



**2.4MW OYSTER 800 ARRAY PROJECT
Oyster 800 and Piles (Phase 1)**

**POST INSTALLATION
MARINE MAMMAL OBSERVATION (MMO)
REPORT**

APL-SD.PR.EU.UK.ORK2-REP-0001

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SIGNATURES

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Rev	Date	Purpose of Issue	Prepared By	Checked By	Approved By

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1. INTRODUCTION

This post installation marine mammal observation (MMO) report has been produced to demonstrate compliance with the environmental monitoring licence conditions granted for the installation and operation of the Oyster 800 (2a) and Piles Project at Billia Croo, Orkney.

This report includes:

- a short background;
- a summary of the MMO activities undertaken during installation; and
- the MMO recording forms.

Aquamarine Power produced an Environmental Monitoring Plan (EMP) (OY02-DES-RH-XOD-PLN-0001) in May 2011 which addresses the relevant conditions of the FEPA Licence granted for Oyster 800 (Ref 03987/11/0-4849). The EMP stipulates the marine mammal observation arrangements to be carried out during the 'noisy' operations associated with the installation of the Oyster 800 (2a) and piles project.

The MMO procedure is used to observe and record marine mammals and large or unusual fish species (e.g. basking shark) in the area around the works prior to, and during, any 'noisy' installation activities.

2. MMO MONITORING STRATEGY

A detailed MMO Protocol (OY02-DES-RH-XOD-SPEC-0001) based on the European Marine Energy Centre's (EMEC) protocol was developed by Aquamarine Power in partnership with environmental consultants Xodus Aurora & agreed with Marine Scotland in May 2011.

'Noisy' installation activities requiring an MMO are identified in the protocol and are summarised in Table 3.1 below alongside the dates they occurred. For further details see the MMO Protocol.

ID	Activity	Date of Operation
1	Lower legs of jack up to seabed 'jacking up'	15/06/11 to 16/06/11
2	Drill first pile socket (for Oyster 800 (2a))	18/06/11 to 21/06/11
3	Drill second pile socket (for Oyster 800 (2a))	24/06/11 to 28/06/11
4	Lower legs of jack up to seabed 'jacking up'	09/07/11
5	Drill third pile socket (for Oyster 801 (2b))	10/07/11 to 16/07/11
6	Lower legs of jack up to seabed 'jacking up'	17/07/11
7	Drill fourth pile socket (for Oyster 802 (2c))	19/07/11 to 22/07/11

Table 3.1 Summary of 'noisy' activities

3. MMO MONITORING RESULTS

A team of observers were trained by Xodus Aurora and were stationed on the Excalibur jack-up barge (the pile drilling vessel) to carry out their observation duties. Only one observer was on watch at any one time.

Records collected during the MMO monitoring (i.e. during the 'noisy' installation activities identified) are summarised in Table 4.1. Any additional sightings that occurred during the rest of the installation programme are also summarised in Table 4.2.

Copies of the forms completed in the field, including full environmental information, are included in Appendix A.

Date	MMO Start Time	MMO End Time	Work Phase (P = pre operational, O = Operational)	Summary of Marine Mammals Recorded
15/06/11	10.30	11.00	P - Arrival on site, pre jack down	None
15/06/11	14.00	14.30	O - Placing legs	None
15/06/11	18.00	18.30	O - Jacking Down	None
16/06/11	11.00	11.40	P - Pre landing of leader legs & jack hammering	None
16/06/11	15.00	15.30	O - Divers working with jack hammer	None
18/06/11	11.00	11.30	P- Pre drilling	None - drilling cancelled
18/06/11	11.50	12.25	P - Pre drilling	None
18/06/11	16.10	16.45	P - Pre drilling	None
18/06/11	19.45	20.15	O - Drilling	None
19/06/11	07.30	08.00	O - Drilling	None
19/06/11	10.30	11.00	O - Drilling	None
19/06/11	13.45	14.15	O - Drilling	None
19/06/11	18.45	19.15	O - Drilling	None
20/06/11	07.15	07.45	O - Drilling	None
20/06/11	13.30	14.00	O - Drilling	None
21/06/11	07.30	08.00	O - Drilling	None
21/06/11	13.20	13.50	O - Drilling	None
21/06/11	17.00	17.30	O - Drilling	None
24/06/11	12.00	12.30	P - Pre-drilling	None
24/06/11	16.30	17.00	O - Drilling	None
25/06/11	09.00	09.30	O - Drilling	None
25/06/11	14.00	14.30	O - Drilling	None
25/06/11	17.30	18.00	O - Drilling	None
26/06/11	07.30	08.00	O - Drilling	None
26/06/11	12.30	13.00	O - Drilling	None
26/06/11	17.00	17.30	O - Drilling	None
27/06/11	07.30	08.00	O - Drilling	None
27/06/11	12.30	13.00	O - Drilling	None
27/06/11	15.30	16.00	O - Drilling	None
27/06/11	18.30	19.00	O - Drilling	None
28/06/11	08.00	08.30	O - Drilling	None
28/06/11	10.00	10.30	O - Drilling	None
09/07/11	04.30	05.00	P - Pre-legs down	None
09/07/11	13.00	13.30	P - Jacking up	None
10/07/11	15.00	15.30	P - Divers drilling	None
10/07/11	16.15	16.55	P - Pre-drilling	None
11/07/11	08.05	08.40	O - Drilling	None
11/07/11	12.15	12.45	O - Drilling	None
11/07/11	16.15	16.45	O - Drilling	None
12/07/11	07.45	08.15	O - Drilling	None
12/07/11	12.00	12.30	O - Drilling	None
12/07/11	16.10	16.50	P - Pre-drilling	None
13/07/11	07.45	08.30	O - Drilling	None

13/07/11	18.00	18.40	P - Pre-drilling	None
14/07/11	08.15	08.45	P - Pre-drilling	None
14/07/11	18.00	18.40	P - Pre-drilling	None
15/07/11	09.15	10.05	P - Pre-drilling	None
15/07/11	16.30	17.00	O - Drilling	None
16/07/11	08.30	09.00	O - Drilling	None
17/07/11	16.30	17.00	P - Pre jack up	None
17/07/11	19.00	19.20	P - Leg move	None
19/07/11	01.00	01.30	P - Pre drilling	None
19/07/11	05.30	05.55	P - Pre drilling	None
19/07/11	12.00	12.30	O - Drilling	None
19/07/11	21.30	22.00	P - Pre drilling	None
20/07/11	10.00	10.30	O - Drilling	None
20/07/11	16.00	16.30	O - Drilling	None
21/07/11	09.15	09.45	P - Pre drilling	None
21/07/11	21.00	21.30	P - Pre drilling	None
22/07/11	11.30	12.05	O - Drilling	None
30/07/11	21.35	22.10	P - Pre legs down	None
02/08/11	20.00	20.30	P - Pre legs down	None

Table 4.2 Summary of MMO Monitoring.

There were no sightings of marine mammals during the MMO monitoring of 'noisy' activities during pile installation.

Date	MMO Start Time	MMO End Time	Work Phase (P = pre operational, O = Operational)	Summary of Marine Mammals Recorded
18/06/11	21.45	--	Out with MMO watch - at the time of sighting the pile conductor was being lifted into gates	Sighting No.1 4 to 5 porpoise
18/06/11	21.55	22.15	As above – a watch was started after the porpoise were sighted at 21.45	None
22/06/11	04.00	--	Out with MMO Watch - at the time of sighting there was deck work only	Sighting No.2 4 Orca
10/07/11	16.05	--	Out with MMO Watch - at the time of sighting there was deck work only	Sighting No.3 1 Grey Seal
12/07/11	15.10	--	Out with MMO Watch - at the time of sighting there was localised drilling	Sighting No.4 1 Grey Seal
13/07/11	13.35	--	Out with MMO Watch - at the time of sighting there was localised drilling	Sighting No.5 1 Common Seal
02/08/11	19.30	--	Out with MMO Watch - at the time of sighting there was deck work only	Sighting No.6 1 Pilot Whale

Table 4.2 Additional Sightings

There were 6 sightings of marine mammals out with the MMO monitoring for the remainder of the installation operations which included activities such as deck work and localised drilling.

4. CONCLUSIONS

The MMO monitoring took place over a period of 7 weeks and indicated the presence of marine mammals around the installation site only 6 times during this period. These sightings were not during the 30 minute pre-operational marine mammal observation periods and were not during the MMO watch period but during deck work and localised drilling activities.

Sightings of marine mammals were generally seen within 200 metres from the jack-up barge and included porpoise, orca, grey seal, common seal and pilot whale.

All of the species which were recorded during the pile installation period have previously been observed in the region.

No marine mammals were observed during the MMO Protocol watch periods.

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BILLIA CROO			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
15 06 11	1030	P ARRIVAL ON SITE PRE JACK DOWN	F 4 5 EASTERLY	SLIGHT	LOW	GOOD	1100	NIL
15 06 11	1400	O PLACING LEGS	F 4 5 EASTERLY	SLIGHT	LOW	GOOD	1430	NIL
15 06 11	1800	O JACKING DOWN	F4 EASTERLY	SLIGHT	LOW	GOOD	1830	NIL
16 06 11	1100	P PRE LANDING OF LEAPER LEGS + JACK HAMMERING	F4 S' EASTERLY	SLIGHT	LOW	MODERATE (RAINING)	1140	NIL
16 06 11	1500	O DIVERS WORKING WITH JACKHAMMER	F4 EASTERLY	SLIGHT	LOW	MODERATE (RAINING)	1530	NIL
18 06 11	1100	P PRE DRILLING	F3 EASTERLY	SLIGHT	LOW	GOOD	1130 DRILLING CANCELLED	NIL
18 06 11	1150	P PRE DRILLING	F3 EASTERLY	GLASSY	LOW	GOOD	1225	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BILLIA CREEK			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
180611	1610	P PRE DRILLING	F3 N' EASTERLY	GLASSY	LOW	GOOD	1645	NIL
180611	1945	O DRILLING	F2 N' EASTERLY	GLASSY	LOW	GOOD	2015	NIL
180611	2155 2155	N/A	F2 N' EASTERLY	GLASSY	LOW	GOOD	2215	SEE SIGHTING #1
190611	0730	O DRILLING	F2 W'N' WESTERLY	SLIGHT	LOW	MODERATE (MISTY)	0800	NIL
190611	1030	O DRILLING	F3 N'N' WESTERLY	SLIGHT	LOW	MODERATE (MISTY)	1100	NIL
190611	1345	O DRILLING	F5 N'N' WESTERLY	SLIGHT	LOW	GOOD/MODERATE (HAZY)	1415	NIL
190611	1845	O DRILLING	F5 N'N' WEST	SLIGHT	LOW	GOOD	1915	3 NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE PAPER LIMITED	Location	BILLIA CROO			
Contractor	FUGRO SEACORE	Observer	SHAWN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
20 06 11	0715	O DRILLING	F5 N' WESTERLY	S LIGHT	O	GOOD (SLIGHT MIST)	0745	NIL
20 06 11	1330	O DRILLING	F4 N' WESTERLY	S LIGHT	O	GOOD	1400	NIL
21 06 11	0730	O DRILLING	F4 N' EASTERLY	GLASSY	O	GOOD	0800	NIL
21 06 11	1320	O DRILLING	F3 N' EASTERLY	GLASSY	O	GOOD	1350	NIL
21 06 11	1700	O DRILLING	F3 N' EASTERLY	GLASSY	O	GOOD	1730	NIL
24 06 11	1200	P PRE DRILLING	F4 N' WESTERLY	S LIGHT	O	GOOD	1230	NIL
24 06 11	1630	O DRILLING	F4 N' WESTERLY	S LIGHT	O	GOOD	1700	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BILBA CROO			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
25 06 11	0900	O DRILLING	F6 S'EASTERLY	S LIGHT	O	G	0930	NIL
25 06 11	1400	O DRILLING	F5 S'EASTERLY	S LIGHT	O	G	1430	NIL
25 06 11	1730	O DRILLING	F4 S'EASTERLY	S LIGHT	O	G	1800	NIL
26 06 11	0730	O DRILLING	F3 S'S'WESTERLY	S LIGHT	O	G	0800	NIL
26 06 11	1230	O DRILLING	F4 S'WESTERLY	S LIGHT	O	G	1300	NIL
26 06 11	1700	O DRILLING	F3 S'WESTERLY	S LIGHT	O	G	1730	NIL
27 06 11	0730	O DRILLING	F4 S'WESTERLY	S LIGHT	O	G	0800	NIL

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 (Fax: 01856 852068, E-Mail: Jennifer.Norris@emec.org.uk)
 Marine Mammal Recording SOP074-03-02 20100310
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MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BILLIA CROO			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
270611	1230	O DRILLING	F4 S' WESTERLY	SLIGHT	O	GOOD	1300	NIL
270611	1530	O DRILLING	F4 S' WESTERLY	SLIGHT	O	GOOD	1600	NIL
270611	1830	O DRILLING	F4 S' WESTERLY	SLIGHT	M	GOOD	1900	NIL
280611	0800	O DRILLING	F3 SOUTHERLY	SLIGHT	O	GOOD	0830	NIL
280611	1000	O DRILLING	F3 SOUTHERLY	SLIGHT	O	GOOD	1030	NIL
090711	0430	P PRE- LEGS DOWN	F3 EASTERLY	SLIGHT	O	GOOD	0500	NIL
090711	1300	P SACKING UP	F3 EASTERLY	SLIGHT	O	GOOD	1330	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BILLA CROO			
Contractor	SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
100711	1500 1500 DIVERS DRILLING	P DIVERS DRILLING	F3 NORTH WEST	SLIGHT	O	GOOD	1530	NIL
100711	1615	P PRE DRILLING	F4 N' WEST	SLIGHT	O	GOOD	1655	NIL
110711	0805	O DRILLING	F3 N' EAST	SLIGHT	O	GOOD	0840	NIL
110711	1215	O DRILLING	F3 N' EAST	SLIGHT	O	GOOD	1245	NIL
110711	1615	O DRILLING	F3 EASTERLY	SLIGHT	O	GOOD	1645	NIL
120711	0745	O DRILLING	F4 N' EAST	SLIGHT	O	GOOD	0815	NIL
120711	1200	O DRILLING	F3 N' EAST	SLIGHT	O	GOOD	1230	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT								
Ship	FUGRO EXCALIBUR		Client	AQUAMARINE PEARL LIMITED		Location	BILLIA CROO	
Contractor	FUGRO SEACORE		Observer	SHAUN DOLPHIN				
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
120711	1610	P PRE-DRILLING	F3 1800 EASTERLY	GLASSY	O	GOOD	1650	NIL
130711	0745	O DRILLING	F3 S' EAST	GLASSY	O	GOOD	0830	NIL
130711	1330	O DRILLING	F3 S' EAST	GLASS	O	GOOD	1400	COMMON SEAL SIGHTING #5
130711	1800	P PRE DRILLING	F3 S' EAST	GLASS	O	GOOD	1840	NIL
140711	0815	P PRE DRILLING	F4 N' EAST	SLIGHT	O	GOOD	0845	NIL
140711	1800	P PRE DRILLING	F4 N' EAST	SLIGHT	O	GOOD	1840	NIL
150711	0915	P PRE DRILLING	F5 N' EAST	SLIGHT	O/M	GOOD	1005	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

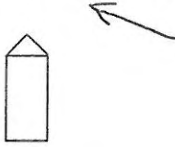
MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT								
Ship		Client			Location			
Contractor		Observer						
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
150711	1630	O DRILLING	F4 S' EAST	SLIGHT	O	GOOD	1700	NIL
160711	0830	O DRILLING	F4 N' WEST	SLIGHT	M	GOOD	0900	NIL
170711	1630	P PRE JACK UP	F4 NORTH	SLIGHT	O	GOOD	1700	NIL
170711	1900	P LEG MOVE	F4 NORTH	SLIGHT	O	GOOD	1920	NIL
180711	0100	P PRE DRILLING	F4 WEST	SLIGHT	O	MODERATE POOR (DARK)	0130	NIL
190711	0530	P PRE DRILLING	F4 WEST	CHOPPY	O/M	GOOD	0555	NIL
190711	1200	O DRILLING	F4 NORTH	CHOPPY	O/M	GOOD	1230	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT


Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LTD	Location	BILUA CREEK			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
19 07 11	2130	P PRE DRILLING	F5 NORTH	SLIGHT	O/M	GOOD	2200	NIL
20 07 11	1000	O DRILLING	F5 NORTH	CHOPPY	O/M	GOOD	1030	NIL
20 07 11	1600	O DRILLING	F5 N' WEST	CHOPPY	O/M	GOOD	1630	NIL
21 07 11	0915	P PRE DRILLING	F4 N' WEST	SLIGHT	O	GOOD	0945	NIL
21 07 11	2100	P PRE DRILLING	F4 N' WEST	SLIGHT	O/M	GOOD	2130	NIL
22 07 11	1130	O DRILLING	F4 N' WEST	SLIGHT	O/M	GOOD	1205	NIL
30 07 11	2135	P PRE LEGS DOWN	F5 N' WEST	CHOPPY	O	GOOD	2210	NIL

MARINE MAMMAL RECORDING FORM – RECORD OF OPERATIONS, EFFORT & ENVIRONMENT

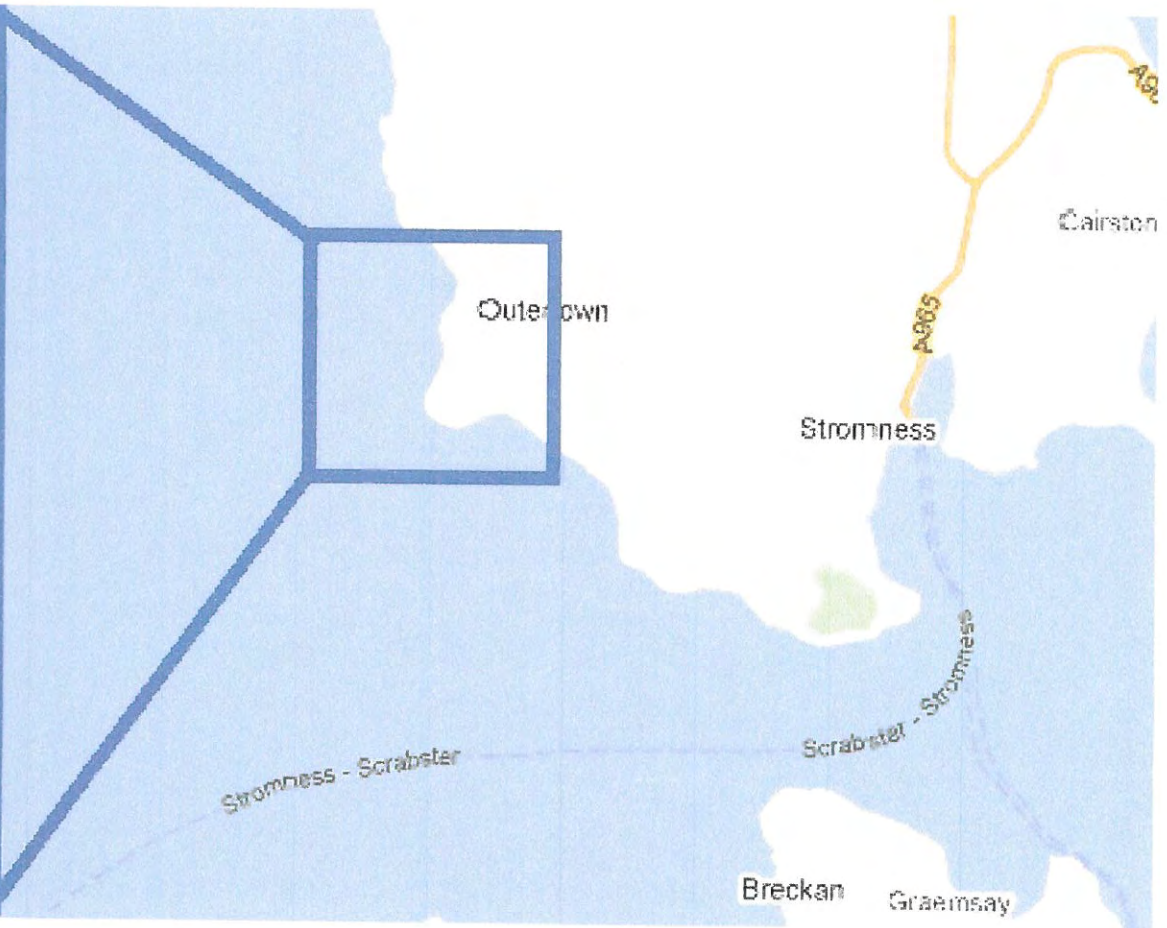
Ship	FUGRO EXCALIBUR	Client	AQUAMARINE POWER LIMITED	Location	BALLIA CROO			
Contractor	FUGRO SEACORE	Observer	SHAUN DOLPHIN					
Date	Time when search for marine mammals began	Phase of Work: P= Pre-Operational O=Operational	Wind force (Beaufort) and direction	Sea State: G=Glassy S=Slight C=Choppy R=Rough	Swell: O=Low (0-2m) M=Medium (2-4m) L=Large (>4m)	Visibility: P=Poor (<1km) M=Moderate(1-5km) G=Good (>5km)	Time when search for marine mammals ended	Summary of marine mammals seen
020811	2000	P PRE LEGS DOWN	F4 S' EAST	SLIGHT	O	GOOD	2030	NIL

MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING					
Date	18 06 11	Time	21 45	Sighting No.	1
How did this sighting occur? <ul style="list-style-type: none"> • While you were keeping a continuous watch for marine mammals • Spotted incidentally by you or someone else ✓ • Other (please specify) 					
Location of Observer ON BOARD JACK UP EXCALIBUR STARBOARD STERN OF VESSEL			Observer JOSS HOLLINGWORTH MATT GREGORY		
Position of Works (degrees and decimal minutes) 58. 58. 158 N 03. 21. 640 W			Water depth (metres) If practical 20m		
Species PORPOISE ?			Certainty of identification Definite / probable / <u>possible</u>		
Total number 4 OR 5			Number or adults UNKNOWN Number of juveniles		
Description (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) 4 OR 5 DORSAL FINS SEEN TO BREAK THE SURFACE APPROX 200m AWAY. BLACK IN COLOUR. FURTHER DESCRIPTION VERY VAGUE			Photograph or video taken Yes / <u>No</u>		
			Direction of travel of animals (in relation to centre of works) 		
Behaviour NORMAL SWIMMING			Direction of travel of animals (compass points) NE → SW		
Activity of Ship/ Vessel when animal/s first seen LIFTING PILE CONDUCTOR INTO GATES NO DRILLING			Further information I WAS INFORMED AT 2155, WENT TO OBSERVE BUT SAW NOTHING MYSELF		

Return to: EMEC, Old Academy, Stromness, Orkney, KW163AW
(Fax: 01856 852068, E-Mail: Jennifer.Norris@emec.org.uk)

MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING					
Date	22 06 11	Time	04 00	Sighting No.	2
How did this sighting occur? <ul style="list-style-type: none"> • While you were keeping a continuous watch for marine mammals • Spotted incidentally by you or someone else ✓ • Other (please specify) 					
Location of Observer DRILLING DECK, FUGRO EXCALIBUR, BILBA CROO			Observer JOSS HOLLINGWORTH MATT GENDLE		
Position of Works (degrees and decimal minutes) 58.58.158N 03.21.640W			Water depth (metres) <i>If practical</i> 15 → 30m		
Species ORCA			Certainty of identification <input checked="" type="radio"/> Definite / probable / possible		
Total number 4			Number or adults Number of juveniles - 4 ? OR FEMALES		
Description (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) ALL 4 APPEARED TO BE AROUND THE SAME SIZE, WITH POINTED THIN DORSAL FIN. PREDOMINANTLY BLACK WITH WHITE MARKINGS AT THE SIDE OF THE HEAD.			Photograph or video taken <input checked="" type="radio"/> Yes / No		
			Direction of travel of animals (in relation to centre of works) 		
Behaviour NORMAL SWIMMING, FOLLOWING THE COASTLINE THEN OUT TO SEA.			Direction of travel of animals (compass points) E → W THEN SW → NE THEN E → W		
Activity of Ship/ Vessel when animal/s first seen DECK WORK ONLY. NO 'NOISY' WORKS.			Further information MAP ATTACHED.		

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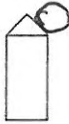


MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING

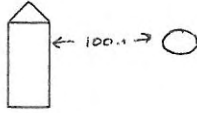
Date	10 07 11	Time	16 05	Sighting No.	3
How did this sighting occur?					
<ul style="list-style-type: none"> • While you were keeping a continuous watch for marine mammals • Spotted incidentally by you or someone else ✓ • Other (please specify) 					
Location of Observer			Observer		
ON BOARD FUGEO EXCALIBUR			DOUG WRIGHT (DIVER)		
Position of Works (degrees and decimal minutes)			Water depth (metres) <i>If practical</i>		
58.58.158 N 03.21.640 W			10 m		
Species			Certainty of identification		
GREY SEAL			Definite / <u>probable</u> / possible		
Total number			Number of adults		
ONE			1		
			Number of juveniles		
			0		
Description (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)			Photograph or video taken		
			Yes / <u>No</u>		
			Direction of travel of animals (in relation to centre of works)		
1.5 - 2m					
Behaviour			Direction of travel of animals (compass points)		
TRAVELLING AT SPEED AND JUMPING OUT OF THE WATER			NW → SE		
Activity of Ship/ Vessel when animal/s first seen			Further information		
DECK WORK ONLY			SEEN APPROX 100m ASTERN OF VESSEL. HEADING TOWARDS LAND BY JUMPED 4-5 TIMES THEN NOT SEEN AGAIN.		

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MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING

Date	12 07 11	Time	1510	Sighting No.	4
How did this sighting occur?					
<ul style="list-style-type: none"> • While you were keeping a continuous watch for marine mammals • Spotted incidentally by you or someone else ✓ • Other (please specify) 					
Location of Observer			Observer		
Bow of EXCALIBUR			KEIRAN		
Position of Works (degrees and decimal minutes)			Water depth (metres) <i>if practical</i>		
58.58.158 N 03.21.640 W			20m		
Species			Certainty of identification		
GREY SEAL			Definite / probable / possible		
Total number			Number of adults		
1			0		
			Number of juveniles		
			1		
Description (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)			Photograph or video taken		
			Yes / <input checked="" type="checkbox"/>		
DARK IN COLOUR 1-1.5m IN LENGTH			Direction of travel of animals (in relation to centre of works)		
					
Behaviour			Direction of travel of animals (compass points)		
SUNBATHING OBSERVING US			NOT SEEN TO TRAVEL		
Activity of Ship/ Vessel when animal/s first seen			Further information		
DRILLING			APPEARED ON SURFACE AT THE BOW OF EXCALIBUR. "INVESTIGATED" FOR 1-2 MINUTES THEN SUBMERGED. NOT SEEN AGAIN.		

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MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING		
Date	13 07 11	Time 1335
Sighting No.		#5
How did this sighting occur? • While you were keeping a continuous watch for marine mammals ✓ • Spotted incidentally by you or someone else • Other (please specify)		
Location of Observer	Observer	
Bow Of EXALBUR	DOUG WRIGHT SHAUN BOWHIN DAVE HUBBARD	
Position of Works (degrees and decimal minutes)	Water depth (metres) If practical	
58.58.158 N 03.21.640 W	15-20m	
Species	Certainty of identification	
COMMON SEAL	<u>Definite</u> / probable / possible	
Total number	Number or adults	
1	0	
	Number of juveniles	
	1	
Description (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) LIGHT COLOUR WITH DARK SPOTS 1m IN LENGTH 'FLAT' FACE	Photograph or video taken Yes / <u>NO</u>	
	Direction of travel of animals (in relation to centre of works) 	
Behaviour	Direction of travel of animals (compass points)	
SURFACING/DIVING	NOT SEEN TO TRAVEL	
Activity of Ship/ Vessel when animal/s first seen	Further information	
DRILLING	SURFACED AND DIVED 4-5 TIMES IN ABOUT 1 MINUTE THE DISAPPEARED TO FAR TO PHOTOGRAPH IN FOCUS.	

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MARINE MAMMAL RECORDING FORM – RECORDING OF SIGHTING

Date	02-08-2011	Time	1930	Sighting No.	6
How did this sighting occur?					
<ul style="list-style-type: none"> • While you were keeping a continuous watch for marine mammals • Spotted incidentally by you or someone else ✓ On way back to accommodation after shift • Other (please specify) and it was 150 - 200 metres from barge. 					
Location of Observer			Observer		
Port &wd on ATCO deck			Ian Jacka		
Position of Works (degrees and decimal minutes)			Water depth (metres) <i>If practical</i>		
58.58.158 N 03.21.640 W			?		
Species			Certainty of identification		
Pilot whale			Definite / <u>probable</u> / possible		
Total number			Number or adults		
1			1		
			Number of juveniles		
Description (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)			Photograph or video taken		
Almost black, dorsal fin forward. Going away from me so didn't see head. At least 4 metres long (including head)			Yes / <u>No</u>		
			Direction of travel of animals (in relation to centre of works)		
Behaviour			Direction of travel of animals (compass points)		
Sweeping surface, then dived for approx 10 minutes.			N → S THEN EAST UP HOY SOUND		
Activity of Ship/ Vessel when animal/s first seen			Further information		
During shift change					

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