



ATLANTIS
RESOURCES CORPORATION

European Marine Energy Centre (EMEC) Decommissioning Programme

Atlantis Resources Corporation proposed installation of AK-1000™ turbine at EMEC's Fall of Warness Tidal Test Facility, Eday, Orkney Islands, Scotland

Desmond Low
11-Jul-2012

CONFIDENTIAL

Author: Desmond Low	Document No: 3004-ARC-DL-017-EMECDecomProgConfi-6.1 D	Revision: 7	Date: 11-Jul-2012
Project No: 3004	Project Title: EMEC AK-1000™		
Document Type: Consenting			
Document Title: Decommissioning Programme			

Document History and Status

Revision	Approved by (internally)	Date approved	Date issued	Comment
1.0	Dave Rigg	14-Dec-09	11-Dec-09	Incorporated ARC's and XA's comments
2.0	Dave Rigg	21-Dec-09	21-Dec-09	Incorporated Atlantis' & XA's comments
3.0	Dave Rigg	22-Dec-09	22-Dec-09	Minor editorial edits
4.1	Dave Rigg	23-Dec-09	23-Dec-09	Minor editorial change.
5.1	Dave Rigg	08-Jan-10	08-Jan-10	Incorporated EMEC comments
5.3	Drew Blaxland	22-Jan-10	22-Jan-10	Minor editorial edits
5.4	Dave Rigg	22-Jan-10	22-Jan-10	Minor editorial edits
6.0	Dave Rigg	31-Mar-10	31-Mar-10	Incorporated stakeholder consultation responses; update to installation method & schedule
7.0	Dave Rigg	11-Jul-10	11-Jul-10	Incorporated stakeholder consultation (2 nd round) responses.

Distribution of Copies

Revision	Media	Issued to	Company
7.0	Electronic	John Swift	DECC

London Office

King Scholar's House, 3rd Floor, 230 Vauxhall Bridge Road, London, SW1V 1AU, UK

DID +44 20 7901 1525

www.atlantisresourcescorporation.com

TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY	5
2.	INTRODUCTION	6
2.1.	ATLANTIS RESOURCES CORPORATION	6
2.2.	STAKEHOLDER CONSULTATION	6
3.	BACKGROUND INFORMATION	10
3.1.	DEVICE LOCATION	10
3.2.	LAYOUT OF FACILITIES TO BE DECOMMISSIONED	12
3.3.	PHYSICAL CONDITIONS RELEVANT TO DECOMMISSIONING	13
3.4.	CONSERVATION AREAS RELEVANT TO DECOMMISSIONING.....	15
3.5.	NAVIGATIONAL ACTIVITY IN THE AREA	16
4.	DESCRIPTION OF ITEMS TO BE DECOMMISSIONED	17
5.	DESCRIPTION OF PROPOSED DECOMMISSIONING MEASURES	20
5.1.	INTRODUCTION.....	20
5.2.	VESSEL SPECIFICATIONS	20
5.3.	CABLE DISCONNECTION	20
5.4.	NACELLE DECOMMISSIONING	20
5.5.	GBS DECOMMISSIONING	20
5.6.	HEALTH AND SAFETY CONSIDERATIONS.....	20
5.7.	PROPOSED WASTE MANAGEMENT SOLUTIONS	21
6.	ENVIRONMENTAL IMPACT ASSESSMENT.....	25
7.	COSTS.....	29
8.	FINANCIAL SECURITY	30
9.	SCHEDULE	31
10.	PROJECT MANAGEMENT AND VERIFICATION.....	32
11.	SEABED CLEARANCE	33
12.	RESTORATION OF THE SITE	34
13.	POST-DECOMMISSIONING MONITORING, MAINTENANCE AND MANAGEMENT OF THE SITE.....	35
14.	SUPPORTING STUDIES.....	36
15.	APPENDICES.....	37
15.1.	DETAILED CHART OF DEVELOPERS’ PROJECTS AT FALL OF WARNESSE	37
15.2.	SPECIFICATION OF TYPICAL VESSEL REQUIRED FOR DECOMMISSIONING.....	38
15.3.	STAKEHOLDER CONSULTATION RESPONSES.....	41
16.	CONFIDENTIAL APPENDICES.....	53
16.1.	COSTS.....	ERROR! BOOKMARK NOT DEFINED.
16.2.	FINANCIAL SECURITY.....	ERROR! BOOKMARK NOT DEFINED.

GLOSSARY

BPEO	Best Practicable Environmental Option
COLREGS	International Regulations for Preventing Collision at Sea
CDM	Construction Design & Management (Regulations)
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CPA	Coastal Protection Act
DECC	Department of Energy & Climate Change
DP	Dynamic Positioning
EIA	Environmental Impact Assessment
ES	Environmental Statement
EMEC	European Marine Energy Centre
FEPA	Food & Environmental Protection Act
FMSI	Final Maritime Safety Information report
HIRA	Hazard Identification & Risk Assessment
MSR	Mean Spring Range
NavWarn	Navigational Warning
NM	Notices to Mariners
NSRA	Navigational Risk Assessment
OREI	Offshore Renewable Energy Installation
RIB	Rigid Inflatable Boat
ROV	Remotely Operated Vehicle
SOP	Standard Operating Procedure
UKHO	United Kingdom Hydrographical Office

1. Executive summary

Atlantis proposes to install one 1,000kW tidal energy conversion device, the AK-1000™, at the Fall of Warness tidal energy test site at the European Marine Energy Centre (EMEC) off the coastline at Eday, Orkney, Scotland. This document outlines a decommissioning plan for the AK-1000™ tidal turbine at EMEC's tidal test site at the Fall of Warness, Orkney. This document is submitted for approval in accordance with the Energy Act 2004.

The AK-1000™ comprises one major component with two support structures:

- The turbine nacelle, housing all of the electro-mechanical systems including the blades, generator, gearbox, brake and the stab system designed to connect the turbine to the top of the support pylon;
- The Gravity Base Structure (GBS) that secures the turbine to the seabed.
- Support pylon that connects the turbine to the GBS.

Environmental impacts associated with the decommissioning of this device have been addressed by the supporting environmental documentation to be submitted as part of the licence applications under the Food and Environment Protection Act 1985 (Part II) (As Amended) (FEPA), Coast Protection Act 1949 (CPA) and European Protected Species (EPS; likely). Consultation responses arising from assessment of the Environmental Scoping have been reviewed and integrated into this decommissioning plan.

The proposed decommissioning procedure is described in detail in this document and is summarized as follows:

- Mobilize installation vessel.
- Disconnection of EMEC subsea cable from turbine at junction box.
- Install cable guidance system for the raising of the nacelle.
- Remove the nacelle from the GBS pylon.
- Detach the cable guidance system via ROV.
- Remove the ballast blocks from the GBS frame.
- Remove the GBS frame from the seabed.
- Demobilize installation vessels.
- Turbine removal complete.
- ROV survey.
- Decommissioning complete.

The decommissioning of the AK-1000™ is expected to take place between May and August 2015. Because no piling work was done during installation, the removal of the GBS (including the pylon) completes the decommissioning of the turbine.

2. Introduction

This document outlines a decommissioning plan for Atlantis Resources Corporation's AK-1000™ tidal turbine, which is planned to be installed in August 2010 at EMEC's tidal test site at the Fall of Warness, Orkney. This document is submitted for approval in accordance with the Energy Act 2004 and has been prepared in line with the DECC (formerly DTI/BERR) industry guidelines for the decommissioning of Offshore Renewable Energy Installations (OREI's)¹.

2.1. Atlantis Resources Corporation

Atlantis Resources Corporation, through its wholly owned subsidiary, Atlantis Operations (UK) Ltd, ("Atlantis") is the company which will own and operate the installation, their ownership extending to the point of interface with the seabed cable. The seabed cable itself will be installed and owned by EMEC and is therefore not covered in this decommissioning programme.

2.2. Stakeholder consultation

As part of the decommissioning programme, this document was submitted for two consultation rounds. The first was sent to 16 DECC specified stakeholders listed in *Table 1*; the second, to specified government departments (*Table 2*). The stakeholders had a statutory 30 days to provide consultation responses. This version of the decommissioning programme has, where possible, addressed the issues raised by the stakeholders. *Table 1* and *Table 2* provide summaries of the responses and where relevant, copies of consultation correspondence are provided in *Appendix 15.3*.

¹ DTI (2006). Decommissioning of offshore renewable energy installations under the Energy Act 2004. Guidance notes for industry, December 2006.

Table 1: First consultation list of stakeholders and issues raised

Stakeholder	Comment received	Action
Chamber of Shipping	Keep local Ferry operator (Orkney Ferries Ltd) informed on progress of work plan and any changes that may affect their safe operations nearer the anticipated time of decommissioning schedule.	This has been considered and Atlantis has commissioned a NSRA which will address this issue. See Section 5.6.
Historic Scotland	No comment to make on the proposal.	
Joint Nature Conservation Committee	No comment to make on the proposal.	
Maritime and Coastguard Agency	Include a section on project management and verification of operation.	This has been included in Section 5.1.
Northern Lighthouse Board	Recommendations for lighting and marking will be given through the Coastal Protection Act Section 34 consultation process.	
	Adequate notice of timescale, manner and vessels to be used is given to the Mariner prior to the commencement of any operation, and in consultation with the Director of Orkney Harbours.	This has been considered and Atlantis has commissioned a NSRA which will address this issue. See Section 5.6.
	Refer to the particular section on the Navigational Risk Assessment and include the methodology and procedures to be used during the decommissioning phase.	This has been considered and Atlantis has commissioned a NSRA which will address this issue. See Section 5.6.
	The vessels used in these operations should be lit and marked as per the International Regulations for the Prevention of Collisions at Sea 1972.	This has been considered and Atlantis has commissioned a NSRA which will address this issue. See Section 5.6.
Orkney Dive Boat Association	No comment received.	
Orkney Fisheries Association	No comment received.	
Orkney Fishermen's Society	No comment received.	
Orkney Island Council	No comment received.	

Stakeholder	Comment received	Action
Orkney Islands Council Marine Services	No comment to make on the proposal.	
Royal Society for the Protection of Birds	No comment to make on the proposal.	
Royal Yacht Association (Scotland)	No problems with this application as regards small craft navigation.	
Scottish Environmental Protection Agency	No objection to proposal provided that all materials are removed from the seabed and EMEC guidelines are followed.	
	No reference made to decommissioning of land based facilities.	The decommissioning programme, as set out in the Energy Act 2004, applies only to materials deposited in territorial waters in or adjacent to England, Scotland and Wales (between the mean low water mark and the seaward limits of the territorial sea) and to waters in the UK Renewable Energy Zone (including that part adjacent to Northern Ireland territorial waters). All land based infrastructure is situated within the EMEC facility on Eday and will be decommissioned at the end of the project.
Scottish Fisheries Protection Agency	No comment received.	
Scottish Fishermen’s Federation	No comment received.	
Scottish Natural Heritage	Due to timing, brevity and limited scale of the decommissioning programme, it is unlikely to have a significant effect on the qualifying European sites and protected species. SNH has no objections to the proposal but recommends it is completed outwith the most sensitive period for cetaceans and harbour Seals (ie before late June or after early August).	This will be considered when preparing the decommissioning schedule. Tidal conditions and weather windows may limit the scope to work at some periods. See Section 9.

Table 2: Second consultation list of stakeholders and issues raised

Stakeholder	Comment received	Action
CEFAS	No comment received	
Department for Transport	No comment received	
Marine Scotland	Providing the device is decommissioned during the least sensitive periods of the year then there is no major concern.	
	There should be a requirement to survey an area of the seabed extending beyond the footprint of the works	Post-decommissioning ROV survey will be conducted in line with the EMEC ROV seabed survey guidelines. A visual inspection of the seabed will be conducted, flying the ROV 50m to the North, South, East and West (or along appropriate environmental gradients) from the central location. Section 11
Maritime and Coastguard Agency	Include a section on project management and verification of operation.	Section 10 Project Management and Verification has been added
The Crown Estate	What is the intended period of operation for the Mark 2 nacelle	The intended maximum period of operation for the Mark 2 nacelle is 4 years until 2015. Section 4
	Consideration should be given to the different physical differences between nacelles and the implications for decommissioning works	There is no physical difference between Mark 1 and Mark 2 nacelles, they have the same dimensions and utilise the same method of installation and decommissioning. Section 4
UK Hydrographic Office	When a device is decommissioned it will not be removed from navigational publications until the UKHO has been informed. There is also a requirement to provide evidence of this.	A Final Maritime Safety Information (FMSI) form will be submitted by Atlantis, this includes a decommissioning report (produced in line with EMEC Decommissioning SOP) and the final ROV survey report on the clearance of the site (Section 11).

3. Background information

3.1. Device location

The device will be located directly south of Seal Skerry at the EMEC tidal test site at the Fall of Warness, off the west coast of the island of Eday in Orkney. Atlantis will not be using one of the existing EMEC test berths but has identified a site within the EMEC test area which shows good potential for meeting the requirements of the various stakeholders. The water depth at this site is 33m LAT (Lowest Astronomical Tide). The tip of the AK-1000™ will be 22.5m from the seabed thus yielding a clearance from LAT of at least 10m.

At present, it is expected that the final location will be within 100m of the position below which is quoted in WGS84 and Ordnance Survey local grid:

Lat (WGS84)	Long (WGS84)	Easting (BNG – OSGB36)	Northing (BNG – OSGB36)
59°8'59.899" N	2°49'37.301" W	352791	1029537

As the proposed position is not an existing EMEC test berth, Atlantis has negotiated with EMEC the laying of a new cable for the proposed installation in a location suitable to Atlantis’ needs and technology.

Figures 1 and 2 illustrate the proposed location for deployment of the device with reference to other nearby EMEC test berths and also in context of detailed bathymetry at the proposed location.

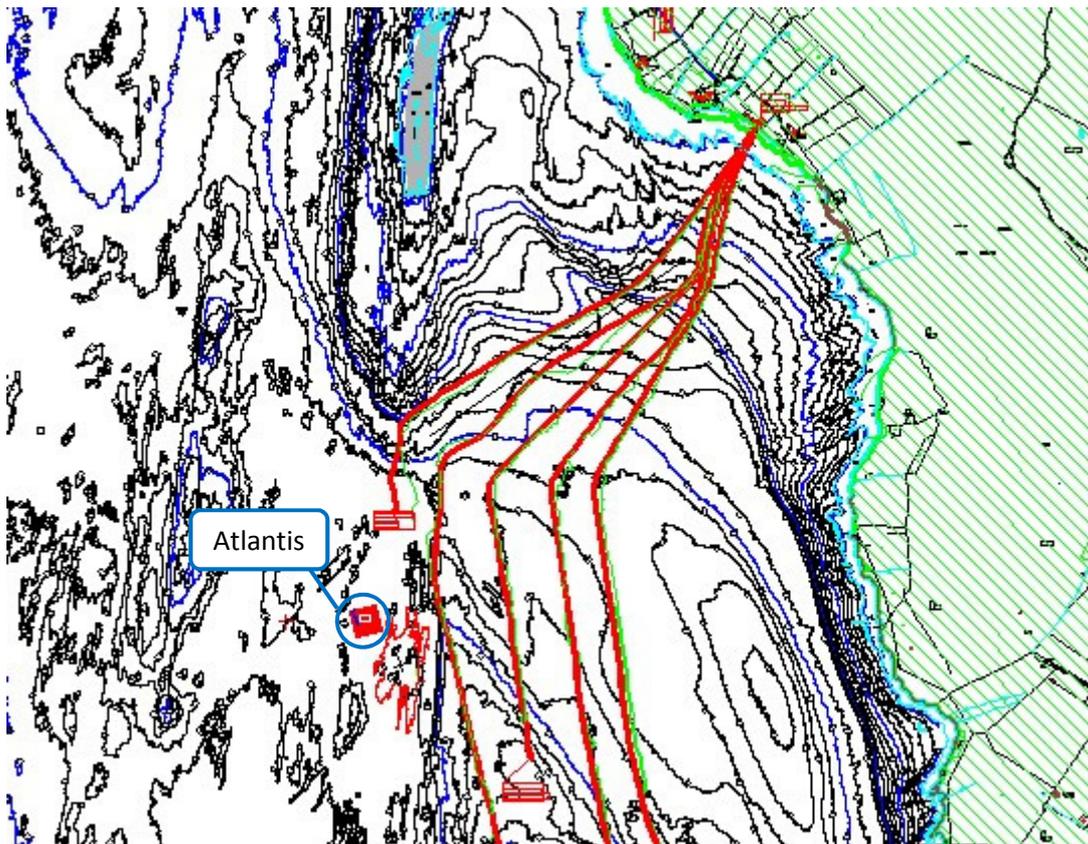


Figure 1: Chart showing location of proposed site at EMEC

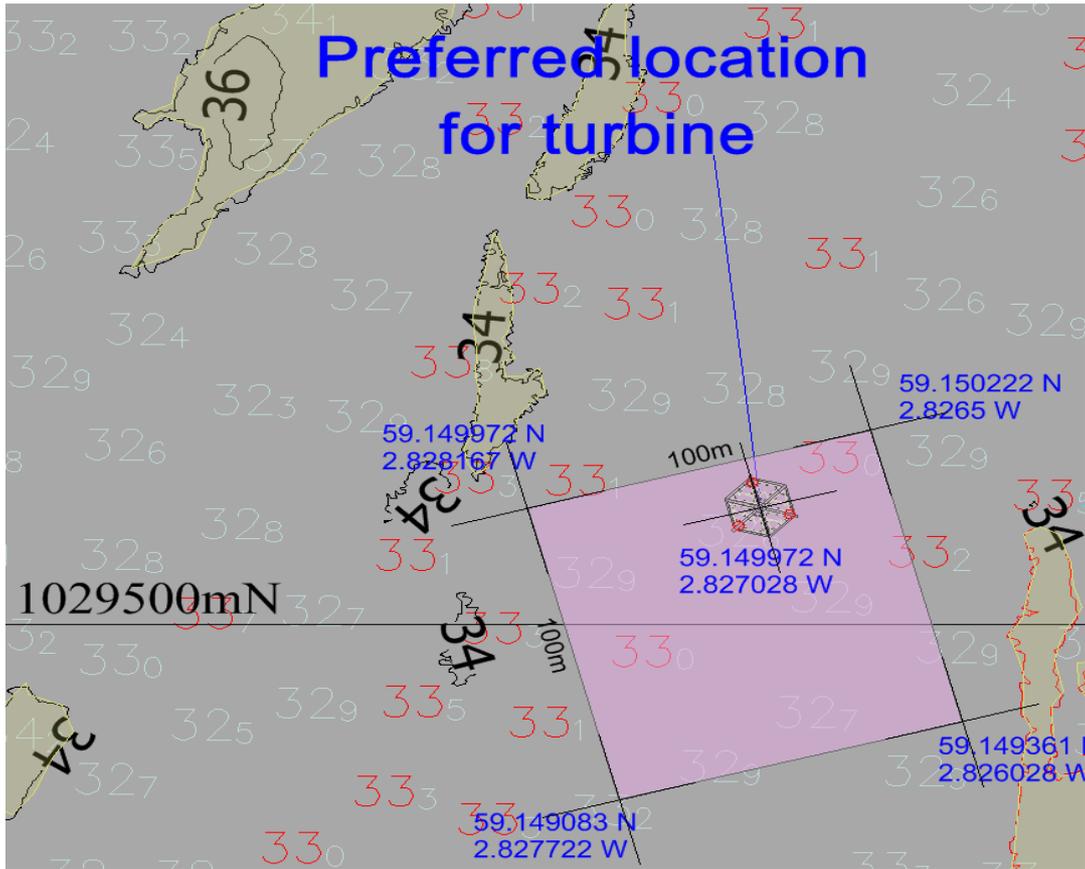


Figure 2: Coordinates of the proposed site 59.149°N (59°8'59.899"N), 2.827°W (2°49'37.301"W)

Adjacent facilities will have to be taken into consideration during decommissioning. These include other installations at the test area (Table 3).

Table 3: Tidal developers and their (proposed) installations at EMEC (at the time of writing)

Developer	Test Berth	Status
Hammerfest Strom	#1	In progress
Tidal Generation Ltd	#2	In progress
N.A.	#3	N.A.
OpenHydro	#4	Installed
Scotrenewables	#5	In progress
Atlantis Resources Corporation	New	In progress

Figure 3 shows the location and footprint of those developers adjacent to Atlantis' site. Appendix 15.1 shows the respective locations and footprints of all the developers and their proposed installations.

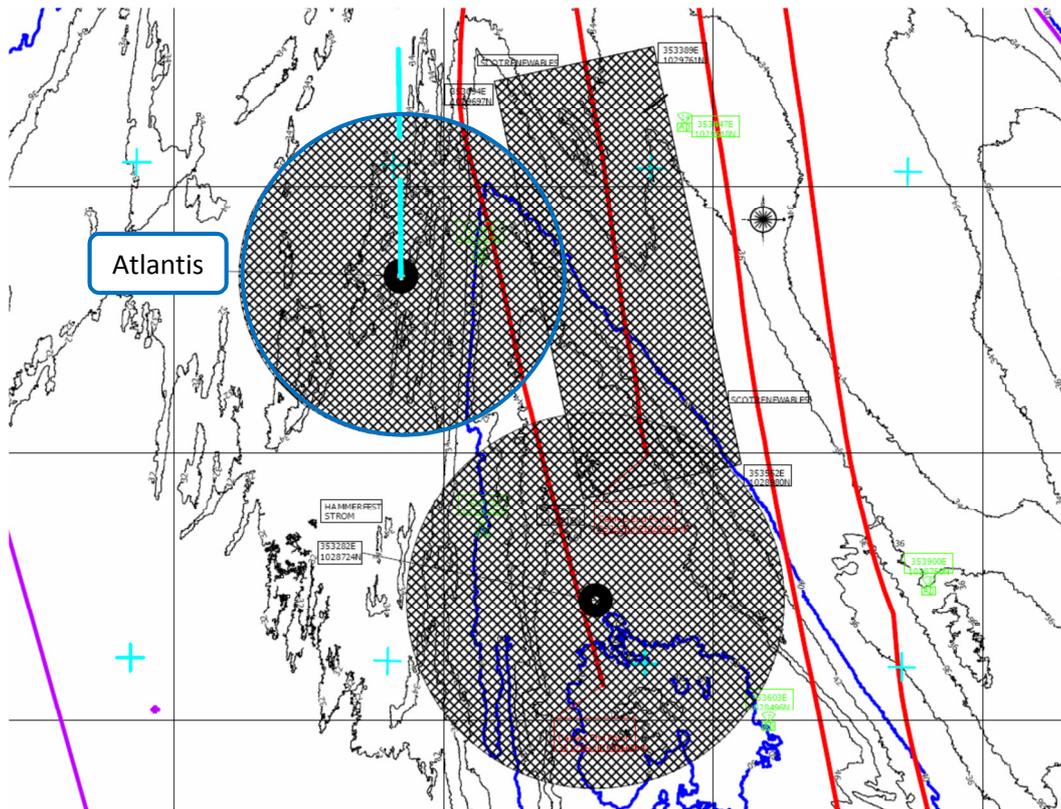


Figure 3: Closeup of relative locations of other developers' installations adjacent to Atlantis' site

3.2. Layout of facilities to be decommissioned

The device (*Figure 4*) will consist of a GBS with associated ballast, pylon, and nacelle. Initially the Mark 1 turbine will be installed and then replaced with a Mark 2 turbine following a 12 month period of testing. This Mark 2 turbine will have identical dimensions to the Mark 1 and maintain a maximum power output of 1MW. The installation of the Mark 2 nacelle, will only involve removing the Mark 1, and replacing it with the Mark 2 nacelle. The GBS will not need replacing and is designed to be used for both the Mark 1 and Mark 2 nacelles.

The seabed footprint occupied by the equipment that will be decommissioned is 485m²

There will be no other facilities requiring decommissioning.

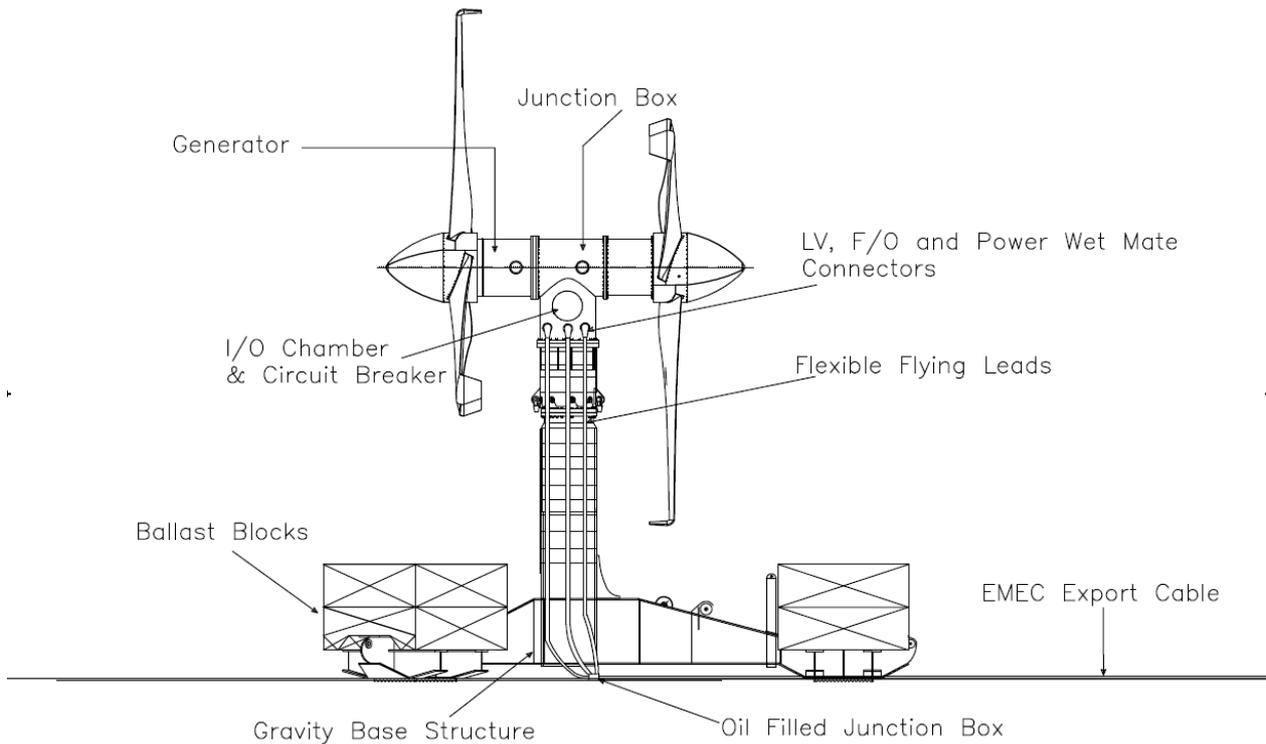


Figure 4: Nacelle, GBS and ballast to be decommissioned

3.3. Physical conditions relevant to decommissioning

Seabed conditions

The Fall of Warness tidal test site is known to be a region of exposed bedrock. Surveys undertaken of the tidal test site by EMEC (EMEC 2005a) indicate that the seabed within the tidal test site ranges from eroding sub-littoral sandbanks in the east to smooth scoured bedrock ridges and platforms with occasional boulders towards the centre of the test site.

Atlantis have supplemented this area wide survey with pre-installation ROV surveys of the proposed site and surrounding area; carried out in November 2009.

Results show that, as expected in this active tidal regime, the relatively level seabed is largely bare and devoid of mobile sediments. However, numerous encrusting sponges (both brown and yellow in appearance) are present across the area, with a large covering of barnacles potentially interspersed with white calcareous worms. In addition, as reported in the Fall of Warness ES (EMEC, 2005), anemone species were recorded frequently in the majority of ROV transects. Bryozoans (likely to include *Flustra foliacea*), were sighted, as well as macrofauna such as the common sea urchin *Echinus esculentus*.

The habitat and species described above were continuous across much of the area. In addition, the ROV footage did not appear to record the presence of any protected habitats or species or those of potential conservation concern. Indeed, the area seems to be similar to that recorded in Orkney from areas with similar physical conditions.

Figure 5 and Figure 6 provide an indication of the seabed at the deployment site.

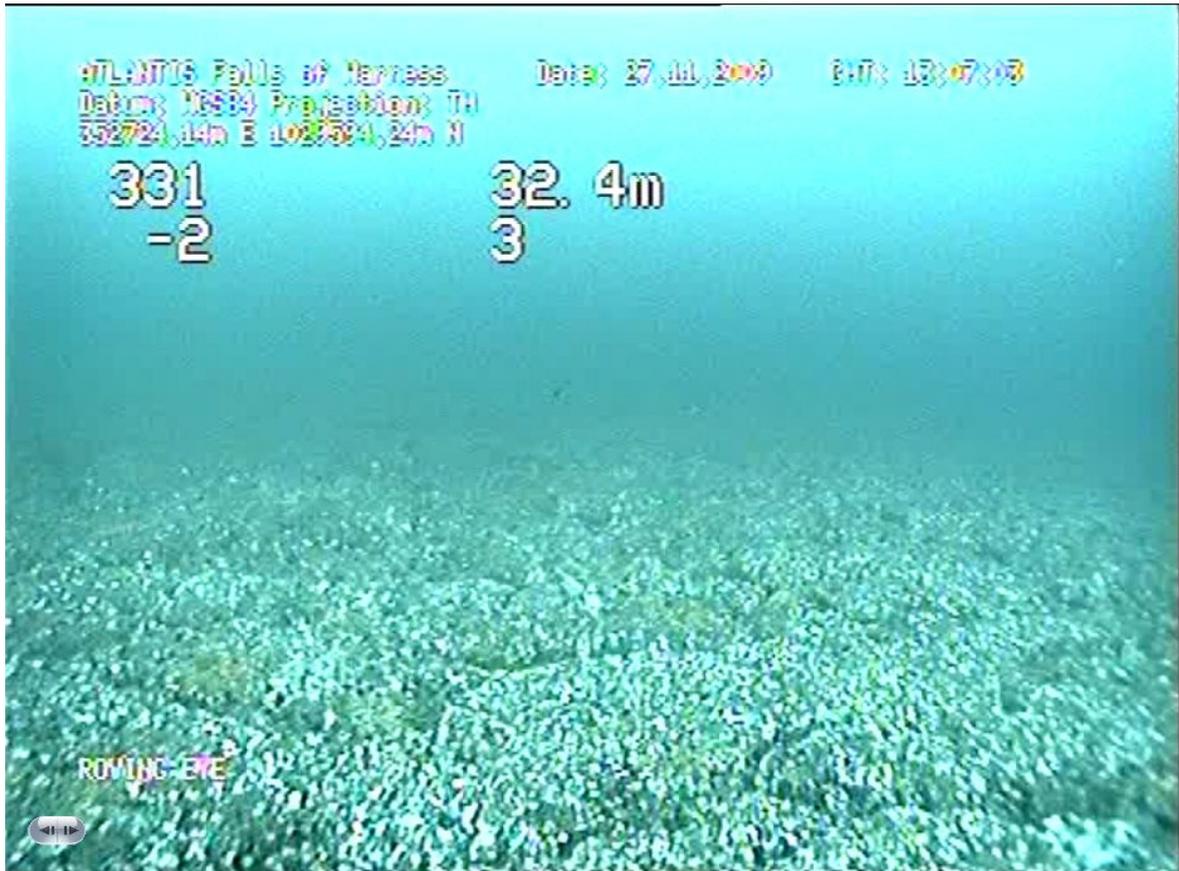


Figure 5: Seabed at proposed installation site

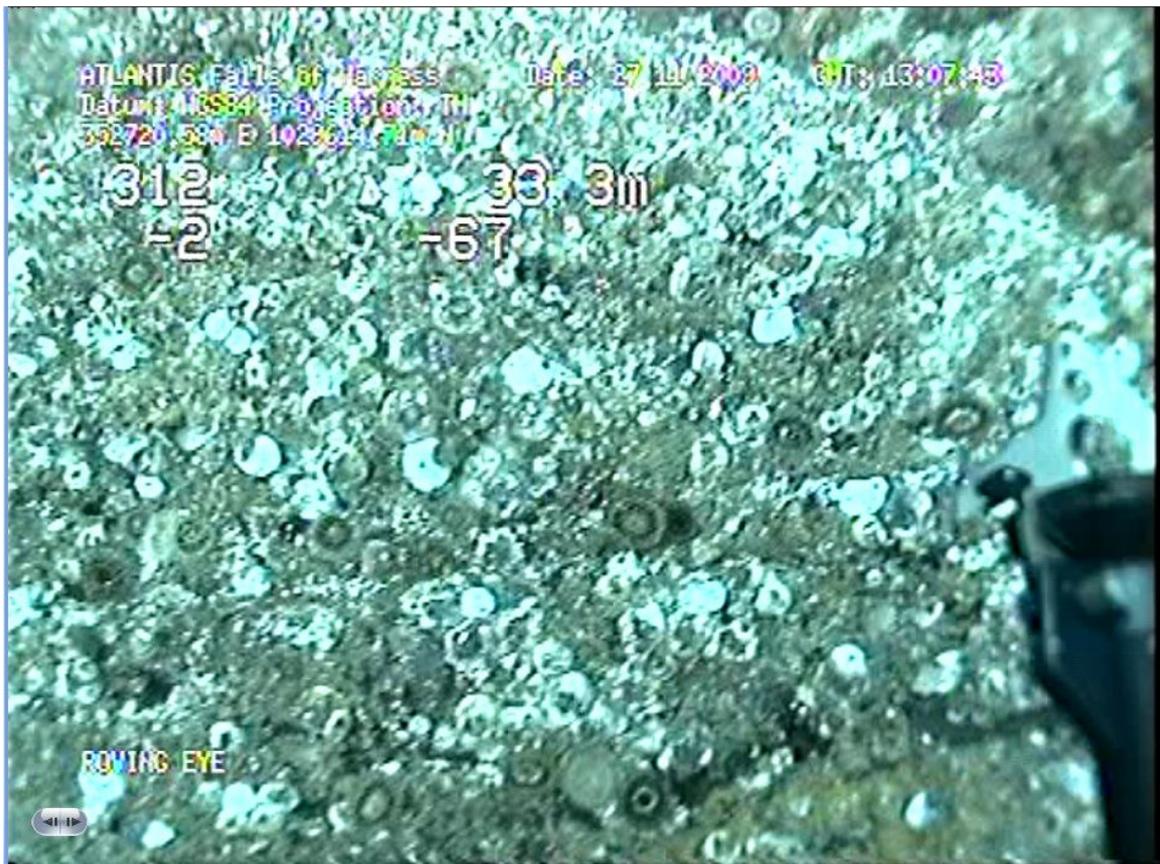


Figure 6: Closeup of seabed at proposed installation site

Metocean conditions

The Fall of Warness channel is covered by *Admiralty Chart 2250* which identifies the tidal range (~ 3.0m MSR) and tidal flows (up to 3.7m/s). The channel runs roughly NW-SE from the Westray Firth out to the Stronsay Firth and is exposed to winds and swells from either of these directions, but generally better protected from wind from other directions.

EMEC has collected detailed Metocean data including ADCP surveys for tidal flow as well as other Metocean studies. Using this data, Atlantis conducted detailed analyses of the potential deployment designs and installation methods. Fatigue analysis of the turbine, pylon, stab and GBS has been undertaken by Prospect (A Hallin Company) and SLP Energy. Various load cases based on the EMEC Metocean data as well as 1-100 type weather events were simulated via Computational Fluid Dynamics (CFD) to ensure the designs and installation methodology are safe and robust. This data and analysis will be used in planning the decommissioning, and will be updated / confirmed by wind, wave and current measurements that will be taken during the turbine test programme.

3.4. Conservation areas relevant to decommissioning

Although the Fall of Warness itself is not a protected area, there are protected sites in the surrounding area. Of particular note and relevance to this application are the following:

- Faray and Holm of Faray SAC – protected for its grey seal (*Halichoerus grypus*) populations.
- Sanday SAC – protected for its harbour seal (*Phoca vitulina*) population; intertidal mudflats and sandflats; reefs; inshore sublittoral rock and subtidal sandbanks.
- Muckle and Little Green Holm SSSI – Nationally important grey seal breeding colony. 3% of the British breeding population. Also LBAP priority species – cormorant colony on Little Green Holm.

Nature conservation designations in the immediate vicinity of the EMEC tidal test site are shown in *Figure 7* overleaf. It should be noted that many of the onshore designations on Eday are not relevant to the proposed offshore installation of the AK-1000TM turbine.

4. Description of items to be decommissioned

The items to be decommissioned are as follows:

- The turbine nacelle, housing all of the electro-mechanical systems including the blades, and the system designed to connect the turbine to the top of the support pylon.
- The GBS that secures the turbine to the seabed, including the blocks required for ballast.
- Support pylon that connects the turbine to the GBS.

These are illustrated in *Figure 8* below.

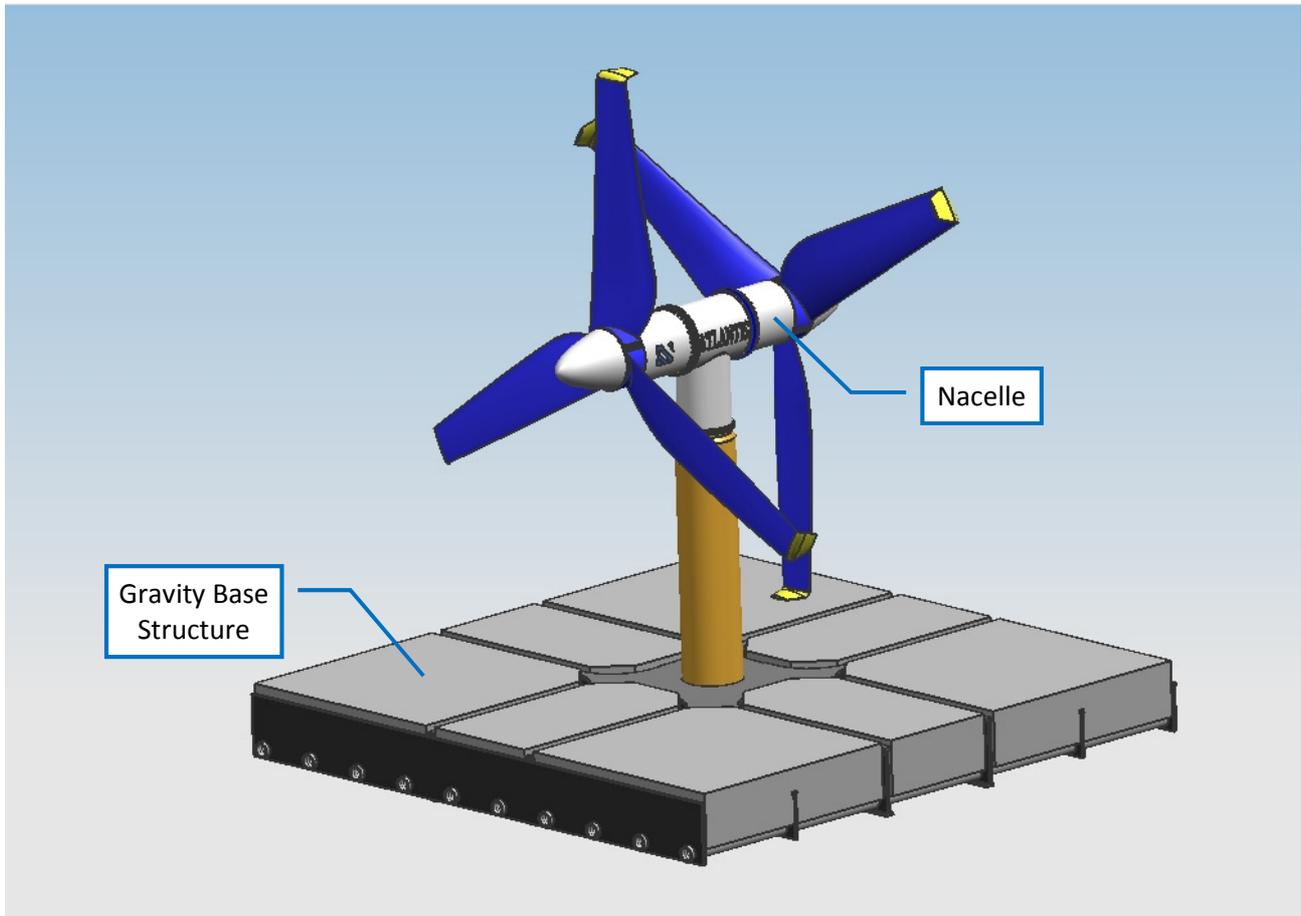


Figure 8: Drawing of assembled AK-1000™ on GBS

The turbine comprises a nacelle that incorporates 3 blades at either end. The blades are designed to be slightly negatively buoyant at the hub level and hence will sink to the seabed in the event of breakage. The turbine is designed to cater for flows from either direction without having to rotate the nacelle.

Atlantis proposes to install the first iteration of the AK-1000™ called AK-1000™ Mark 1 in 2010. Atlantis proposes to return in summer 2011 to install the AK-1000™ Mark 2. This Mark 2 turbine will have identical dimensions to the Mark 1 and maintain a maximum power output of 1MW. Both nacelles are constructed largely from carbon steel. The installation of Mark 2 involves the removal of the Mark 1 nacelle, and replacing it with the Mark 2 nacelle. The GBS will not need replacing.

The blades measure 8m in length and the hub is 2m across, thus providing a swept area of 18m in diameter. The blades have a minimum clearance from the seabed of 4.5m.

The GBS will measure approximately 22m x 22m x 2.5m and will weigh approximately 1,500 metric tonne in air once fully assembled. The GBS will be constructed from steel. The GBS is designed to distribute load so that localised pressure is minor, removing the need for detailed geotechnical investigation of the seabed at the EMEC site. No other methods/devices for mooring or anchoring to the seabed are necessary. This type of foundation removes the need for grab sampling, coring of the seabed or the conduct of any piling operations. The pylon measures 2m in diameter, is approximately 10m long and weighs 20t. Mounted on top of the pylon is a stab arrangement which allows the nacelle to be removed from the GBS for maintenance.

When fully assembled, the turbine will stand approximately 22.5m from the seabed to the top of the rotor swept arc. *Figure 9* and *Table 4* outline the indicative overall dimensions of the device.

The maximum power output of the turbine, rated at a water speed of 2.6m/s, is 1MW. At speeds above 2.6m/s, the control systems apply additional torque to slow the turbine down such that power never exceeds 1MW.

The EMEC subsea cable will be connected to the turbine nacelle via the GBS and pylon. This will be spliced with the turbine electrical system via a junction box for a connection to the land based substation on Eday. The EMEC cable will be installed and ultimately, owned by EMEC and hence will not be decommissioned by Atlantis.

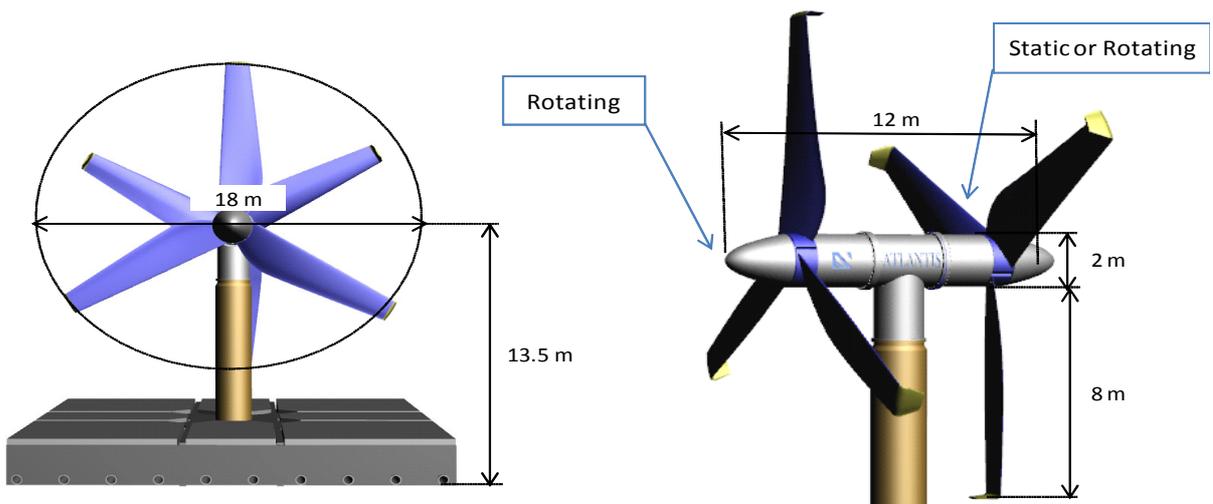


Figure 9: Key dimensions of the AK-1000™

Table 4: Specification of main component parts of the AK-1000™

Item	Specification
GBS length/width	22 m
GBS height	2.5 m
Hub height above seabed	13.5 m
Rotor diameter	18 m
Height to top of rotor swept arc from seabed	22.5 m
Distance between tip of blade and sea surface	At least 10 m

Table 5 summarises the items to be decommissioned.

Table 5: Items to be decommissioned

Item	Specification	Weight in air (t)
Gravity Base Structure	Steel frame – 22m x 22m x 2.5m	200
	Ballast blocks – 6 pieces	1,200
	Bottom pylon (steel) + stab	25
Turbine Nacelle	Steel housing	30
	Equipment within nacelle	35
	Top pylon (steel) + stab	50

5. Description of proposed decommissioning measures

5.1. Introduction

Atlantis is committed to its decommissioning obligations under both the Energy Act 2004 and its Developer's Contract with EMEC. Towards the end of the test programme in 2015, Atlantis will set up appropriate project management for the decommissioning programme. This will include a review the proposed method statement based on the advent of new technologies and lessons learnt.

The proposed decommissioning procedure will essentially be a reversal of the installation process. The process is described below and illustrated in *Figure 10* through to *Figure 15*.

5.2. Vessel specifications

For the decommissioning works, Atlantis plans to use a dive support vessel for the deployment of divers to disconnect the EMEC subsea cable and a large dynamic positioning vessel ("DP vessel") for the removal of nacelle, ballast and GBS. The DP vessel is capable of dynamically adjusting its position to stay on station in the rough sea state and high flow rates. This DP vessel (See *Appendix 15.2* for the sample specifications of such a vessel) will have a 400t crane fitted with active heave compensation (AHC) which will be used for each lift. The AHC serves to dynamically adjust the operation of the crane in response to the heave (upward and downward movement) of the DP vessel that is caused by swell.

5.3. Cable disconnection

The dive support vessel will move on site. Divers will be deployed to cut the electrical and fibre connection between the turbine and the in-situ EMEC cable.

Once the dive support vessel has moved off site the DP vessel will mobilise. The cable will be lifted onto the DP vessel and a termination box will be attached to the head of the EMEC cable and made secure. The EMEC cable will be tested before it is finally returned to the seabed in the same state as when it was first provided by EMEC. This process is expected to take a day.

5.4. Nacelle decommissioning

The cable guidance system is first setup from the nacelle to the DP vessel. With the aid of the cable guidance system, the nacelle will then be lifted up using the crane on the DP vessel. A ROV will be on station to provide visual at all times. This process is expected to take a day.

5.5. GBS decommissioning

Once the nacelle is removed and the cable guidance system is also disengaged, the ballast blocks from the GBS will be removed. All 6 will be removed via the crane with assistance from the ROV. Once all of the ballast blocks are removed the GBS frame and integral pylon will then be lifted onto the DP vessel. An ROV will be used to monitor all subsea operations and will also survey the seabed after the GBS is removed. This process is expected to last 2 days. Because no pilling work was done during installation, the removal of the GBS (including the pylon) completes the decommissioning of the turbine. The vessel will then be demobilized to a suitable port for offloading of the turbine and GBS for further studies and appropriate waste management measures.

5.6. Health and safety considerations

As per the installation phase, decommissioning will be carried out under the Construction Design and Management (CDM) Regulations 2007. A principal contractor and CDM co-ordinator has been appointed

and detailed method statements for all activities will be prepared for review by stakeholders, including for example Atlantis and EMEC. An NSRA (Navigational Safety Risk Assessment) has been carried out for the lifecycle of the device in accordance with Marine General Guidance Notice MGN 371 (M+F) – Offshore Renewable Energy Installations (OREI): Guidance on UK Navigational Safety and Emergency Response Issues. HIRA (Hazard Identification and Risk Assessment) workshops will be held prior to works commencing and mitigation/remedial actions identified during these implemented as appropriate.

During decommissioning, as will be the case for any maintenance works, all vessels will comply with the International Regulations for Preventing Collision at Sea (COLREGS) and the activities will be notified by NTMs and NavWarn messages broadcasted by the appropriate authority.

Atlantis will comply with EMEC's procedure for the provision of appropriate marine safety information to the UKHO (UK Hydrographic Office) at appropriate times prior to and on completion of decommissioning work. It is considered that, with the available searoom, adequate notice of such activity given through the Maritime Safety Information services and appropriate compliance with the COLREGS, the risks from decommissioning activities will be tolerable. The NSRA prepared for installation will be reviewed and updated if necessary in support of decommissioning.

The works will be carried out under the EMEC permit to work system which will coordinate the operations of the various developers at the site and ensure the safety of critical operations in the Fall of Warness. Atlantis will complete a Final Maritime Safety Information (FMSI) form, which is reviewed by EMEC, following the completion of decommissioning activities. A decommissioning report (produced in line with EMEC's Decommissioning Standard Operating Procedure (SOP)) which includes the post-decommissioning ROV survey report will also be submitted.

Any lessons learnt during installation will be incorporated into future revisions of this decommissioning programme as appropriate.

5.7. Proposed waste management solutions

All waste disposals will be carried out in accordance with the relevant legislation at time of decommissioning, giving priority to re-use and recycling in accordance with the waste hierarchy.

All lubricating oils and greases will be safely disposed of. Several companies have been contacted to quote for this with quotations coming in well below GBP 200.

Once removed, the Mark 1 nacelle will be extensively studied and investigated by Atlantis for potential future design improvements. This will include corrosion, marine biofouling, fatigue analysis and will involve disassembly of the turbine and all turbine components. In some cases, the components (e.g. blades) may be dissected for detailed fatigue analysis. Once completed, all components will be handled in accordance with the waste hierarchy i.e. first priority to re-use and recycle, followed by incineration with energy recovery and lastly disposal.

The Mark 2 nacelle is due to be deployed for 4 years. After decommissioning the Mark 2 nacelle will also undergo thorough investigation. Once these investigations are completed, all components will be handled in accordance with the waste hierarchy. It is expected that the Mark 2 nacelle will be re-deployed in another location after undergoing some refurbishment.

The corrosion protection on the steel structure of the GBS has a design life of 5 years and hence the steel structure will require some simple maintenance and the fixing of new sacrificial anodes. The ballast blocks of the GBS will be refurbished and reused together with the steel structure. Atlantis is confident that another suitable location for this GBS can be found.

Step 1

Dive support vessel arrives on site. Divers remove connectors and release EMEC cable. Dive support vessel demobilises.

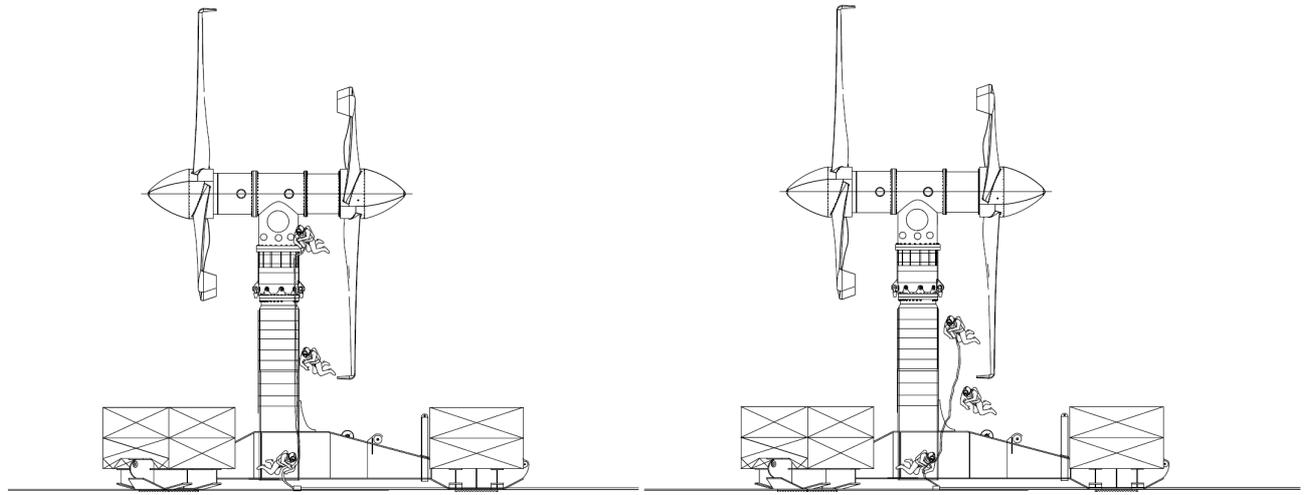


Figure 10: Divers disconnect EMEC cable

Step 2

DP vessel mobilises to site. Lift EMEC cable onto vessel and connect the termination box onto the cable, test and overboard onto seabed.

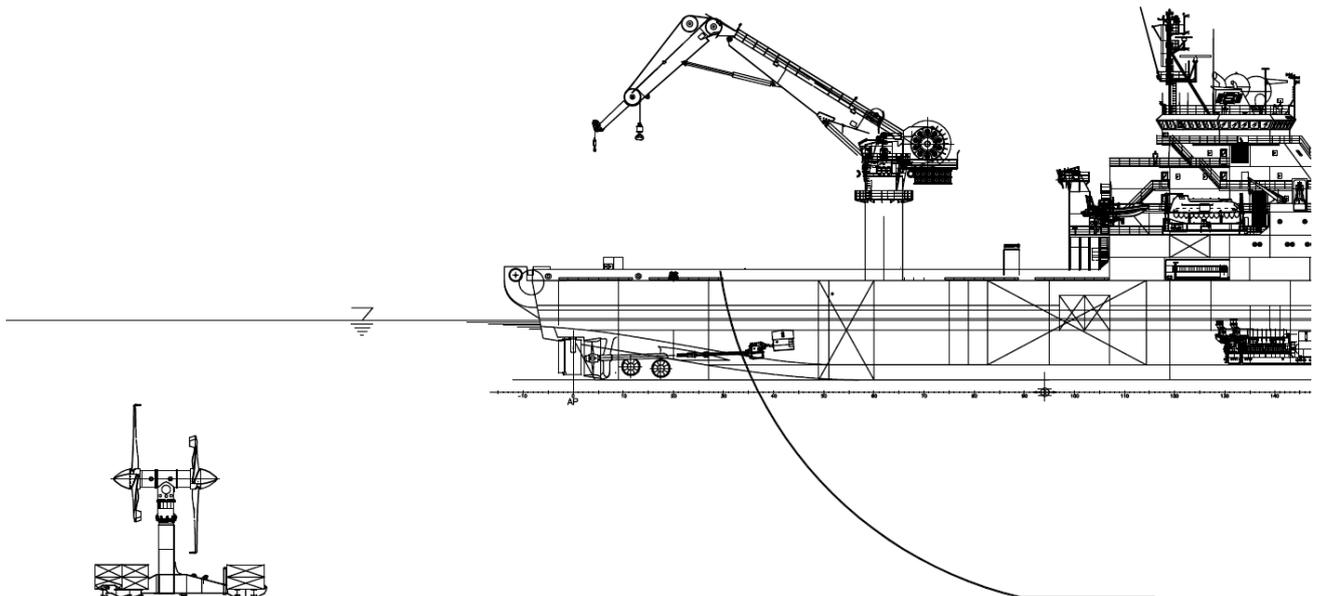


Figure 11: EMEC cable lifted to DP vessel and termination box connected onto end of EMEC cable

Step 3

Set up cable guidance system and lift up nacelle onto the DP vessel.

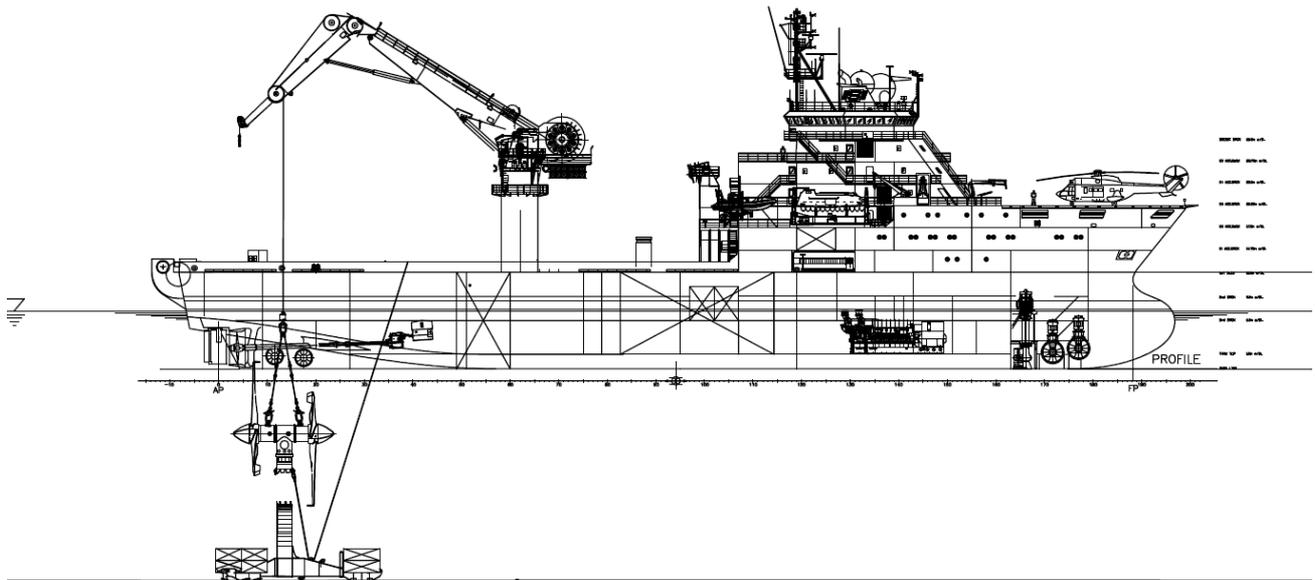


Figure 12: Lift up nacelle with cable guidance system

Step 4

Remove cable guidance system and lift ballast blocks

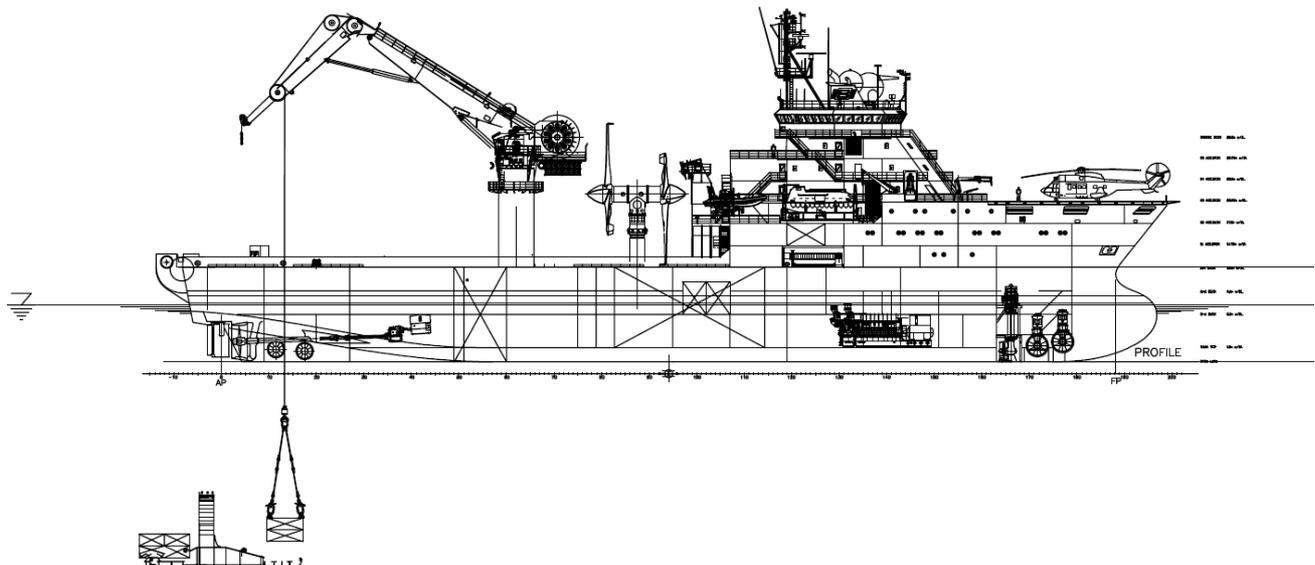


Figure 13: Lift ballast blocks after cable guidance system removed

Step 5

Lift GBS frame onto the DP vessel

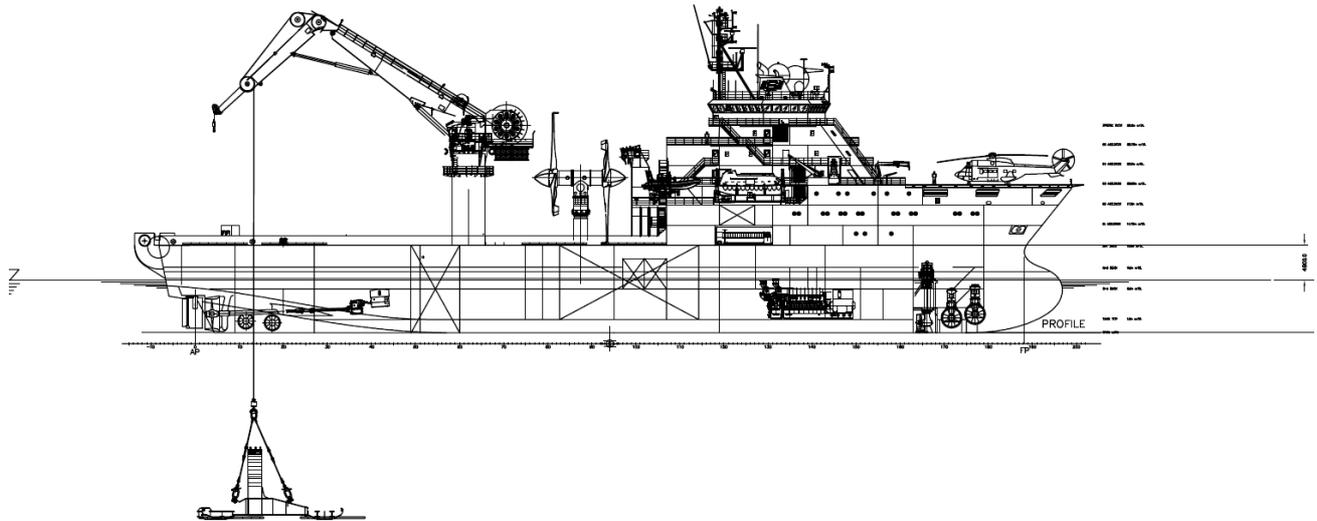


Figure 14: Lift GBS once ballast blocks removed

Step 6

Demobilize DP vessel; turbine removal complete.

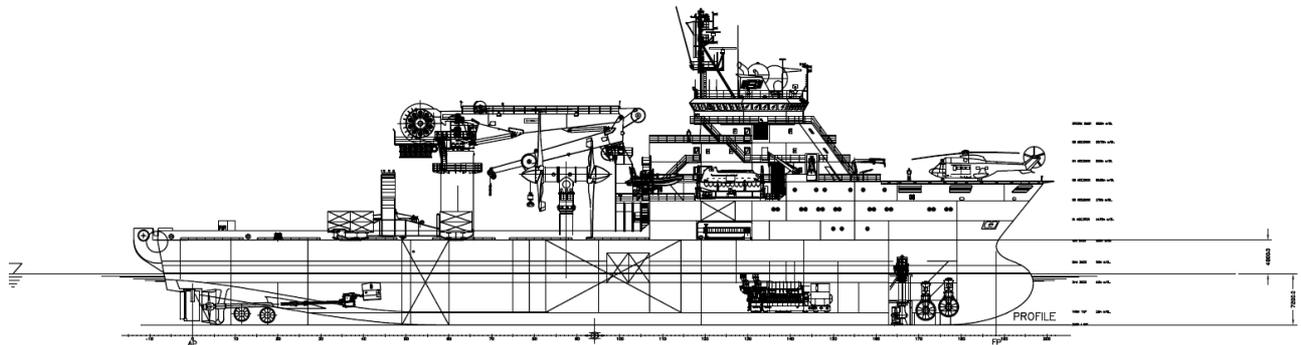


Figure 15: Turbine removal complete. Demobilise

6. Environmental Impact Assessment

An assessment of the environmental impacts has been conducted including consultation with statutory and non-statutory stakeholders. The environmental documentation and Navigational Safety Risk Assessment (NSRA) will be submitted in support of the CPA and FEPA licences for the device installation. The environmental documentation and NSRA will identify potential environment impacts and possible navigational hazards caused by the installation, operation, maintenance and decommissioning of the device. This work will also identify mitigation measures to avoid, reduce and remedy any potential impacts.

The supporting environmental documentation will contain a table of commitments made by Atlantis to ensure these measures are adhered to.

At this point it is considered that the environmental documentation and NSRA described above will be sufficient to address decommissioning impacts, however, as the time of decommissioning approaches, this will be reviewed, taking into account any lessons learned during installation and testing.

Table 6 overleaf is an extract from the environmental documentation and provides a summary of the potential environmental impacts expected during decommissioning. Impact significance criteria (as defined in the EMEC EIA Guidance, EMEC 2005b) are provided after the Table.

Table 6: Summary of the potential environmental impacts expected during decommissioning

Decommissioning – Mark 2 and GBS						
Identified activity	Prediction of potential impact	Routine or non routine event	Continuous, temporary or intermittent	Potential impact significance	Proposed management and mitigation measures, comments	Residual impact significance
Dynamically positioned vessel activity	Noise and vibration (engines) – disturbance to wildlife – presence of international , nationally and locally important species including seals, cetaceans and birds	NR	Temporary	High	One vessel present with regular use of thrusters to maintain position Little known data on the impact of DP vessels in shallow water, but the noise output may be similar to the cumulative noise output of several vessels	High
	Atmosphere emissions	NR	Temporary	Medium	Winds in Orkney average Force 3 – 4 in summer and Force 6 in winter – atmospheric emissions are rapidly dispersed naturally	Medium
	Wildlife disturbance due to vessel presence and use of DP system (see above) - presence of international , nationally and locally important species including seals, cetaceans and birds	NR	Temporary	High	One vessel present for 1 day with regular use of thrusters to maintain position	High
	Visual and seascape impact	NR	Temporary	Medium	Vessel present over a few hours/days Area already routinely in use by vessel traffic	Medium
	Hazard to navigation from presence of vessel	NR	Temporary	High	Risk mitigation/controls determined by the NSRA The works will be broadcasted by appropriate Notices to Mariners and Navigational Warnings The removal of the nacelle, cable disconnection and GBS removal expected to be a maximum three days of activity The Fall of Warness will still be navigable around the proposed works	High

	Impact of local fisheries (including diving fishermen)	NR	Temporary		<p>Test site boundary / lease area has been reduced based on consultations undertaken with fishermen representatives since initial site establishment. This has been a significant decrease in test site lease area to accommodate creeling up to 30 m water depth</p> <p>Consultation with local fisheries representatives with regard to this specific deployment site did not raise any significant issues</p>	
Removal of GBS structure	Seabed habitat disturbance from removal of GBS – no protected seabed habitats or species of conservation importance present	NR	Temporary		<p>GBS removal not expected to greatly disturb the predominately bedrock seabed. Lack of mobile sediments negates scour or sediment redistribution issues</p> <p>It is a condition at EMEC that all infrastructure be removed from the seabed on completion of testing activity</p>	
Waste disposal	Waste disposal	NR	Temporary		<p>The nacelle will be disassembled and extensively studied following testing to inform future design improvements</p> <p>Once investigations are complete all components will be handled in accordance with waste hierarchy with priority on re use and recycling</p> <p>Any items disposed of will be done so in line with legislative requirements to avoid unnecessary environmental impact</p>	
Accidental discharges to sea	Oil / chemical spill	NR	Temporary		<p>All subcontractors will have valid Shipboard Marine Pollution Emergency Plans which include a Shipboard Oil Pollution Emergency Plan (SOPEP) or equivalent procedures as required</p>	
	Loss of ballast blocks	NR	Temporary		<p>Handling equipment tested and designed to withstand large weights</p> <p>Any lessons learned during the installation phase will be implemented as required during decommissioning</p>	

Impact significance criteria

Impact	Ecological effects	Socio-economic effects	Stakeholder concern
Major	Degradation to the quality or availability of habitats and/or wildlife with recovery taking more than 2 years	Change to commercial activity leading to a loss of income or opportunity beyond normal business variability/risk. Potential short term effect upon public health/well-being, real risk of injury.	Concern leading to active campaigning locally or wider a field.
Moderate	Change in habitats or species beyond natural variability with recovery potentially within 2 years	Change to commercial activity leading to a loss of income or opportunity within normal business variability/risk. Possible but unlikely effect upon public health/well-being. Remote risk of injury	Widespread concern, some press coverage, no campaigning
Minor	Change in habitats or species which can be seen and measured but is at same scale as natural variability	Possible nuisance to other activities and some minor influence on income or opportunity. Nuisance but no harm to public.	Specific concern with limited group
Negligible	Change in habitats or species within scope of existing variability and difficult to measure or observe	Noticed by, but not a nuisance to other commercial activities. Noticed by but no effects upon the health and well-being of the public	An awareness but no concerns
No impact	None	None	None
Beneficial	An enhancement of ecosystem or popular parameter	Benefits to local community	Benefits to local stakeholder issues and interests

7. Costs

The decommissioning costs are commercially confidential to Atlantis. The details of the cost breakdown are provided in confidential *Appendix Error! Reference source not found.*, available to DECC only.

8. Financial security

The details of the financial security that Atlantis is providing are commercially confidential. A separate confidential *Appendix Error! Reference source not found.* has been provided to DECC only.

9. Schedule

Table 7 below summarises the proposed development, including decommissioning programme at the EMEC tidal test site.

The decommissioning of the Mark 2 nacelle and GBS is expected to take place between May and August 2015. The exact date and duration on site will depend on the weather and tidal conditions, environmental sensitivities, vessel type and availability as well as possibility of other marine operations at the Fall of Warness. However, it is anticipated that decommissioning is simpler than the installation because there is no requirement for precision lowering operations, and hence it is likely to be of a shorter duration.

Based on the information known to date the different activities associated with the decommissioning operations are summarised below. These times will be reviewed and updated nearer the time of decommissioning and based on installation experience.

- Cable disconnection – 1 day
- Removal of Mark 2 nacelle – 1 day
- GBS (including pylon) decommissioning – 2 days

Table 7: Atlantis' proposed development program

Sequence	Description	Date Range
1	Install GBS	May – August 2010
2	Install Mark 1 nacelle	May – August 2010
3	Remove Mark 1 nacelle	May – August 2011
4	Install Mark 2 nacelle	May – August 2011
5	Decommissioning of Mark 2 nacelle & GBS	May – August 2015

10. Project Management and Verification

Atlantis will continually review the decommissioning programme throughout the lifetime of the project, ensuring that details and methods are up to date. Any lessons learnt during installation will be incorporated into future revisions of this decommissioning programme as appropriate.

At a suitable point in time before decommissioning works are due to start, Atlantis will set up appropriate project management to conduct the programme.

Atlantis will submit a report, detailing how the programme will be carried. The report will be submitted within four months of the completion of decommissioning work, in line with DECC guidance.

11. Seabed clearance

The decommissioning process will leave no seabed debris, as the device, including GBS, will be removed completely. This is one of the main reasons Atlantis opted for this installation method rather than one that required piling and coring.

Confirmation that the site has been cleared will be achieved by a post-decommissioning ROV survey, conducted according to EMEC procedures and by an independent third party. This footage will be made available to the authorities upon request as evidence that the seabed at the installation site has been cleared.

12. Restoration of the site

As the decommissioning programme is not expected to greatly disturb the seabed, it is not considered that specific site restoration measures will be necessary. Bed rock is exposed throughout the majority of the area, with only occasional boulders, and is virtually devoid of mobile sediments with the exception of a few sparse pockets of mobile sands, thus negating the potential for scour and any potential subsequent redistribution issues.

It is considered that the removal of the GBS will disturb only a relatively small area of seabed and will not impact any habitats of conservation importance.

13. Post-decommissioning monitoring, maintenance and management of the site

Given that the seabed will be completely cleared as a result of the decommissioning process, it is not considered that any post-decommissioning monitoring or maintenance/management of the site will be necessary.

Confirmation that the site has been cleared will be achieved by a post-decommissioning ROV survey undertaken by an independent party and conducted in accordance with this decommissioning programme to the satisfaction of EMEC.

14. Supporting studies

EMEC (2005a). EMEC Tidal Test Facility Fall of Warness Eday, Orkney. Environmental Statement. June 2005.

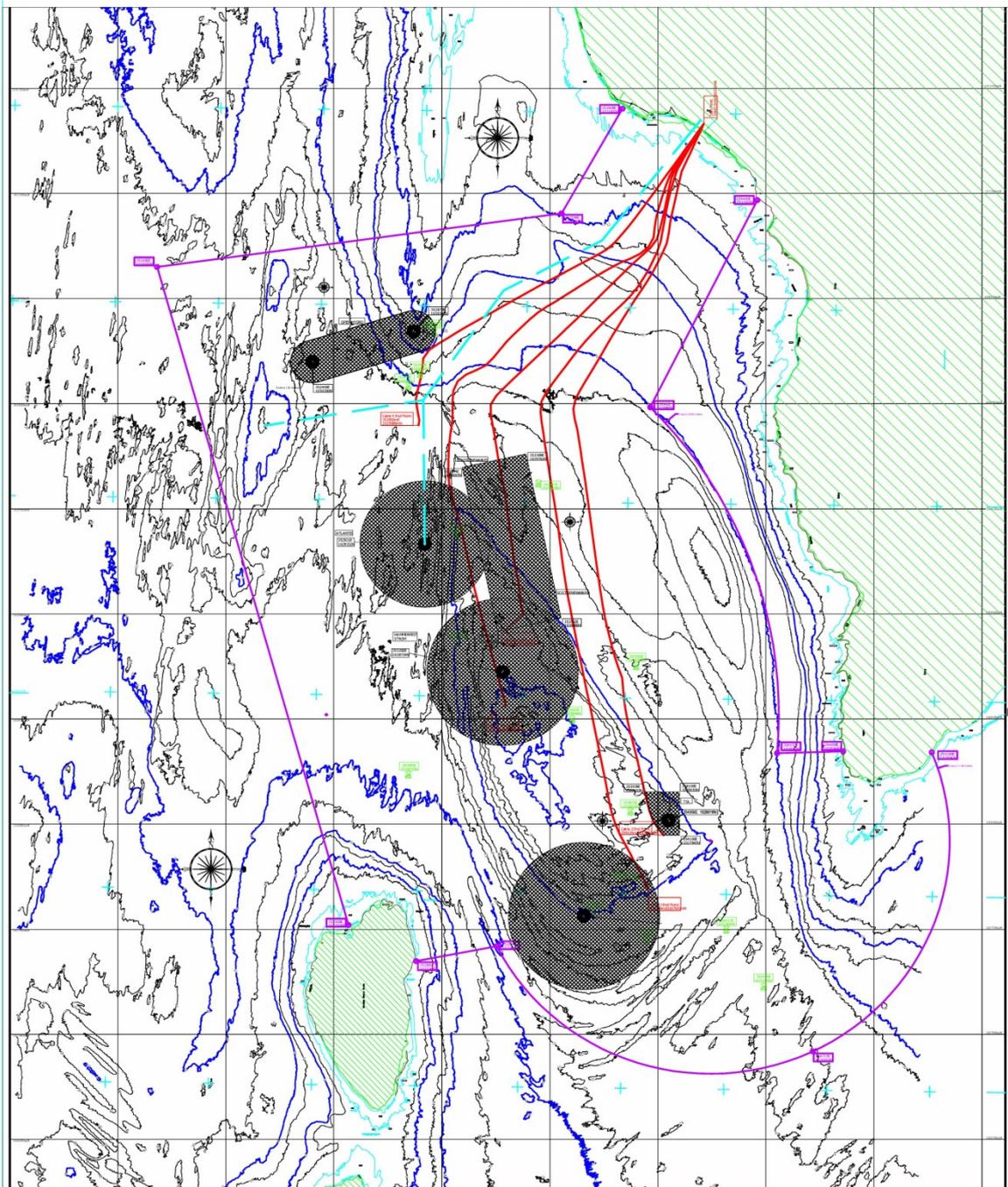
EMEC (2005b). Environmental Impact Assessment Guidance for developers at the European Marine Energy Centre.

Atlantis Resources Corporation (In Prep). Supporting Environmental Documentation for the deployment of the AK-1000TM turbine at EMECs Fall of Warness Tidal Test Facility, Orkney Islands, Scotland. Prepared by Xodus AURORA Limited.

Atlantis Resources Corporation (In Prep). Navigational Safety Risk Assessment for the deployment of the AK-1000TM turbine at EMECs Fall of Warness Tidal Test Facility, Orkney Islands, Scotland. Prepared by Abbott Risk Consulting Limited.

15. Appendices

15.1. Detailed chart of developers' projects at Fall of Warness



15.2. Specification of typical vessel required for decommissioning



BOA Sub C Offshore Construction Vessel DP Class III

Aker Marine Contractors has the proven methodology required to execute successful marine operations and deliver predictable solutions unsurpassed in quality, efficiency, and safety. Designed for ultra-deepwater, the *BOA Sub C* offers the state-of-the-art equipment and experienced crew that can meet any challenge.

Crane Capacity

(1) 400 t AHC mid-ship crane and (1) 30 t AHC stern crane
(both up to 3,000 m working depth) plus auxiliary cranes

Hang-off System

Installed for subsea upending and extended depth capabilities

ROV Operation

(2) Oceaneering Millenium Plus WROVs rated to 3,000 m operational working depth with cursor type LARS system and 600 m tether

Flexible Deployment System (FDS)

150 t capacity (up to 400 mm product dia. and 1,200 m/hr lay speed)

Carousel

Above deck basket type with 2,500 t capacity

Accommodations

(105) single berth cabins

Winches

(1) 600 t anchor handling winch and (2) 500 t towing winches





FLOATER INSTALLATIONS
 TOPSIDE FLOATOVERS
 REMOVAL OPERATIONS
 SUBSEA SURF

Recognized by the maritime industry all over the world

Aker Marine Contractors is a global provider of marine operations for the oil and gas industry. With a permanent presence in Houston, Oslo, Stavanger, Aberdeen, and Perth, we can provide access to an extensive customer network and facilities on all continents. Through this network, we aim to be close to our customers and their decision makers, enabling us to align our special areas of experience and expertise with market demands around the globe.

Aker Marine Contractors has access to a fleet of state-of-the-art vessels and submersible barges. The Offshore Construction Vessels, *BOA Deep C* and *BOA Sub C*, have worked continuously for AMC since their launch and are both on long-term contracts with AMC.

These multi-purpose vessels are designed for ultra-deepwater and represent a step-change in capacity, workability, safety, and comfort for offshore construction work and have proven to be an excellent resource for transportation and floatover operations in the GoM.

The vessels have DnV 'Clean' class notation, ensuring safe operation in sensitive environments, and utilize first-class equipment for all the major functions onboard from suppliers such as VIK Sandvik, Rolls-Royce, Kongsberg Simrad, and National Oilwell Varco. Considering their size, DP systems, heave-compensated cranes, and ROV launch and recovery systems, the vessels' workability are unsurpassed by their competitors.

HOUSTON

Aker Marine Contractors US Inc.
 2103 City West Blvd.
 Suite 400
 Houston, TX 77042
 Tel. +1 713 272 4000
 Fax +1 713 270 2377
 amc-houston-sales@akersolutions.com

OSLO (HQ)

Aker Marine Contractors AS
 Snarøyveien 36, 1364 Fornebu
 P. O. Box 247 Lilleaker
 N-0216 Oslo
 Tel. +47 2294 5000
 Fax +47 2294 5900
 amc-oslo-sales@akersolutions.com

PERTH

Aker Marine Contractors Pty.
 Level 4, Quayside on Mill
 P. O. Box 7226, Cloisters Square
 Perth WA 6000
 Tel. +61 8 9429 5878
 Fax +61 8 9429 5840
 amc-perth-sales@akersolutions.com

ABERDEEN

Aker Marine Contractors AS
 Howe Moss Avenue
 Kirkhill Ind. Estate, Dyce
 Aberdeen, AB21 0GP
 Tel. +44 1224 794 309
 Fax +44 1224 414 400
 amc-oslo-sales@akersolutions.com

15.3. Stakeholder consultation responses



Northern Lighthouse Board

Your Ref: Atlantis Resources Corporation
Our Ref: AJ/OPS/Nav/Ore/WT/10/270110

Ed Rollings
EIA and Consents Manager
Atlantis Resources Corporation
London Office
10 Greycoat Place
Victoria
London
SW1P 1SB

27 January 2010

Dear Mr Rollings

Atlantis Resources Turbine Decommissioning Scoping – 22 Jan 2010

Thank you for your correspondence dated 22 January 2010 regarding the decommissioning of the AK1000 tidal turbine by Atlantis Resources Corporation at the EMEC test site in the Falls of Warness.

We would advise that the following should be considered as our initial response to the Scoping Document and that any formal recommendations for lighting and marking will be given through the Coast Protection Act 1949 – Section 34 consultation process.

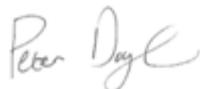
We would further advise that a response to the installation and operational phases of the project dated 28 Nov 2009 was given by us to EMEC, a copy of which is enclosed. We would ask that you refer to the particular section on the Navigational Risk Assessment and include the methodology and procedures to be used during the decommissioning phase.

We note that there will be a requirement to remove the additional sub-sea cable between the device and the permanent subsea connector provided by EMEC.

During the decommissioning phase we would require that adequate notice of timescale, manner and vessels to be used is given to the Mariner prior to the commencement of any operation, and in consultation with the Director of Orkney Harbours. The vessels used in these operations should be lit and marked as per the International Regulations for the Prevention of Collisions at Sea 1972.

We would reserve the right to amend this initial statement in the light of further discussion or the provision of additional information.

Regards,



Peter Douglas
Navigation Manager

For the safety of all
Certified to: ISO 9001:2000 · The International Safety Management Code (ISM) ·





Delivering for Britain

The Chamber of Shipping

Carthusian Court
12 Carthusian Street
London EC1M 6EZ

Direct dial: +44 (0)20 7417 2828

Fax +44 (0)20 7600 1534

E-mail: saurabh.sachdeva@british-shipping.org

Internet www.british-shipping.org

Ed Rollings
Atlantis Resources Corporation (Atlantis)
EIA and Consents Manager
10 Greycoat Place,
Victoria, London,
UK - SW1P 1SB
By email: edrollings@atlantisresourcescorporation.com

22 February 2010
Our Ref: Atlantis-1

Dear Mr Rollings,

AK-1000 EMEC Decommissioning Programme (DP) consultation

I am writing in response to the DP consultation sent to us by email on 25 January 2010 with reference to AK-1000 tidal stream generator test device at the European Marine Energy Centre (EMEC) tidal test facility in the Fall of Warness, Orkney Islands.

We would like to highlight that safety of shipping and navigation is our primary concern. It is our understanding that that DP Atlantis Resources Ltd shall be liable to ensure complete removal of the Gravity Base Structure (GBS) including the pylon from the seabed except the cables. Since, there is no piling work being done during installation we are content with this proposed approach.

However, we would like to advise you to keep the local Ferry operator (Orkney Ferries Ltd) informed on the progress of your work plan and any changes that may affect their safety operations nearer the anticipated time of decommissioning schedule.

We have no further comments or objection to submit and should you have any queries then please do not hesitate to contact me.

Yours sincerely,

A handwritten signature in blue ink that reads 'Saurabh Sachdeva'.

Captain S. Sachdeva
Nautical Consultant
The Chamber of Shipping, London



Scottish Natural Heritage
Dualchas Nàdair na h-Alba

All of nature for all of Scotland
Nàdair air fad airson Alba air fad

Ed Rollings
Atlantis Resources Corporation
London Office
10 Greycoat Place,
Victoria,
London,
UK,
SW1P 1SB

Your ref: Atlantis EMEC AK-1000
Decommissioning Programme

Our ref: cns/ren/tide/emec/atlantis/59299

Date: 24 February 2010

Dear Ed,

Atlantis Resources Corporation
Decommissioning Programme for AK-1000 at EMEC Falls of Warness Tidal Test Facility.

Introduction

Thank you for consulting Scottish Natural Heritage (SNH) on the above decommissioning programme, which we received on the 25th January 2010.

Position Statement

SNH is offering advice only to this consultation, however we recommend that operations are carried out in early May or late August to avoid sensitive periods for marine mammals.

Background

The proposal is for the decommissioning of the AK-1000 mark 1 and mark 2 tidal turbine which is to be installed at EMEC – Falls of Warness during the summer of 2010. The area of seabed to be decommissioned is 505m², and the entire decommissioning operation should take 4 days in total, with the use of a DP vessel. Items to be decommissioned include the cable connection, nacelle and gravity base system.

Decommissioning is proposed to take place during the period May – August 2015.

1 Appraisal of the impacts of the proposal and advice

1.1 European Sites

The proposed location for these works lies approximately 7.5 km to the south of the *Faray and Holm of Faray Special Area of Conservation (SAC) and Site of Special*



Printed on 100%
recycled paper

Scottish Natural Heritage, 54-56 Junction Road, Kirkwall, Orkney, KW15 1AW
Tel: 01856 875302 Fax: 01856 876372
e-mail: forename.surname@snh.gov.uk
www.snh.org.uk

Scientific Interest (SSSI). This area is designated for its nationally and internationally important colony of breeding grey seals.

Sanday SAC designated for harbour seals, intertidal mudflats and sandflats; reefs; inshore sublittoral rock and subtidal sandbanks, lies approximately 20 km to the north east of the site.

1.2 European Protected Species

Cetaceans are known to pass close to the location of the proposed works. Marine mammal observations undertaken by the EMEC have observed harbour porpoises, minke whales, killer whales, Risso's dolphins and white-beaked dolphins passing through the tidal test site. All cetaceans are referred to as European protected species and are listed on Schedules 2 (animals) of the Habitats Regulations. Regulations 39 and 43 of The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (Habitats Regulations) provide full protection for these species.

1.3 National Interests

The proposed location for these works lies in close proximity to Muckle and Little Green Holm Site of Special Scientific Interest (SSSI). Which is notified for its importance as a breeding colony for grey seals.

1.4 Birds

There are a number of important seabird populations in the vicinity of the Fall of Warness, including a breeding population of cormorants on Muckle & Little Green Holm SSSI.

1.5 General

Listed on Annex V(a) of the Habitats and Species Directive, significant numbers of harbour seals (*Phoca vitulina*) use the islands of Muckle and Little Green Holm as a haul-out and potentially as a breeding site. Harbour seals are also known to use Seal Skerry, The Graand and War Ness as haul-out sites, all of which lie in close proximity to the proposed site for these works.

Basking sharks (*Cetorhinus maximus*) are likely to use the area for passage and/or feeding. Basking sharks have full protection from intentional capture or disturbance in British waters (up to 12 miles offshore) under a 1998 listing on Schedule 5 of the Wildlife and Countryside Act (1981). They are also listed under CITES Appendix III in UK waters.

2 SNH Appraisal of the likely impacts of the proposal on Natural Heritage Interests.

2.1 European Sites

2.1.1 Faray and Holm of Faray SAC and SSSI.

This proposal is not connected with or necessary for the conservation management of the nearby-designated site, hence further consideration is required.

Given the limited duration and scale of these works and the intention to undertake them outwith the grey seal pupping season, it is unlikely that the proposal will have a significant effect on any qualifying interests either directly or indirectly, and in SNH's view an appropriate assessment is therefore not required.

2.1.2 Sanday SAC

This proposal is not connected with or necessary for the conservation management of the designated site, hence further consideration is required.

Given the limited duration and scale of these works, it is unlikely that the proposal will have a significant effect on the seal qualifying interest either directly or indirectly. Given the distance of the proposal from Sanday SAC, it is unlikely that the proposal will have a significant effect either directly or indirectly on the intertidal, subtidal or sublittoral interests of the designated site. In SNH's view therefore, an appropriate assessment is not required.

2.2 European Protected Species (EPS)

Given the timing, brevity and limited scale of the proposed works it is unlikely that these will constitute disturbance as defined under the Conservation (Natural Habitats &c.) Regulations 1994 and The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2004. We do not believe, therefore, that a European Protected Species (EPS) Licence is required in this instance. However we recommend that decommissioning operations occur either in early May or late August, to avoid the most sensitive period of cetacean activity (late May through to early August).

2.3 National Interests

2.3.1 Muckle and Little Green Holm Site of Special Scientific Interest (SSSI)

Given the timing, brevity and limited scale of the proposed works these are unlikely to affect the natural heritage interests of this site.

2.3.2 Birds

Given the timing, brevity and limited scale of the proposed works these are unlikely to affect the ornithological interests in this area.

2.3.2 General

Decommissioning is proposed for 4 days between May and August 2015. Harbour seal pupping commences in early June and moulting extends in to early August. Works during late May to early August could result in disturbance that might lead to abandonment or separation of pups from their mothers, leading to increased mortality. We recommend therefore that decommissioning operations occur either in early May or late August, to avoid the most sensitive period for harbour seals.

3 CONCLUSION

SNH has no objection to this proposal but recommends that work is completed outwith the most sensitive period for cetaceans and harbour seals, ie before late June or after early August.

Should you wish to discuss this response further please don't hesitate to contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ruth De Silva'.

Ruth De Silva
RECA – wave and tide.



Our ref: PCS 105560
Your ref:

Atlantis Resources Corporation
.10, Graycoat Place
Victoria
London
UK SW1P 1SB

If telephoning ask for:
Pat Haynes

12 February 2010

By email only to: edrollings@atlantisresourcescorporation.com

Dear Mr Rollings

**Town and Country Planning (Scotland) Acts- Energy Act 2004
Atlantis EMEC AK-1000 decommissioning programme
Fall of Warness Orkney**

Thank you for your consultation email of 25 January 2010 with respect to the decommissioning programme for this project.

Based on the information you have provided in your draft decommissioning document we are unlikely to have any objections to the proposals provided that

- a) EMEC guidelines are followed;
- b) All materials are removed from the sea bed.

We do however note that no reference is made to any decommissioning of land based facilities and we would expect to be consulted on these aspects if applicable to this project.

This advice is given without prejudice to any decision made on elements of the proposal regulated by us, which may take into account factors not considered at the planning stage.

Regulatory advice

1. Regulatory requirements

- 1.1 Details of regulatory requirements and good practice advice for the applicant can be found on our website at www.sepa.org.uk/planning. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the Environmental Protection and Improvement Team in your local SEPA office at:

Norlantic House, Scott's Road, Hatston, Kirkwall KW15 1RE Tel: 01856 871080



Chairman
David Sigworth
Chief Executive
Dr Campbell Gemmill

Dingwall Office
Graesser House, Fodderty Way,
Dingwall Business Park, Dingwall N15 9RB
tel 01349 fax 01349 863987
www.sepa.org.uk

If you have any queries relating to this letter, please contact me by telephone on 01349 860447 or e-mail at planning.dingwall@sepa.org.uk.

Yours sincerely

Pat Haynes
Senior Planning Officer
Planning Service

Ecopy: planning@orkney.gov.uk

From: Paul Townsend [mailto:Paul.Townsend@mcga.gov.uk]
Sent: 06 February, 2010 02:09
To: edrollings@atlantisresourcecorporation.com
Cc: Desmond Low
Subject: Atlantis EMEC AK 1000 Decommissioning Programme

Ed

We have now had an opportunity to review the Atlantis EMEC AK 1000 Decommissioning Programme Document No 3004 ARC DL 003 EMECDecomProg 5.3D and would comment as follows:

11 Project Management and Verification: To be included when final review of programme takes place towards end of installations life.

Regards

Paul

Capt Paul Townsend
Navigation Manager
Navigation Safety Branch
Bay 2/04 Spring Place
105 Commercial Road
Southampton SO15 1EG

Tel: 02380 329100
Fax: 02380 329204
DDI: 02380 329523
E-mail: paul.townsend@mcga.gov.uk

Ed

Would agree with your statement which should (subject to DECC agreement) be sufficient at this stage.

Regards

Paul

Capt Paul Townsend
Navigation Manager
Navigation Safety Branch
Bay 2/04 Spring Place
105 Commercial Road
Southampton SO15 1EG

Tel: 02380 329100
Fax: 02380 329204
DDI: 02380 329523
E-mail: paul.townsend@mcga.gov.uk

Subject to the need to keep up to date file records, please consider your environmental responsibility before printing this email

>>> Ed Rollings <edrollings@atlantisresourcescorporation.com> 08/02/2010
>>> 09:13 >>>
Paul,

Thanks for the response, I didn't receive your email myself, I note below my email address is slightly wrong, it should be edrollings@atlantisresourcescorporation.com

With regard to your comment. Do you mean that we should include a 'Section 11 Project Management and Verification'? If so, could you expand a little on this section?

I would assume that we should state that we will verify the decommissioning methodology towards the end of the installation of the device and set up appropriate project management to conduct the programme.

Regards
Ed

marine scotland



DECC
3 Whitehall Place
London
SW1A 2AW

10/05/10

Dear John

FOOD AND ENVIRONMENT PROTECTION ACT 1985, PART II DEPOSITS IN THE SEA (AS AMENDED) (FEPA)

ATLANTIS RESOURCES CORPORATION: ENVIRONMENTAL DECOMMISSIONING DOCUMENT EMEC, ORKNEY

Thank you very much for the opportunity to comment on the decommissioning Plan for the proposed works described above dates 15th April 2010. Marine Scotland is the licensing authority for the above act which extends seaward of the mean high water spring mark. The proposal is for the deployment of the AK-1000 commercial prototype tidal turbine which will not exceed 1MW max capacity in 2010 at EMEC. This is an experimental deployment of a single device very close to an area that is an established test site for tidal turbines. It is clear from the documentation that the deployment will follow a staged development. Phase 1 will involve the deployment of the device in 2010 but with the turbines fixed i.e. no moving parts, therefore the opportunity for interaction with sea mammals is insignificant. Phase 2 will replace the nacelle unit with an operational turbine in 2011.

Marine Scotland have reviewed the decommissioning plan for the above deployment and view these works as relatively minor following the short term deployment of a single unit. Providing the device is decommissioned during the least sensitive periods of the year then there are no major concerns. The intention to survey is welcomed but due to limited experience of tidal device deployment, Marine Scotland feels that there should be a remediation clause built into all plans. There should be a requirement to survey an area of the seabed that extends beyond the footprint of the works. In the mid 1990's there was a deployment in the Pentland Firth and the device did not with stand the harsh environment, causing it to break up and scatter debris over a considerable distance. In 2009 another tidal device had to change a broken blade, but once the new blade was attached and submerged into the current it also shattered.

The seabed in Eday Sound is bedrock and the community is restricted by this characteristic to sessile organisms such as anemones, sponges, ascidians and bryozoans and mobile animals that can occupy the small crypts and fissures in the rock. The footprint of the installation is relatively small compared to the area of the sound. Any populations that are killed by the installation of the device will be rapidly replaced when the gravity base is removed, so we would expect no long term impacts.

Marine Laboratory, PO Box 101, 375 Victoria Road,
Aberdeen AB11 9DB
www.scotland.gov.uk/marinescotland



Marine Scotland acknowledges the developers recognition of fouling by organisms in their post deployment analysis of the kit but there is no mention of the contribution that this will make to the lifting requirements of the project. Fouling organisms can add significantly to the weight of the sub marine equipment. (The Buchan Alpha FPSO was estimated to have 500 tonnes of fouling material on her hull at one stage and this was in an area where fouling organisms are not all that prevalent). The communities in Eday are akin to fouling communities, so colonisation may be quicker than expected. However as the lift capacity is 400 tonnes for a device weighing 200 tonnes I would think that there is sufficient contingency in the calculations to accommodate for this.

The decommissioning plan for this fairly simple operation is considered environmentally acceptable.

Minor Observations

Can you please add Marine Scotland to the stakeholder and consultee list?

SFPA/Compliance is not the competent authority but they are part of SG's competent authority

Can Marine Scotland have a hardcopy of the DECC guidelines on decommissioning?

The glossary page refers to but should be changed to the following:

Coastal Protection – Section 34 Coast Protection Act 1949

Food and Environmental Protection – Section 5 described in full at top of letter

Thank you for consulting with us on this matter.

Yours sincerely

Fiona Thompson
Marine Scotland

Marine Laboratory, PO Box 101, 375 Victoria Road,
Aberdeen AB11 9DB
www.scotland.gov.uk/marinescotland



From: Millard Roger [mailto:Roger.Millard@UKHO.gov.uk]
Sent: 08 April 2010 16:12
To: Moriarty Shaun (Energy Development)
Cc: Cavill Roger
Subject: RE: Commercial in confidence: consultation on attached decommissioning programme - Atlantis AK-1000

Shaun

Roger Cavill has forwarded this to me as he is responsible for England and Wales and I am responsible for Scotland and Ireland.

Para 5.6 states that 'Atlantis will comply with EMEC's procedure for the provision of appropriate marine safety information to the UKHO (UK Hydrographic Office) at appropriate times prior to work starting.

Is it possible to see these procedures to confirm they meet the needs of decommissioning?

There may be some confusion here in that EMEC informs the UKHO prior to the implementation of a new device. When a device is being decommissioned the device will not be removed from navigational publications until the UKHO has been informed it has actually been removed after recovery operations. There is also a requirement to provide evidence that the seabed is completely clear of any obstructions or details are provided of what remains on the seabed.

Regards

Roger Millard

Head of Regional Team 1C Scotland and Ireland
United Kingdom Hydrographic Office

Tel: 01823 337900 Ext 3638

www.ukho.gov.uk



please consider the environment before printing this email

From: Steven, Jack [mailto:Jack.Steven@thecrownestate.co.uk]
Sent: 29 April 2010 09:13
To: Moriarty Shaun (Energy Development)
Cc: Barton, Ben
Subject: RE: Commercial in confidence: consultation on attached decommissioning programme - Atlantis AK-1000

Dear Shaun,

Thanks for your email and associated attachments relating to the proposed decommissioning of the Atlantis AK 1000 tidal energy device at EMEC.

We are satisfied that the content of the proposed decommissioning programme meets any requirements in respect of The Crown Estate and agree to the performance of decommissioning works on the basis proposed.

Further to the information provided I have a couple of observations/questions;

1. The proposed programme refers to the replacement of the mark 1 nacelle with a later model following 12 months of operation. Has an indication been given on the intended period of operation of the subsequent mark 2 nacelle? Consideration should be given to any physical differences between nacelles and the implications this could have on decommissioning works, the final decommissioning works will apply to the second nacelle and as such methods should be geared toward the requirements of that later model, should those requirements differ from the 1st model.
2. No reference has been included on costs stating that such information is commercially confidential to Atlantis. Please can you confirm that such information has been shared with DECC and a suitable security or mechanism is in effect which will ensure adequate funding is in effect and available for use at the time of decommissioning works.

Any comments you can offer in respect of the above would be welcome, probably a case of me having overlooked such items.

I look forward to hearing from you.

Kind Regards
Jack

16. Confidential appendices