza-like' symptoms. Early diagnosis is essential.

## **2.11 FIRE PREVENTION**

A suitable means of raising the alarm will be in place. The alarm should be audible in all areas of the site and take into account any noise/operating machinery.

Communication to local fire fighting units should be established.

Emergency access and fire exit route should be kept free from obstruction and unlocked, at all times when personnel are on site.

All flammable substances should be controlled in the appropriate manner. See 'FLAMMABLE AND HAZARDOUS SUBSTANCES'.

House keeping and site planning should ensure that waste is cleaned away and stored in an appropriate area. In addition waste should be removed from site regularly, to avoid a build-up of flammable materials.

'Hot' permits to work, should be applied and monitored, with the appropriate precautions taken.

'SITE PLANNING' should ensure that plant is laid-out in such a way as to reduce to the risk of fire.

## **2.12 FIRE EMERGENCY ACTION**

In the event of a fire, the fire services should be called immediately.

Personnel should vacate the area/building and assemble in the designated area. No personnel should re-enter the site until the all clear is given.

In the event of a minor fire, an individual should only attempt to tackle it if they have been appropriately trained, and if the correct equipment is to hand.

In addition, if an individual does not feel able to tackle the fire, then they should leave it to the fire services and ensure that the fire service has been called.

Escape routes should always be kept clear and if the individual's safety could be compromised in any way, they should clear the area immediately.

## **2.13 FLAMMABLE AND HAZARDOUS MATERIALS**

All information should be obtained from the supplier, in order that risks and hazards can be assessed. Copies of which will be included in the Method Statement & Risk Assessment.

Data sheets should be available on site.

Flammable and Hazardous materials should be stored in the correct containers and in a designated, secure area.

Containers/Cylinders should be stored upright and adequate ventilation ensured. Appropriate PPE should be supplied and worn when handling flammable substances. The appropriate fire fighting equipment should be available.

Supplies of absorbent material and booms etc should be available (where appropriate).

All spillages should be dealt with in accordance with our environmental policy. All instructions for usage should be adhered to. All necessary training in the use of any specialized substance will be provided. Controls such as no smoking and safe handling should be observed at all times. Use of any Flammable or Hazardous substance will be subject to a risk assessment.

Transportation of flammable and hazardous materials should only take place in suitably marked vehicles approved for such purposes and in the authorised containers.

## **2.14 WORKING NEAR/OVER/ON WATER**

Where reasonably practical, the provision of suitable barriers, hand rails, safety harnesses and covers to openings should be provided installed or fitted as appropriate.

These precautions should also be used to protect the public, along with the appropriate signs and warnings.

Appropriate PPE should be worn at all times. This will normally include a life jacket or other floatation device.

A safe means of egress from the water should be identified and/or established, where there is a potential risk of personnel falling into the water.

Environmental conditions must be taken into account when planning rescue measures.

The deployment of a safety boat is site specific and may be considered under the following circumstances:

- a) Fast flowing rivers/watercourses;
- b) Open expanse seawater;

## **2.15 MANUAL HANDLING**

Wherever possible, a mechanical means of lifting and transporting loads should be used.

Where mechanical means are inappropriate or unavailable, sufficient personnel must be available to complete the lift safely.

When there is more than 1 person involved in the lift, one person should take control of the lift.

Where possible, break the load down into smaller items that are more manageable.

Access to the load and the route to be travelled with the load, must be clear and free from potential hazards

A correct lifting posture should be used at all times. The appropriate PPE should be worn. Use proper handles and lifting points where provided.

## **2.16 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Personnel should wear Steel toe capped boots at all times when on site and 'Rigger' style boots when working around water. Footwear may also contain the following: -

- a. Steel midsole
- b. Oil/chemical resistance
- c. waterproofing

Other PPE may be required. The risk assessment for a particular task or site will specify which PPE is appropriate.

Personnel will be required to wear the issued PPE at all times when on-site. PPE may include:

- a) Hard hat
- b) Hi-visibility jacket
- c) Overalls
- d) Cloth PVC gloves
- e) Lifejackets
- f) Harnesses
- g) Eye protection
- h) Ear defenders
- Respirators
- Heavy weather clothing

Instruction will be given for all PPE issued.

It is the responsibility of the supervisor to ensure that all personnel wear the appropriate PPE at all times and is familiar with its usage.

## **2.17 LONE WORKING**

Personnel working alone should always inform either their manager, or office, prior to and at completion of work.

Lone working should be subject to the same risk assessment as any other works.

Controls for safety must be in place and may include additional means of communication or remote access.

## **2.18 COMPANY VEHICLES**

Only authorized drivers with a clean license may drive Company vehicles.

Company transport will only be used by company personnel on Company business. Vehicles will not be used for activities outside of their design parameters.

All loads should be secured properly and vehicles will not be overloaded.

No persons should ride in or on the vehicle unless the correct seating is provided. Where necessary a banks man should be used to during reversing or other operations. Vehicles should be driven in accordance with site conditions and prevailing speed limits.

The nominated driver should carry out daily vehicle safety checks before the commencement of a journey.

The driver should inform the office immediately of any damage or defects as they occur.

## **2.19 HOUSE KEEPING**

Maintaining a tidy and clean site forms part of Company policy. To this end, all personnel will ensure that: -

- a) All equipment and tools are returned to their storage when no longer required;
- b) Access routes are kept clear and work area tidy;
- c) All spillages are cleaned up promptly and disposed of correctly;
- ct) All waste materials are disposed of safely as work proceeds;
- e) All waste is disposed of correctly and in accordance with 'ENVIRONMENTAL CONTROLS and WASTE MANAGEMENT' policies.

Further measures should be taken to ensure that emergency equipment is not obstructed in any way and that fire exits, emergency access and escape routes are kept clear.

## **2.20 GENERAL ACCESS**

- a) In good order and checked for defects prior to work starting;
- b) Of adequate length for the work to be done;
- c) Secured at the top and be long enough to extend 1.2 meters above the landing place;
- d) Placed on a firm, level base;
- e) Positioned in such a way that 'overreaching' is not necessary.

## **2.21 PLANT AND EQUIPMENT**

All Company equipment should be serviced and maintained to the highest standards

Daily checks should be carried out on all plant and equipment and any defects will be reported and logged.

All personnel should have the relevant training, authorization and certification to operate any given plant or equipment. In accordance with the Safety Health and Welfare at Work [Construction]Regs 2013

It is the responsibility of all Company personnel involved with plant and equipment to participate in its upkeep and serviceability.

## **2.22 HYDRAULIC EQUIPMENT**

A risk assessment will be carried out to identify and minimize all potential risks to both operators and personnel working near the equipment.

The appropriate PPE should be worn at all times.

Whenever appropriate, drip trays should be used to contain any spillage, however minor.

All equipment should be checked before use and periodically throughout the operation for any signs of damage, wear and loss of fluid (however minor), and any defects reported.

A competent and approved person should operate all hydraulic equipment.

All tools and equipment should be 'in -test', tagged and identifiable, with relevant

certification/conformity procedures in place.

Hydraulic connectors should be protected by blank caps or similar, when not connected to plant or tools.

All hydraulic oil levels and engine oil levels should be checked prior to work commencing and then at regular intervals throughout operation.

All plant and tools should be monitored for leakage of hydraulic oil.

Hydraulic tool, flow/speed control switches, should never be 'tied off' or locked in the ON position. Bypassing the dead man switch is a dangerous practice.

### **2.23 ELECTRICAL EQUIPMENT**

A risk assessment will be carried out to identify and minimize all potential risks to both operators and personnel working near the equipment.

The appropriate PPE should be worn at all times.

All equipment should be checked before use and periodically throughout the operation for any signs of damage and any defects reported.

A competent and approved person should operate all electrical equipment.

All tools and equipment should be 'in-test', tagged and identifiable, with relevant certification/conformity procedures in place.

Equipment should not be lifted, secured or moved by means of the cables. Portable generators should be correctly earthed.

When appropriate, electrical equipment should be protected by a Residual Current Detector (RCD) or other similar protective device.

Cables should be routed in such a manner as to avoid creating a potential trip hazard and to avoid potential damage to the cables.

All cables, extension cables and leads should be fitted or terminated in the correct plugs/sockets for the environment/application they are to be used in.

All cable connections, joints and repairs must be to an approved and recognized standard appropriate to the application.

Only 110 V.A.C. (or less) hand-held tools should be used on site.

### **2.24 PLANT**

All plant should be tested, maintained and in good order with relevant certification/conformity procedures in place.

Servicing schedules should be available and maintained. All plant and operator

certification should be inspected prior to work commencing.

The appropriate PPE should be worn at all times by operators and any other personnel involved in the operation.

Only the correct item of plant should be used for the work being carried out and a suitable work area should be designated i.e., clear working area.

All machinery guards and covers should be in good order and in place when plant is operational.

All plant should be secured when left unattended

## **2.25 COMPRESSED AIR EQUIPMENT**

A risk assessment will be carried out to identify and minimize all potential risks to both operators and personnel working near the equipment.

All equipment should be checked before use and periodically throughout the operation for any signs of damage and any defects reported.

All compressors, associated equipment and fittings, should be inspected and maintained with the relevant certification/conformity procedures in place.

A competent and approved person should operate all compressed air equipment. The appropriate PPE should be worn at all times.

All guards, safety devices and brakes should be checked and in good working order. Any defects should be reported.

Compressor engine cover stays (where fitted) should be in good condition and locked into position when the compressor is running.

Engine covers should be closed during operation to reduce noise pollution.

Hoses, connections and valves should be checked daily. All hose connections should be fitted with a suitable 'Whip check'.

Care should be taken when blowing out condensation from hoses. The open end should be secure and pointed away from any personnel.

Tools should be disconnected from the air supply before changing discs, blades, etc.

## **2.26 LIFTING OPERATIONS**

A risk assessment will be carried out to identify and minimize all potential risks to both operators and personnel working near the equipment.

Only suitably trained and authorized personnel should operate lifting equipment, sling a load, or control a lift. The appropriate PPE should be worn at all times.

All relevant certification (personnel/equipment), should be in date and checked by the supervisor.

Safe working loads should be established and not exceeded. Loads should not be left suspended or unattended during a lift. Where possible, loads should not be moved over personnel or public areas (unless suitable barriers and precautions are established and in place. If the underside of a load requires inspection, suitable, tested stands should be used to support the load before the inspection is carried out.

Loads should be fully secured/covered to avoid loose materials escaping. All slings and chains should display safe working load, and be tested and 'in-date'. Adequate clearance should be given to nearby structures and overhead cables.

## **Section 3 Plant list**

Trojan

4 cu.m Plough Dredger

## Section 4 Risk Assessment

<b>Slips, trips and falls</b>	Low	Access/Egress to the Dredger only by defined ways.
<b>Falling off the dredger Platform</b>	low	<p>Suitable safety footwear with good grip to be worn on deck.</p> <p>Boundaries are established and Defined to crew. Barriers/ Guard Railing erected.</p> <p>Access means to the dredger are checked for safety to embark/ disembark. - Gangway and Rope ladders secure.</p> <p>Access to the dredger is only via the appointed means.</p> <p>The dredger decking must be kept clear of obstructions and potential tripping hazards at all times.</p> <p>Life Rings in accessible positions.</p>
<b>Noise</b>	Low	Ear defenders to be used to reduce noise. Hearing protectors to be worn in Engine Room. Noise level to be tested to BS3489(1962)
<b>Plant and Machinery</b>	Low	<p>All plant and machinery to be used in a safe manner as per manufacturer's instructions and safety guidelines and to be certified to use.</p> <p>Drip trays under all equipment to minimize spillages.</p> <p>Only competent operators with proper training and tickets Skipper/cscs/cpcs may operate plant and equipment.</p>
<b>Leaks &amp; Spills</b>	Medium	<p>Drip trays under all plant.</p> <p>Containment - Marine spill kits available on board dredger</p>
<b>Compressed air</b>	Low	<p>All compressor hoses checked regularly.</p> <p>All compressor hoses in use to be safety clipped together at joints.</p>
<b>Slinging/Signalling of loads</b>	Low	Qualified banks man to control all plant movement
<b>Manual Handling</b>	Medium	Use mechanical means where possible to avoid any manual handling of loads.

<b>Instability of works due to forces from sea</b>	Medium	When heightened sea forces are due or occurring during work around structures this will stop and not restart until forces have subsided. Works will be planned.
<b>Biological/Pest Hazards</b> <b>Weill's Disease</b>	Low	Hands to be washed using antibacterial cleaner and solvent soap  Hands and gloves must be kept clear of eyes, mouth, and any cuts or abrasions
<b>Fire</b>	Low	Emergency fire fighting equipment to be available and in good working order on the dredger  Carbon Dioxide/Dry Chemical/Chemical Foam fire extinguishers to be used
<b>Working with tidal currents</b>	Medium	Monitoring of the dredger shall be carried out by the dredger operator to ensure its stability.
<b>Vibration</b>	Low	Look for alternative work methods, If a job can be automated do so. Rotate staff to limit exposure. Anti - vibration PPE Plan work to limit exposure.
<b>Working over or near water</b>	Medium	Plant & Equipment to be operated in a safe manner by competent staff  Life jackets to be worn at all times.  Emergency Equipment checked regularly and available.
<b>Working over or near water</b>	Medium	Plant & Equipment to be operated in a safe manner by competent staff  Life jackets to be worn at all times.  Emergency Equipment checked regularly and available.

**Attachment 7.2**

Donegal County Council Bunrana Dredging Health & Safety Plan



Donegal County Council, Marine Service

# **Preliminary Safety & Health Plan**

## **Buncrana Dredging 2017**

## **Introduction**

This Preliminary Safety & Health Plan has been prepared by the Project Supervisor Design Process (PSDP) in compliance with Safety, Health & Welfare at Work Act, 2005 and Safety, Health & Welfare at Work (Construction) Regulations 2013.

Donegal Co. Council is the Project Supervisor Design Process (PSDP) and the dredging contractor appointed be requested to take on the role of Project Supervisor Construction Stage (PSCS).

## **Description of Project**

The project involves the dredging of approx. 5,000 tonnes of sand type material from the harbour basin and depositing it approx. 160m. from the pier at a licenced deposition site.

## **Unforeseen Hazards**

Hazards arising during dredging operations from unforeseen circumstances on site shall be incorporated into the Safety & Health Plan by the Project Supervisor Construction Stage.

## **The Health & Safety File**

The inputs to the Safety & Health File will be managed by the Project Supervisor Construction Stage. The file will ultimately contain the following:

- Contractors Safety and Health Plan.
- Existing site prior to dredging
- List of personnel and training records relevant to project
- Dredging sequence and Risk Assessments
- Any other information deemed appropriate by the PSCS

## Hazard Control Checklist

	<b>Hazard</b>	<b>Risk</b>	<b>Action Required</b>
(a)	Use of derricks / cranes / lifting apparatus	High	Never stand below derricks/cranes/lifting apparatus carrying loads
(b)	Working with ropes/chains	Medium	Shall have a current test certificate. Never wrap ropes/chains around hands – Never stand in the line of ropes/chains under tension
(c)	Use of power tools	Medium	Training for designated users. Proper protective equipment.
(d)	Manual handling	Medium	Provide training and undertake appropriate risk assessments.
(e)	Noise	Medium	Proper protective equipment.
(f)	Tidal water	Medium	Life Ring available at all times / harness as appropriate / Life Jackets to be worn at all times.
(g)	Slips, trips and falls	Medium	Good housekeeping and barriers. Safe means of access and egress.
(h)	Welfare	High	Provide adequate welfare facilities.

**Attachment 7.3**

Donegal County Council Buncrana Dredging Risk Assessment

# Site Specific Risk Assessment Dredging at Buncrana Harbour

June 5 – 2017

Scope	Atlantic Towage to dredge Materials at Buncrana Harbour				
Responsibility for Control	Dredger / Skipper: Glen Harrington Crew: Karl Murphy				
Hazards Identified & Persons at Risk	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><u>Hazards</u></td> <td style="width: 50%; border: none;"><u>Persons at Risk</u></td> </tr> <tr> <td style="border: none;"> <ul style="list-style-type: none"> <li>• Coming into contact with cranes, winches, ropes.</li> <li>• Struck by slewing crane</li> <li>• Access/Egress to and from Trojan,</li> <li>• Slips trips and falls when walking across winch ropes.</li> <li>• Vibration</li> <li>• Adverse weather conditions</li> <li>• Fire</li> <li>• Noise</li> <li>• Leaks and Spills</li> <li>• Working with Tide</li> <li>• Working over or near water.</li> <li>• Unauthorized use of plant and machinery</li> <li>• Falling in to water</li> <li>• Mechanical failure</li> </ul> </td> <td style="border: none;"> <p style="text-align: center;">All Workers involved with the works</p> </td> </tr> </table>	<u>Hazards</u>	<u>Persons at Risk</u>	<ul style="list-style-type: none"> <li>• Coming into contact with cranes, winches, ropes.</li> <li>• Struck by slewing crane</li> <li>• Access/Egress to and from Trojan,</li> <li>• Slips trips and falls when walking across winch ropes.</li> <li>• Vibration</li> <li>• Adverse weather conditions</li> <li>• Fire</li> <li>• Noise</li> <li>• Leaks and Spills</li> <li>• Working with Tide</li> <li>• Working over or near water.</li> <li>• Unauthorized use of plant and machinery</li> <li>• Falling in to water</li> <li>• Mechanical failure</li> </ul>	<p style="text-align: center;">All Workers involved with the works</p>
<u>Hazards</u>	<u>Persons at Risk</u>				
<ul style="list-style-type: none"> <li>• Coming into contact with cranes, winches, ropes.</li> <li>• Struck by slewing crane</li> <li>• Access/Egress to and from Trojan,</li> <li>• Slips trips and falls when walking across winch ropes.</li> <li>• Vibration</li> <li>• Adverse weather conditions</li> <li>• Fire</li> <li>• Noise</li> <li>• Leaks and Spills</li> <li>• Working with Tide</li> <li>• Working over or near water.</li> <li>• Unauthorized use of plant and machinery</li> <li>• Falling in to water</li> <li>• Mechanical failure</li> </ul>	<p style="text-align: center;">All Workers involved with the works</p>				
Assessment of Risk	Medium				
Control Measures & PPE Requirements	<ul style="list-style-type: none"> <li>• All persons are to keep a safe distance away from the machine while it is in operation and adhere to the edge protection on the deck of Trojan.</li> <li>• Access to from the Trojan will be made using proper gangways or ladders depending on tide height</li> <li>• Dredger/Skipper will review weather daily and determine if safe to work.</li> <li>• Hi viz vest, boots, helmet, life jacket and Ear defenders to be worn by all crew.</li> <li>• Adequate Fire fighting equipment will be aboard the Trojan .</li> <li>• Only trained and authorised persons to operate plant – CSCS cards or FAS equivalent</li> <li>• Suitable Spill kits and Drip trays will be aboard the Trojan.</li> <li>• Lifebuoys with 50m rope attached to be available in the work area.</li> <li>• Tidal measurements to be put in place using a tide gauge to get accurate tidal level information.</li> <li>• Good housekeeping required on the trojan</li> </ul>				
Further Actions	<ul style="list-style-type: none"> <li>• Ensure that rules relating to authorised use of plant and equipment are made clear to all personnel at induction stage</li> </ul>				

# Working Adjacent to Live Pier

June 5 – 2017

Scope	Works taking place adjacent to live pier at Buncranna				
Responsibility for Control	Dredger / Skipper: Glen Harrington Crew: Karl Murphy				
Hazards Identified & Persons at Risk	<table><thead><tr><th><u>Hazards</u></th><th><u>Persons at Risk</u></th></tr></thead><tbody><tr><td><ul style="list-style-type: none"><li>Working over/ near water</li><li>Access / egress to and from pier</li><li>Mobile plant</li><li>Protection of the public</li></ul></td><td><ul style="list-style-type: none"><li>Public</li><li>All site personnel</li></ul></td></tr></tbody></table>	<u>Hazards</u>	<u>Persons at Risk</u>	<ul style="list-style-type: none"><li>Working over/ near water</li><li>Access / egress to and from pier</li><li>Mobile plant</li><li>Protection of the public</li></ul>	<ul style="list-style-type: none"><li>Public</li><li>All site personnel</li></ul>
<u>Hazards</u>	<u>Persons at Risk</u>				
<ul style="list-style-type: none"><li>Working over/ near water</li><li>Access / egress to and from pier</li><li>Mobile plant</li><li>Protection of the public</li></ul>	<ul style="list-style-type: none"><li>Public</li><li>All site personnel</li></ul>				
Assessment of Risk	Low				
Control Measures & PPE Requirements	<ul style="list-style-type: none"><li>All site personnel to wear lifejackets, lifebuoy's and safety boat to be on board Trojan when working.</li><li>Access to pier to be kept clear for vehicles when required and for pedestrians at all times.</li><li>All mobile plant to be fitted with flashing beacons and reversing beeping.</li><li>Pier to be kept free of mobile plant when boats are moored at pier to load / unload people and materials.</li><li>Signs to be erected on pier of the construction works taking place</li><li>That an Exclusion Zone will be created for the works.</li></ul>				
Emergency Procedures	<ul style="list-style-type: none"><li>The alarm should be raised immediately if anyone falls into the water.</li><li>First-aid provision on site must take account of the possibility of drowning and the need for resuscitation after rescue from the water.</li></ul>				
Further Actions	<ul style="list-style-type: none"><li>Continue reviewing the area as works progress.</li><li>Management should ensure that the safe systems of work laid down are strictly adhered to.</li></ul>				
References					

**Attachment 8.1**

Donegal County Council Statement of Measures



**Table 6.1 Statement of Measures**

Risk ID	Potential Risk	Risk Score	Mitigation Measures to be implemented	Outcome	Action	Date for Completion	Owner/Contact Person
1	Removal of sub tidal benthic species and communities through dredging of the material;	6	Ensure strict adherence to dredging within the approach channel and RNLI lifeboat berth by developing detailed methodology with dredging contractor	Minimise disturbance to sea bed.	Ensure dredging contractor provides detailed methodology	Next dredging campaign	Donegal County Council Engineer.
2	Short term increases in suspended solids;	4	Continuous observations during dredging works. And procedure for ceasing dredging if unacceptable conditions develop during works.	Minimise suspended solids to localised area for short term.	Ensure dredging contractor provides detailed methodology and procedure.	Next dredging campaign	Donegal County Council Engineer.
3	Settlement of suspended solids which may result in blanketing of sub tidal communities;	4	Complete bathymetric survey after each dredging campaign. Ensure strict adherence to disposal in designated dump site.	Minimise deposition of material outside designated dump site.	Provide record of bathymetry to ensure deposition only in dump site.	Next dredging campaign	Donegal County Council Engineer.
4	Release of nutrients or contaminants in loading operation.	2	Sample Sediments and analyse for appropriate suite of analyses	No contaminated materials are deposited in dump site	Commission sampling in advance of dredging campaign	Next dredging campaign	Donegal County Council Engineer.