

## Queiros J (Joao)

---

**From:** Richard Nevinson <RNevinson@ukchamberofshipping.com>  
**Sent:** 26 February 2015 15:40  
**To:** Queiros J (Joao)  
**Subject:** RE: MeyGen Phase 1 – request for comments on post consent documents - HDD works

Joao

We have no comments to make.

Kind regards

Richard

**Richard Nevinson**

Policy Manager

**UK Chamber of Shipping**

30 Park Street, London, SE1 9EQ

  
[rnevinson@ukchamberofshipping.com](mailto:rnevinson@ukchamberofshipping.com)  
[www.ukchamberofshipping.com](http://www.ukchamberofshipping.com)

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**From:** [Joao.Queiros@scotland.gsi.gov.uk](mailto:Joao.Queiros@scotland.gsi.gov.uk) [<mailto:Joao.Queiros@scotland.gsi.gov.uk>]  
**Sent:** 26 February 2015 15:26  
**To:** Richard Nevinson  
**Subject:** MeyGen Phase 1 – request for comments on post consent documents - HDD works

Dear Mr Nevinson,

ELECTRICITY ACT 1989

*The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000*

*The Electricity (Applications for Consent) Regulations 1990*

**MARINE (SCOTLAND) ACT 2010**

*The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)*

MeyGen Ltd, having received consent under the above legislation and in order to discharge conditions of their Section 36 consent and condition of the Marine Licence number 04577/14/0, has submitted to the licensing authority the documents attached.

As a consultee on the Section 36 and/or on Marine Licence conditions, we would appreciate any comments you have on the **Navigation Safety Plan** and its suitability to discharge the conditions. Please note that we do not seek comments on the Consent / Licence, nor on the conditions which will not be amended.

Please forward any comments to the Marine Scotland Licensing Operations Team, at [MS.MarineLicensing@scotland.gsi.gov.uk](mailto:MS.MarineLicensing@scotland.gsi.gov.uk) and before the **26<sup>th</sup> March 2015.**

The Decision Letter and Conditions, as well as other relevant documents, can be found on our [website](#).

Yours sincerely,  
Joao Queiros

Joao Queiros

marinescotland

Marine Renewables Casework Officer  
Marine Scotland Licensing Operations Team

Scottish Government

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Aberdeen, AB11 9DB

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[Joao.Queiros@scotland.gsi.gov.uk](mailto:Joao.Queiros@scotland.gsi.gov.uk) / [ms.marinelicensing@scotland.gsi.gov.uk](mailto:ms.marinelicensing@scotland.gsi.gov.uk)

<http://www.scotland.gov.uk/marinescotland>

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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## Queiros J (Joao)

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**From:** Nick Salter <Nick.Salter@mcga.gov.uk>  
**Sent:** 24 March 2015 15:38  
**To:** Queiros J (Joao)  
**Subject:** RE: MeyGen Phase 1 – request for comments on post consent documents - HDD works  
**Attachments:** MEY-1A-40-HSE-D-001-ConstructionMethodStatementHDD\_NS Comments.pdf;  
MEY-1A-40-HSE-002-D-NavigationSafetyPlanHDD\_NS\_Comments.pdf;  
MEY-1A-40-HSE-003-D-VesselManagementPlanHDD\_NS Comments.pdf

Hi Joao,

I understand that MeyGen is ready to begin HDD works this week and I have given this priority.

I have reviewed the Construction Method Statement, Navigation Safety Plan and Vessel Management Plan which are just for the HDD works. I have not reviewed the Waste Management Plan or Environmental Management Plan as these lie outside Nav Safety's remit.

In the main I am fairly content with the documents which I have attached with my comments. The only issue I have is that an ERCoP has not yet been developed which should be agreed before the works begin. The NSP confirms it will be at least two weeks prior to commencement but we have yet to sight it.

Best regards

Nick

Nick Salter  
Offshore Renewables Advisor  
Navigation Safety Branch  
Maritime and Coastguard Agency  
Tel: 023 8032 9448  
Mob: [REDACTED]  
Email: [nick.salter@mcga.gov.uk](mailto:nick.salter@mcga.gov.uk)

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**From:** Joao.Queiros@scotland.gsi.gov.uk [<mailto:Joao.Queiros@scotland.gsi.gov.uk>]  
**Sent:** 20 March 2015 13:37  
**To:** Nick Salter  
**Subject:** RE: MeyGen Phase 1 – request for comments on post consent documents - HDD works

Dear Nick,

No problem with that. We can grant you an extension of one week. The new deadline is now the 2<sup>nd</sup> of April. If you manage to send your comments by Tuesday 31<sup>st</sup> March, then great.

Best regards,  
Joao

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**From:** Nick Salter [<mailto:Nick.Salter@mcga.gov.uk>]  
**Sent:** 20 March 2015 11:34

**To:** Queiros J (Joao)

**Subject:** RE: MeyGen Phase 1 – request for comments on post consent documents - HDD works

Dear Joao,

It's looking unlikely that I'll be able to respond by 26<sup>th</sup> March so I'd like to ask for a weeks extension? I should be able to respond by Tuesday 31 March.

Many thanks

Nick

Nick Salter  
Offshore Renewables Advisor  
Navigation Safety Branch  
Maritime and Coastguard Agency  
Tel: 023 8032 9448  
Mob: [REDACTED]  
Email: [nick.salter@mcga.gov.uk](mailto:nick.salter@mcga.gov.uk)

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**From:** [Joao.Queiros@scotland.gsi.gov.uk](mailto:Joao.Queiros@scotland.gsi.gov.uk) [<mailto:Joao.Queiros@scotland.gsi.gov.uk>]

**Sent:** 26 February 2015 15:27

**To:** Nick Salter

**Subject:** MeyGen Phase 1 – request for comments on post consent documents - HDD works

Dear Sir / Madam,

ELECTRICITY ACT 1989

*The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000*

*The Electricity (Applications for Consent) Regulations 1990*

**MARINE (SCOTLAND) ACT 2010**

*The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)*

MeyGen Ltd, having received consent under the above legislation and in order to discharge conditions of their Section 36 consent and condition of the Marine Licence number 04577/14/0, has submitted to the licensing authority the documents attached.

As a consultee on the Section 36 and/or on Marine Licence conditions, we would appreciate any comments you have on the **Vessel Management Plan**, the **Navigation Safety Plan** and the **Construction Method Statement**, and their suitability to discharge the conditions. Please note that we do not seek comments on the Consent / Licence, nor on the conditions which will not be amended.

Please forward any comments to the Marine Scotland Licensing Operations Team, at [MS.MarineLicensing@scotland.gsi.gov.uk](mailto:MS.MarineLicensing@scotland.gsi.gov.uk) and before the **26<sup>th</sup> March 2015**.

The Decision Letter and Conditions, as well as other relevant documents, can be found on our [website](#).

Yours faithfully,  
Joao Queiros

**Joao Queiros**  
[marinescotland](#)  
Marine Renewables Casework Officer  
Marine Scotland Licensing Operations Team

Scottish Government

Project Title/ Location	MeyGen Tidal Energy Project, Phase 1a. Inner Sound.
Date:	19/02/2015

# MeyGen Tidal Energy Project Phase 1

## Navigation Safety Plan:

### HDD Marine Works



James Fisher and Sons plc  
Marine Services Worldwide



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Rev	Prepared By	Sign Off	Checked By	Sign Off	Approved By	Sign Off	Date of Issue
1	Fraser Johnson						/02/2015
2							

**Table of Contents**

Executive Summary .....	3
1 Introduction.....	4
2 Scope of Navigational Safety Plan .....	4
3 Communication, roles and responsibilities .....	6
4 Method Statement and Programme .....	15
5 Navigational Sensitivities and Other Users .....	17
6 Meygen Ltd. Commitments and Legislative Commitments .....	22
7 Navigational Safety Measures.....	25
8 Construction Safety Zones .....	26
9 Notice (s) to Mariners and Radio Navigation Warnings .....	27
10 Anchoring Areas .....	29
11 Temporary Construction Lighting and Marking .....	29
12 Emergency Response .....	30
13 Buoyage .....	32
14 NSP Review and Consultation .....	32
15 References .....	34
16 List of Abbreviations .....	35
Appendix A - Example Notice to Mariners .....	37

**EXECUTIVE SUMMARY**

This Navigation Safety Plan (NSP) has been prepared by MeyGen Ltd to set out the proposed method for discharging Condition 17 of the Section 36 Consent for the Development.

The purpose of the NSP is to ensure that the Developments marine activities are conducted in a safe manner considerate of consent conditions and industry best practice. The document will be periodically reviewed during the execution of the Development to provide detailed information relevant to the key activities to be undertaken through the construction and operational phases of the Development;

- I. Horizontal Directional Drilling Marine Works
- II. Construction Works
- III. Operations and Maintenance
- IV. Decommissioning

Upon addition of above listed detailed information, the revised NSP will be reissued 3 months prior to the commencement of that phase of the Development.

The marine works must, at all times, be constructed and operated in accordance with the approved NSP. The NSP includes information relating to following details:

- a) Navigational safety measures;
- b) Emergency Response and Co-ordination Plan;
- c) Safety zones;
- d) Promulgation of information to mariners;
- e) Buoyage;
- f) Anchoring areas; and
- g) Lighting and marking of cable landfall site(s).

The NSP presented within this document is considered sufficient to satisfy Condition 17 and enable the construction and operation of the Development to progress, subject to the NSP being implemented.


The NSP will be presented to the Scottish Ministers, the MCA, NLB and any other navigational advisors or other advisors as may be required at the discretion of the Scottish Ministers.

**REVISION 1 ONLY CONSIDERS HDD MARINE WORKS. FURTHER VERSIONS OF THE NSP FOR OTHER CONSTRUCTION WORKS PHASES, OPERATIONS AND MAINTENANCE AND DECOMMISSIONING WILL BE UPDATED AND SUBMITTED FOR CONSULTATION AND APPROVAL PRIOR TO THAT PHASE COMMENCING.**

## 1 INTRODUCTION

The MeyGen Tidal Energy Project Phase 1 (“the Development”) received consent under Section 36 of the Electricity Act 1989 from the Scottish Ministers 9<sup>th</sup> October 2013 (“the S.36 Consent”). This Navigation Safety Plan (NSP) is prepared to enable Condition 17 of the S.36 Consent (“the Condition”) to be discharged. Condition 17 states:

*The Company must, prior to the Commencement of the Development, submit a Navigational Safety Plan, in writing, to the Scottish Ministers for their written approval, in consultation with the Maritime and Coastguard Agency, the Northern Lighthouse Board, the Chamber of Shipping and any other navigational advisors, or such other advisors, as may be required at the discretion of the Scottish Ministers. The Navigational Safety Plan must include, but is not limited to, the following issues:*

- (a) Navigational safety measures;*
- (b) Emergency Response and Co-ordination Plan,* 
- (c) Safety zones;*
- (d) Promulgation of information to mariners;*
- (e) Buoyage;*
- (f) Anchoring areas; and*
- (g) Lighting and marking of cable landfall site(s).*

*The Development must be constructed and operated in accordance with the Navigational Safety Plan at all times.*

*Reason: In the interests of safe navigation.*

This document sets out the proposed NSP that MeyGen Ltd intends to undertake, to allow the Condition to be discharged.

## 2 SCOPE OF NAVIGATIONAL SAFETY PLAN

Phase 1a of the Development is a 6MW, 4 tidal turbines initial phase to be installed and operatives under the restriction placed on the Development by Condition 2 of the S.36 Consent.

This document is currently the NSP for the marine works associated with the Horizontal Directional Drilling (HDD) Works for Phase 1a only (“**HDD Marine Work**”).

Given the Phase 1a programme for construction works associated with Phase 1a it has been agreed with the licensing authority that the NSP and other related consent documents can be updated for the installation of the Phase 1a infrastructure (4 x Tidal Turbine Generators (TTG), 4 x Gravity-base Turbine Support Structures (TSS) and Turbine Subsea Cables (TSC) and submitted at a later date “**the Construction Works**”. MeyGen Ltd. will produce and update relevant documents for these construction works; these will be submitted and get



approval prior to commencement of these works.

The NSP will apply to the HDD Marine Works and vessels transiting between the site and associated ports.

The NSP forms part of a suite of documents related to the consent conditions that MeyGen Ltd. seek to discharge:

- Environmental Management Plan (EMP) (S.36 Consent, Condition 11) including Marine Pollution Contingency Plan (Marine Licence, Condition 3.2.13), Reporting Protocol for the Discovery of Marine Archaeology (S.36 Consent, Condition 16);
- Construction Method Statement) (S.36 Consent, Condition 9); and
- Vessel Management Plan (VMP) (S.36 Consent, Condition 14).

The purpose of the NSP is:

- To mitigate the navigational risk to the Development and other legitimate users of the sea.

The scope of the NSP will include as a minimum:

- Commercial shipping operations and marine services;
- Commercial Fisheries; and
- Marine leisure and sports activities;

The NSP has been developed in consideration of the MGN 371 (M+F) Offshore Renewable Energy Installations Guidance on UK Navigational Practice, Safety and Emergency Response Issues and is in accordance with the Environmental Statement (ES) and the Supplementary Environmental Information Statement (SEIS).

It is intended that this NSP will be regularly reviewed throughout the planning and development of specific marine activities and revisions approved by the Scottish Ministers in accordance with the Condition.

The document contains the following sections:

- Communications, Role and Responsibilities;
- Method Statement and Programme;
- Navigational Sensitivities (other users);
- MeyGen Ltd. Commitments & Legislative Commitments;
- Navigational Safety Measures;
- Construction Safety Zones;
- Notice(s) to Mariners and Radio Navigation Warning;
- Anchoring Areas;
- Temporary Construction Lighting and Marking;

- Emergency Response;
- Buoyage;
- NSP Review and Consultation; and
- References.

### 3 COMMUNICATION, ROLES AND RESPONSIBILITIES

This section details the Development team roles, responsibilities and lines of communication during the construction and operation of the Development.

#### 3.1 Responsibilities and Ownership

The Principal Contractor (PC) will have the delegated responsibility for ensuring the implementation of the NSP.

The Ecological Clerk of Works (ECoW) will provide quality assurance and approval of any version of the NSP.

Any updates to the NSP by the PC will require the ECoW to check compliance with current legislation, consent conditions and related documents. Updated NSP will then be submitted to Scottish Ministers for approval.

#### 3.2 Organisational Chart

The organisational chart for the HDD Marine Works is below in Figure 1. This includes how communication as part of the NSP will be conducted in normal working procedures and in the case of emergencies.

The organisation chart presents the key interfaces, lines of communication and responsibilities with regards to the flow of requirements and provision of mitigating actions across the HDD Marine Works.

Details are provided in the Table 1 below for contacts relevant to the delivery of this plan. These details may change and the CMS will be updated when necessary.

Name	Role	Organisation	Telephone	Mobile
Ian Sargent	Project Manager	James Fisher Marine Services	01565 658812	██████████
Stan Groundwater	Marine Coordinator	James Fisher Marine Services	01565658824	██████████
Tony Blackshaw	HSE Advisor	James Fisher Marine Services	01565 658817	██████████

Ed Rollings	ECoW	MeyGen Ltd	+441316599662	
Fraser Johnson	Marine Package Manager	MeyGen Ltd	+441316599672	

Table 1 Contact Details

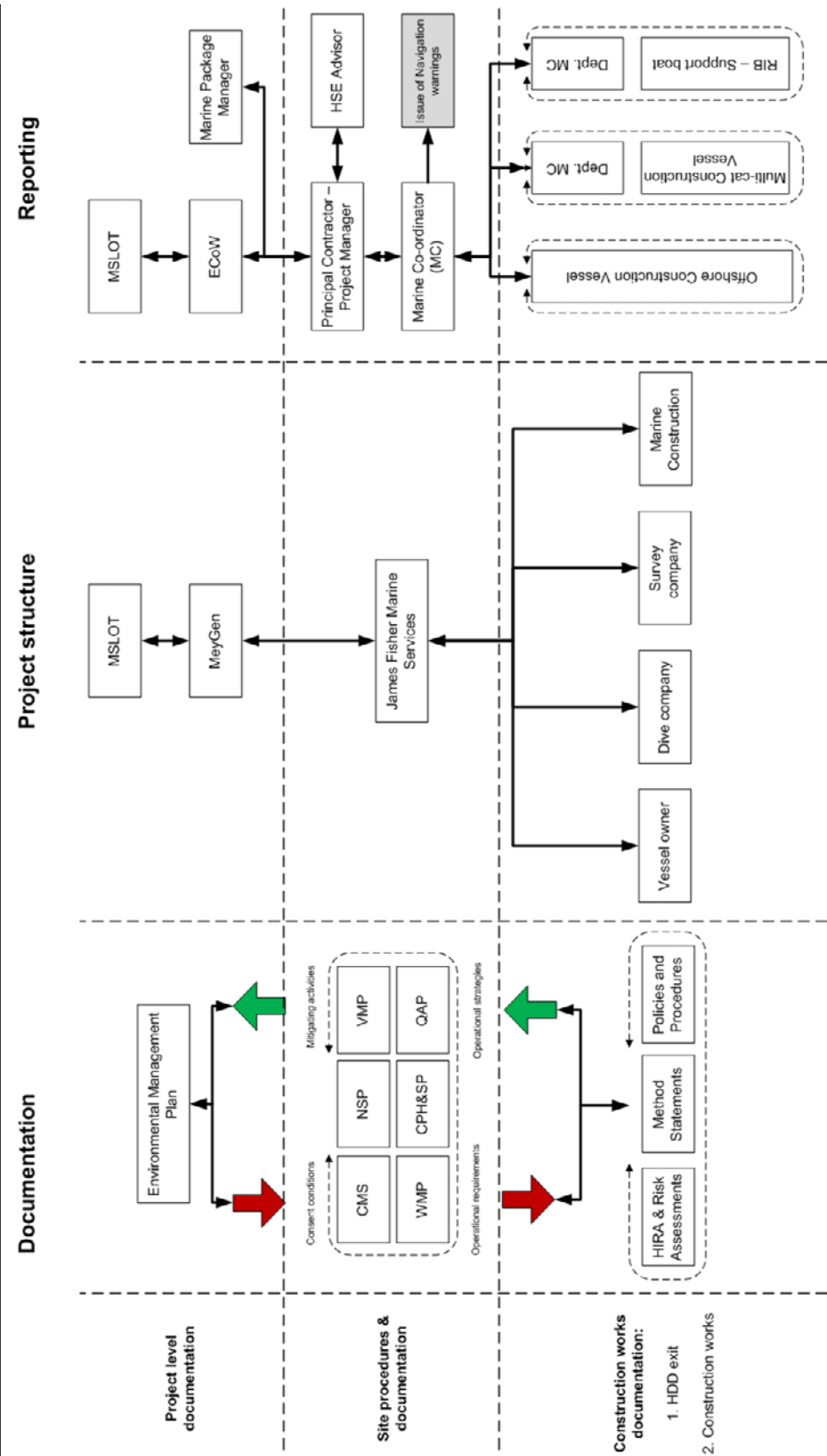


Figure 1 – Key interfaces and organisation chart

**3.3 MeyGen - Ecological Clerk of Works**

- Review and approve all consent related documents (S36 Condition 10).
- Review / comment on content of Site Inductions and Toolbox Talks.
- Review / comment on Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and controls.
- Inspect the site / vessel on a regular basis to ensure effective implementation/operation of all environmental mitigation measures.
- Audit PC procedures, inspections, investigation and reporting.
- Ensure compliance with approve consent related documents, environmental legislation and requirements and address any shortfalls with the PC (S36 Condition 10).
- Review environmental incidents / near misses and PC investigations
- Report compliance and incidents to the licensing authority and other necessary regulatory authorities.
- Notify the licensing authority of vessel details (ML Condition 3.1.3)
- Notify the licensing authority of the commencement date (ML Condition 3.2.1.4)
- Provide Transport Audit Sheets for works to the licensing authority (ML Condition 3.2.2.1)
- Notify the licensing authority of deposits by MHWS (ML Condition 3.2.2.2)
- Ensuring any protected species licenses are in place for the Development (S36 Condition 10)

**3.4 Principal Contractor – James Fisher Marine Services (JFMS)****3.4.1 Project Manager**

- Facilitate dissemination of specific navigational requirements to the project team.
- Oversee the implementation and review of navigational procedures throughout the project.
- Review and approve all consent related documents, including, but exhaustive, CMS, VMP and NSP.
- Monitor the navigational performance of the project through maintaining an overview of incidents, inspections and audits.
- Ensure that navigational considerations form an integral part of Design and Implementation of the Works and to include marine reviews as part of regular project meetings.
- Review and approve Risk Assessments and Method Statements (RAMS) as and where necessary with respect to navigational impacts and mitigation.
- Ensure that all navigational incidents are reported to the ECoW and MeyGen in

accordance detailed reporting requirements and the respective regulatory bodies (where required) as soon as possible.

- Review navigational matters with the ECoW and MeyGen and respective regulatory bodies on a regular basis and as per project requirements.
- Ensure that arrangements for liaison with Development respective regulatory bodies on all navigational issues is appropriate and maintained.
- Implement and maintain a project communications strategy to manage project public relations and complaints.
- Produce weekly and monthly reports and submit to MeyGen Package Manager and ECoW.
- Ensure contractors are approved, operates a Safety Management System, confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.

#### 3.4.2 HSE Advisor

Key roles and responsibilities of the HSE Advisor include, but are not limited to the following:

- Verify compliance with relevant legislation.
- Prepare, implement, review and update consent related documents (in conjunction with the Project Management Team) in accordance with consent condition, James Fisher Marine Services procedures and current legislation.
- Advise the project team on environmental related decision making
- Review Risk Assessments and Method Statements (RAMS) as and where necessary with respect to navigational impacts and mitigation.
- Approve Toolbox Talks and Site / Vessel Inductions and ensure content promotes effective marine operational management, specific works and Site / Vessel sensitivities and communicate associated lessons learnt.
- Provide support to the Marine Coordinator and workforce on any environmental matters that may arise.
- Audit contractors to confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.
- Ensure suitable consideration is given to the period and frequency of environmental monitoring (particularly with respect to higher risk areas).
- Inspect and audit the site / vessels on a regular basis to ensure effective implementation / operation of any environmental mitigation measures.
- Ensure compliance with environmental requirements and address any shortfalls.
- Provide inspection reports to the project management detailing any issues that must be addressed
- Obtain specialist marine expertise to assist in any of the above tasks as required.

- Undertake investigations into environmental incidents or near misses to determine the root/direct cause and present the findings, recommendations and lessons learnt.
- Monitor hazardous observations and incidents trends in relation to environmental aspects and impacts and initiate actions as required to minimise the potential environmental impacts and reduce risk in a timely and effective manner.

#### 3.4.3 Marine Coordinator

- Responsible for all construction operations Marine Coordination including vessel / site HSE during construction operations.
- Ensure that all contractors have received and understood the Site / Vessel induction.
- Undertake Toolbox Talks to promote effective environmental management and communicate associated lessons learnt.
- Monitor and disseminate weather information and forecasts
- Production of marine safety alerts including issuing Notice to Mariners to agreed stakeholder list.
- Responsible for collating, communicating and responding to statutory navigation notices.
- Liaise with port authorities.
- Implement / operate environmental mitigation measures as approved in the consent related documents at the site / vessel.
- Coordinating, ensuring compliance for and recording all vessel movements and personnel movements offshore.
- Emergency response coordination.
- Produce daily reports and submit to the PC Project Manager, MeyGen Package Manager and ECoW.
- Keep Transport Audit Sheets for all materials listed in the licence to be deposited as part of the works
- Keep audit reports stating the nature and quantity of all substances and objects deposited below MHWS under the authority of the licence.

### 3.5 Contractors

#### 3.5.1 Vessel Master

- Overriding authority and responsibility to make decisions with respect to safe navigation of the vessel and matters related to HSE.
- Dedicated watch-keeper on board the vessel, or nominate suitable qualified deputy.
- The persons present on board must adhere to the Vessel Master's instructions.
- Adhere to IMO International Regulations for the Prevention of Collisions at Sea and primary marine legislation or codes applicable to the vessel's size.

- Adhere to vessel owner's (or managers), charterer and clients standing navigational orders and operational guidelines subject to the overall safety of the vessel.
- Ensure that all contractors have received and understood the vessel induction including abandonment.

### 3.5.2 All Other Staff

- To understand and implement procedures relevant to their role as laid out.
- To conduct their work with a view to eliminating/reducing the environmental impact of the Development and to raise any environmental concerns with Marine Coordinator or Project Manager.
- Operate in a safe and efficient manner and "stop the job" if the potential for an unsafe act is developing.
- To report all environmental incidents to the Marine Coordinator and Vessel Master as soon as possible.

## 3.6 Communication

Environmental issues will be formally communicated through the arrangements on Site / Vessel in Table 2.

Meeting/briefing	Frequency	Attendees
Safety, Health, Environment, Security and Quality (SHESQ) and Progress Meeting	Weekly	See paragraph below
Daily site team briefs	Daily	All work parties
Risk Assessment/Method Statement briefings	Each job task	All members of the working party
Toolbox Talks including environmental practices and mitigation measures	Before mobilisation, or a minimum of one per week	All Site / Vessel personnel
Pre commencement navigational meeting	Once before task commences	Vessel Master, Marine co-ordinator, Harbour Master.
Site / Vessel Induction	On first attendance at site <u>BEFORE</u> any work is undertaken	All persons attending Site / Vessel
Passage Planning Meeting	Prior to each departure	Master, Bridge Team

**Table 2 Communication and Meetings**

### 3.6.1 SHESQ and Progress Meeting

The PC shall convene weekly Site / Vessel meetings with all contractors on Site / Vessel to communicate, discuss and consult any change in conditions, working practices and environmental arrangements, procedures and overall SHESQ performance.

The ECoW and representatives from MeyGen and other interested Third Parties shall have an open invitation to attend these weekly Site / Vessel meetings. Each contractor on Site /



Vessel shall nominate a person to attend these meetings with the appropriate authority to act on those contractors behalf. SHESQ and Progress Meetings shall be augmented by additional meetings at intervals dictated by the requirements of the contract or at key stages of the works.

Minutes of all such meetings shall be produced and held on file for record purposes, with copies supplied to each contractor on Site / Vessel, the CDM Co-ordinator and ECoW.

### 3.6.2 Extraordinary meetings

Extraordinary meetings would be held in order to deal with special navigational issues that may arise during the Development such as navigational incidents. These meetings shall be organised by the HSE Advisor with the aim of ensuring a timely response and resolution to any identified issues.

### 3.6.3 Daily Site / Vessel team meetings

Daily site team meetings will take place at the Onshore / Offshore site between the PC and contractors. Any navigational concern shall be addressed at this meeting.

### 3.6.4 Risk Assessment / Method Statement briefings

These briefings will take place before each construction task and attended by all directly involved in the task. Operational requirements and mitigation measures will be instructed and reviewed.

### 3.6.5 Site / Vessel inductions

Inductions, conducted before anyone commences work on the project are utilised to raise awareness for personnel regarding Site / Vessel rules, emergency response procedures and if applicable navigational protection arrangements. The inductions include a test to confirm understanding.

### 3.6.6 Site / Vessel notice boards

Site / Vessel notice boards will contain relevant Site / Vessel information relating to Health, Safety and Environmental issues. The Site / Vessel will also have appropriate signage in place to highlight awareness of environmental hazards. Other communications media, such as newsletters and posters will also be posted on notice boards to communicate awareness of environmental / navigational matters.

## 3.7 Reporting

The PC will communicate the following to the ECoW and contractors on Site / Vessel:

- Details of audits and inspections;
- Details and statistics for navigational incidents and near misses;
- Details of any pending and actual enforcement action in respect of any marine related incidents;
- Any other pertinent issues identified;
- Transport Audit Sheets; and



- Audit reports for the nature and quantity of all substances and objects deposited below MHWS.

The PC will provide these in:

- Daily logs and reports when construction activities are taking place on site / vessels;
- Weekly progress reports
- Monthly reports (additionally, confirming the status of the project, implementation of navigational / environmental commitments and mitigation measures, monthly and cumulative statistics, training delivered, environmental initiatives undertaken, amendments to the any of the consents related documents).

### 3.7.1 External Communication

The Marine Coordinator is responsible for:

- Documenting, issuing, communicating and responding to statutory navigation notices for the Development; and
- Emergency Response  Co-operation Procedures are in place for such events. The communication and reporting protocols for such an event can be found in the Emergency Response  Co-operation Plan (Section 12).

The ECoW is responsible for:

- Notification to the licensing authority detailed in the consent condition;
- Reporting monthly to the licensing authority once works have commenced with:
  - Details of audits and inspections;
  - Details and statistics for incidents and near misses;
  - Details of any pending and actual enforcement action in respect of any incidents;
  - Any other pertinent issues identified;
  - Transport Audit Sheets; and
  - Audit reports for the nature and quantity of all substances and objects deposited below MHWS.
- Meeting with the licensing authority and statutory agencies and the local community; and
- Receiving, documenting and responding to any environmental communication from third parties.

### 3.8 Training

The purpose of marine training is to ensure that all site personnel have the knowledge to successfully implement the requirements of the project and remain safe on any marine asset.

In order to ensure that the environmental mitigation measures are implemented on site, the following environmental training Table 3 in will be required.

Training	Target Persons
Vessel Safety Induction covering emergency procedures, action in event of man overboard, fire and abandonment procedures.	Personnel working aboard any marine asset
Induction (which will include and environmental aspects (environmental sensitivities and controls, pollution prevention, waste management and emergency preparedness and response)	All persons attending Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel, and visitors)
Toolbox Talks	Toolbox talks will be carried out prior to undertaking any activity. All persons carrying out work on site (site personnel, contractors on site) shall attend
Environmental Bulletins / Legislation Briefings / Best Practice Briefings	All persons carrying out work on Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel) shall attend.
Job specific training e.g. <ul style="list-style-type: none"> <li>• IOSH Working with Environmental Responsibilities / IOSH Managing Environmental Responsibilities.</li> <li>• Use of Pollution Prevention Equipment.</li> <li>• Site Waste Management.</li> </ul>	As identified for personnel with environmental responsibilities
Project specific information, including relevant elements of: <ul style="list-style-type: none"> <li>• the EMP, CMS, NSP, VMP</li> <li>• Consent Conditions</li> </ul>	Briefed out and available for reference to all Site / Vessel staff.

**Table 3 Training**

Any person working on the Site / Vessel will be competent and trained sufficiently to undertake their work in a safe and efficient manner. Each Contractor will ensure that their personnel maintain the necessary level of competence for their work & will maintain the training records on site & make them available for review and audit. Records of training will be maintained and made available for inspection.

#### **4 METHOD STATEMENT AND PROGRAMME**

The full HDD Marine Works method and programme can be found in the Construction Method Statement (MEY-1A-40-HSE-001-D-ConstructionMethodStatementHDD).

#### 4.1 HDD Marine Works Summary

HDD Marine Works will be set out for the following 4 dives at the HDD exit point (location, see Figure 3):

- 1) Identifying the exit point of the 4 x HDD bores on the seabed;
- 2) Cut the 'bullnose' from the HDD liner;
- 3) Connecting and disconnecting equipment to the drill string to clean and prove the HDD liner; and
- 4) Fit a seal to the end of the HDD liner to prevent debris entering.

The 4 dives are likely to take place in 2 mobilisation per HDD bore.

The dive operations will take place from a multicat vessel on a 4 point mooring system. The mooring system will be deployed in the operation for HDD bore 1 and remain in-situ until HDD bore 4 operations are complete, upon which it will be removed. Details of the navigation safety measures are included in this document.

The dive activities to be executed in the HDD Marine Works are programmed to require a single day. The vessels will therefore mobilise to site in the morning of the activity and demobilise back to their home port within the same 24 hour period.

The HDD bores will be completed in sequence so the HDD Marine Works are separated by approximately 1 month (see Figure 2). This is dependent on the HDD bore drilling progress as well as having suitable weather and tide windows for the works.

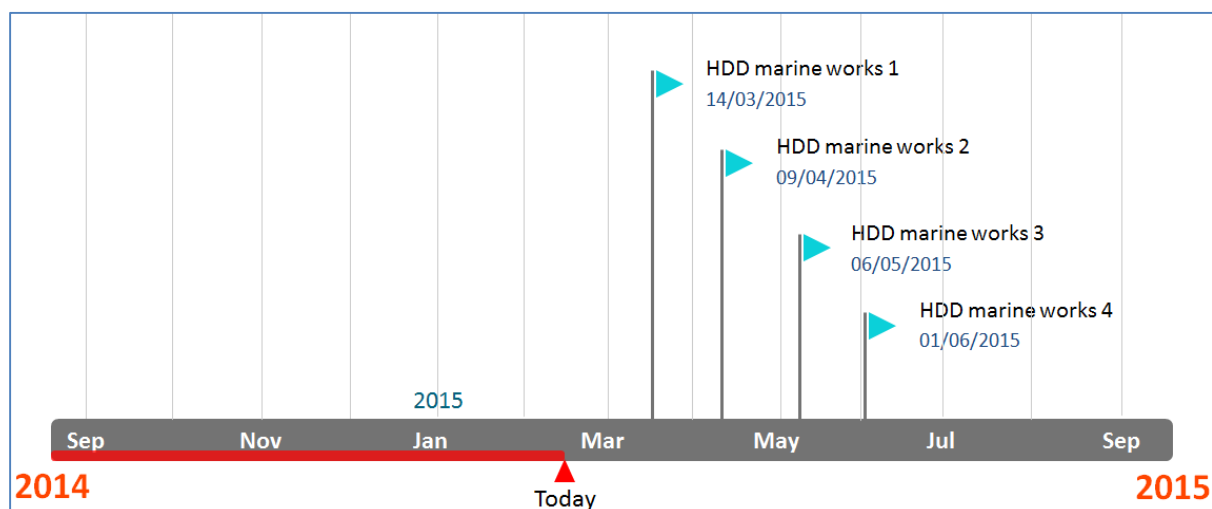
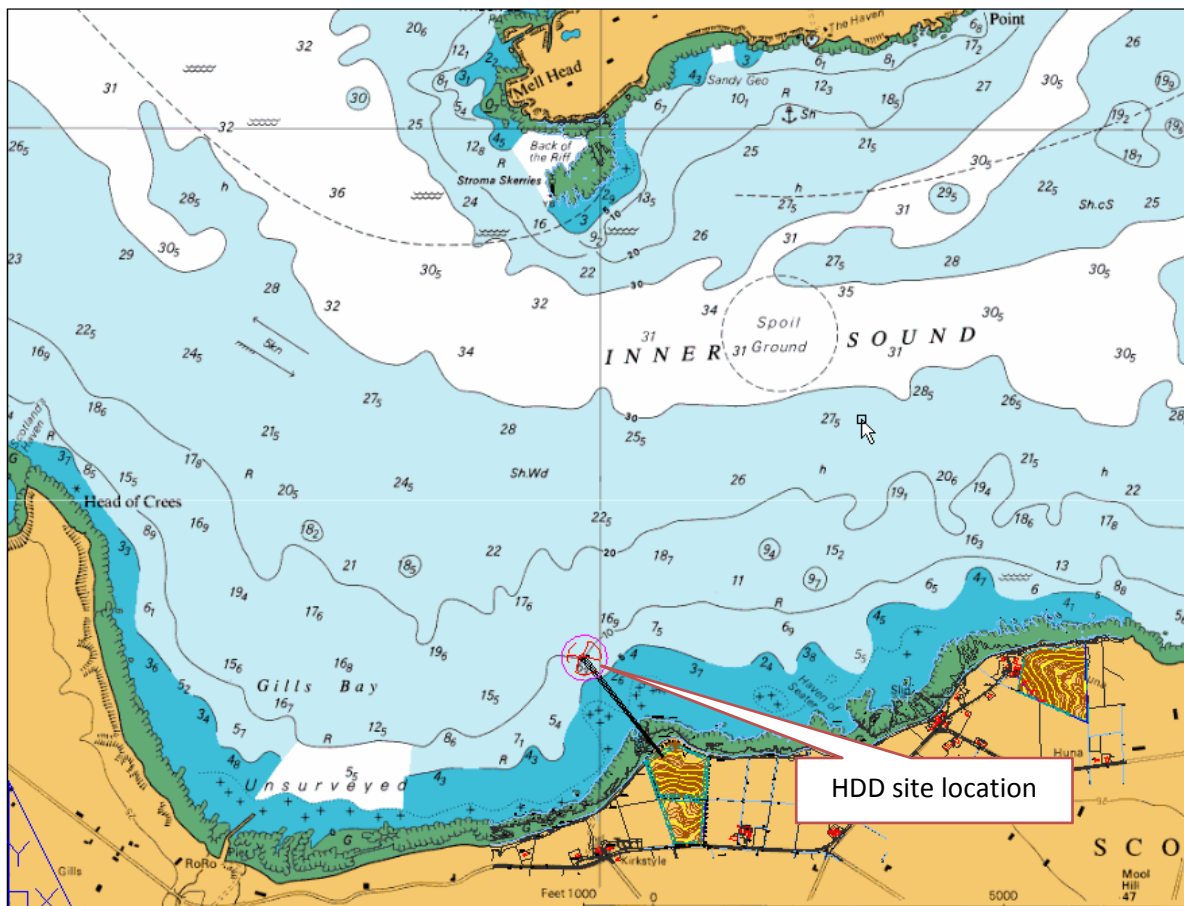


Figure 2 HDD Marine Works Programme

## 5 NAVIGATIONAL SENSITIVITIES AND OTHER USERS

### 5.1 Navigational features

The Development is located in the Pentland Firth, which separates the Scottish mainland from the Orkney Islands, Figure 3. The Pentland Firth is well known as a challenging environment for mariners, with Admiralty Charts of the firth including general recommendations on navigation and more specific advice for laden tankers, due to strong tidal streams which give rise to eddies and races. The Development area lies outside of the worst of these, such as The Merry Men of Mey and The Swilkie.



**Figure 3 – HDD Marine Works Location**

The Pentland Firth is divided into two passages by the island of Stroma. The principal and usual route through the firth by day and night, recommended for larger vessels, is the 2.5nm wide, deep and well-marked Outer Sound between Stroma and Swona. The Inner Sound between Stroma and the mainland is approximately 1.25nm wide, shallower, poorly marked, and its use by larger vessels is not recommended at any time, particularly in high winds or at night. However, it may be used by slow or smaller vessels with local knowledge in certain weather or in order to avoid proceeding against a stronger contrary stream in the Outer

Sound.

Admiralty Sailing Directions suggest a mid-channel route through the Inner Sound when transiting with the tidal stream. When heading eastbound against the stream, keeping close in to either Stroma or Gills Bay is recommended to take advantage of comparatively slack water either side of mid-channel. For the westbound passage against an east-going tidal stream, the track favours the mainland shore through Inner Sound. However, the directions state that the coast between Ness of Duncansby and Gills Bay should not be approached too closely as it is generally poorly surveyed and in a number of places is fringed by dangerous or drying rocks.

#### 5.1.1 Voluntary Reporting System

There is a voluntary reporting system in the Pentland Firth. Laden vessels should report to Aberdeen Coastguard on VHF Channel 16 at least 1h before ETA and on final departure of the Pentland Firth. This includes giving details on Name, Course, Speed, Draught and Destination.

## 5.2 Vessel movements

A combined dataset of 16 weeks seasonally and tidally weighted AIS survey data from 2010-2011 was used for the baseline shipping analysis. This exceeded the minimum required by MCA MGN 371 of 4 weeks in order to provide a comprehensive picture of the traffic in the Inner Sound.

This was analysed for the Development area and its surroundings, covering both the Inner and Outer Sounds. A plot of ship tracks recorded during the survey period, colour-coded by vessel type, is presented in Figure 44. An illustration of the relative traffic density within the area is presented in Figure 55 based on the combined AIS track data. Key features are:

- The Pentalina ferry, operated by Pentland Ferries between Gills Bay and Saint Margaret's Hope with three return trips per day. A combined plot of all the Pentalina tracks over the 16 weeks is presented in Figure 66. Pentland Ferries still operate the 3 return trips per day.  
In easterlies the ferry will tend to pass west of Stroma whilst in westerlies the route east of Stroma is preferred.
- Consistently heavy east-west traffic via the Outer Sound between the islands of Stroma and Swona. The number of vessels using the Outer Sound averaged 14 per day,
- The east-west traffic transiting the Inner Sound is low-to-moderate by comparison, averaging less than 1 vessel per day (approx. 4% of the Outer Sound traffic). The sizes of vessels in the Inner Sound also tended to be smaller.
- In total, 43 different vessels were recorded using the Inner Sound making a total of 63 transits (average of 1 transit every 2 days). The number of vessels varied slightly between the periods with marginally more traffic in winter.

- A number of these same vessels were also recorded using the Outer Sound during the survey, which suggests vessels can use both channels, although their choice is likely to depend on weather, tides and departure / destination ports.
- A total of 29 of the 63 vessels were broadcasting their draught on AIS. The draughts of a further 23 vessels were conservatively estimated based on researching their maximum draught or depth. A combined plot of the transiting traffic by draught is presented in Figure 77 and Figure 88. Draughts for 62 of the 63 vessels have therefore been ascertained.

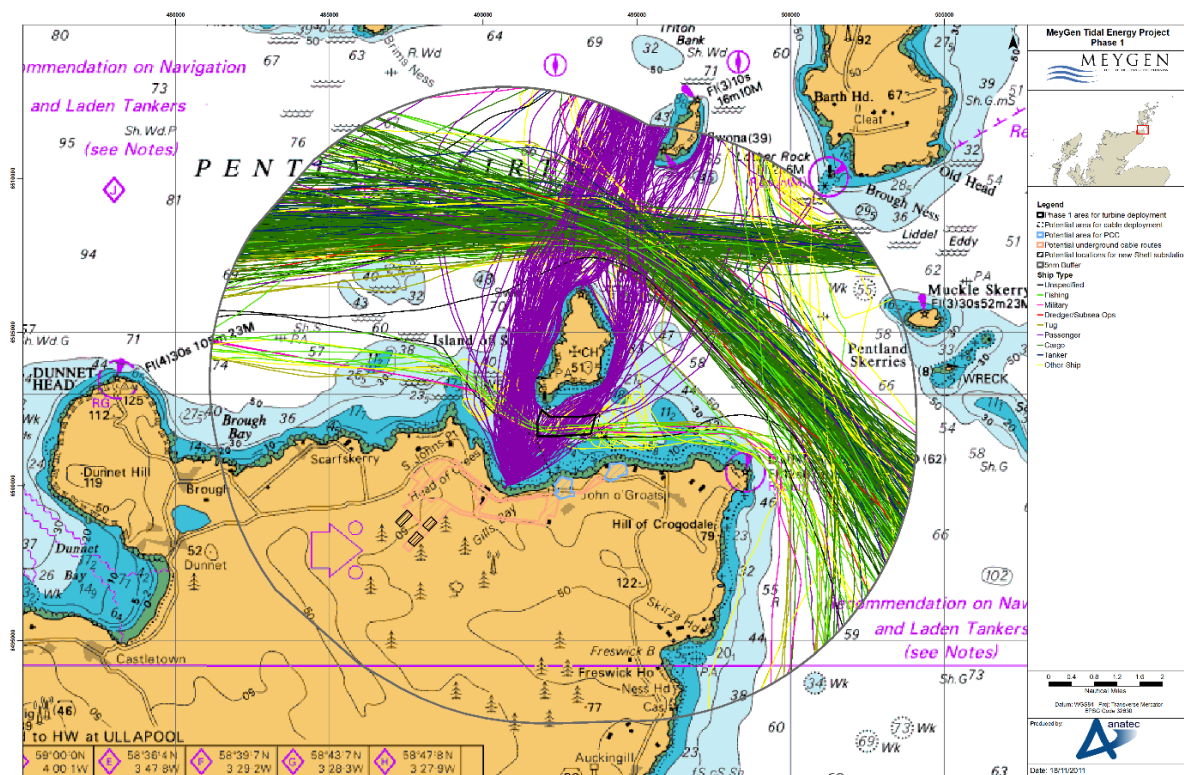


Figure 4 – AIS tracks by ship type within 5nm of the Development (Summer, 2011)



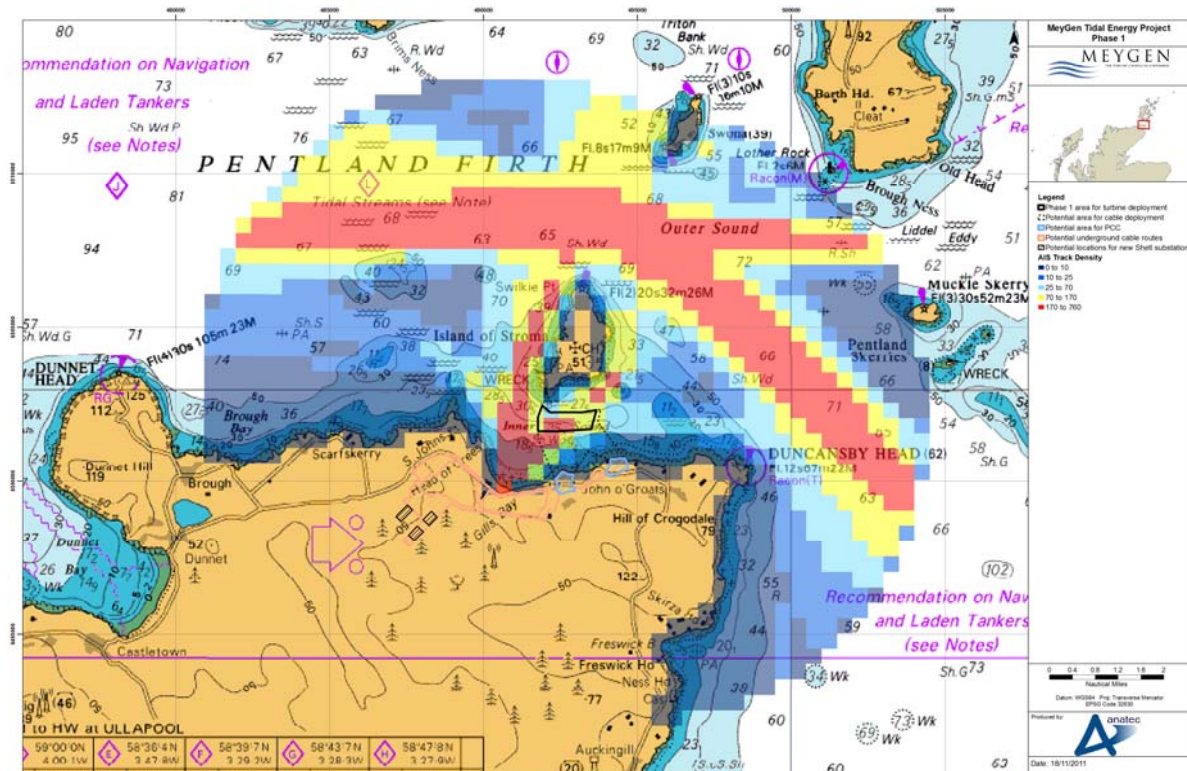


Figure 5 – AIS density (2010 and 2011)

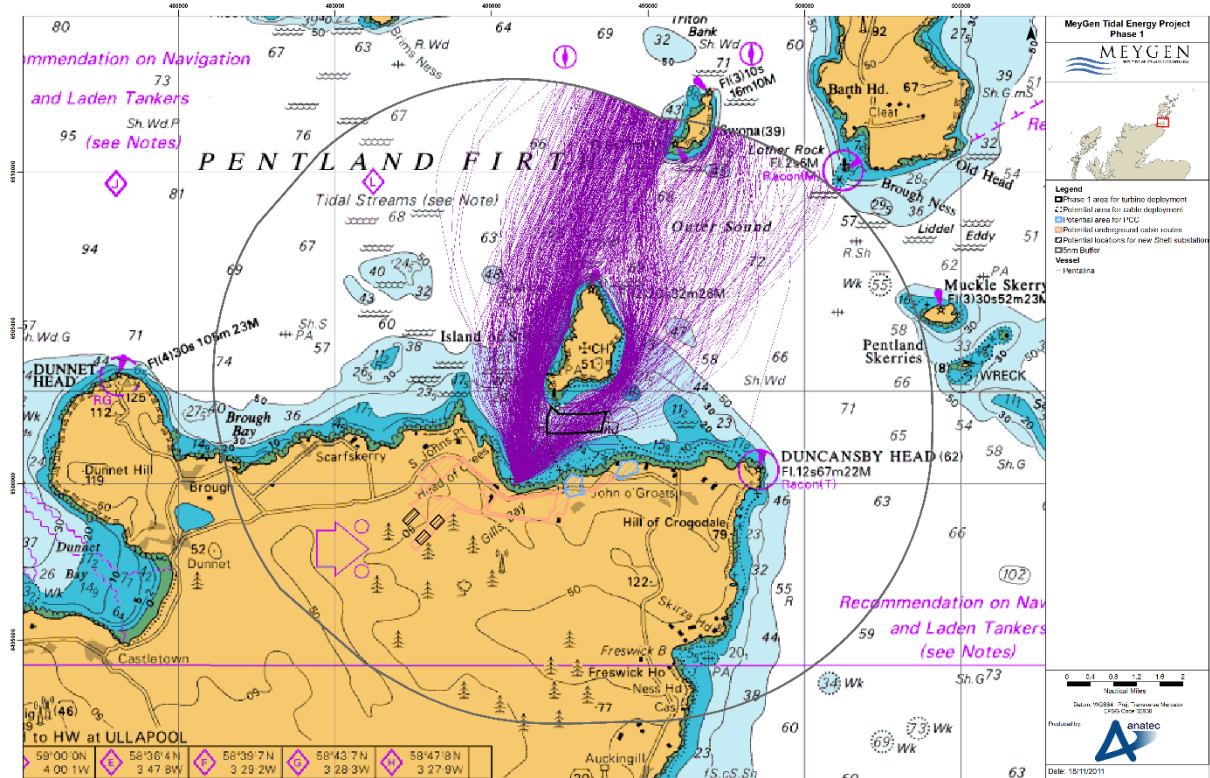
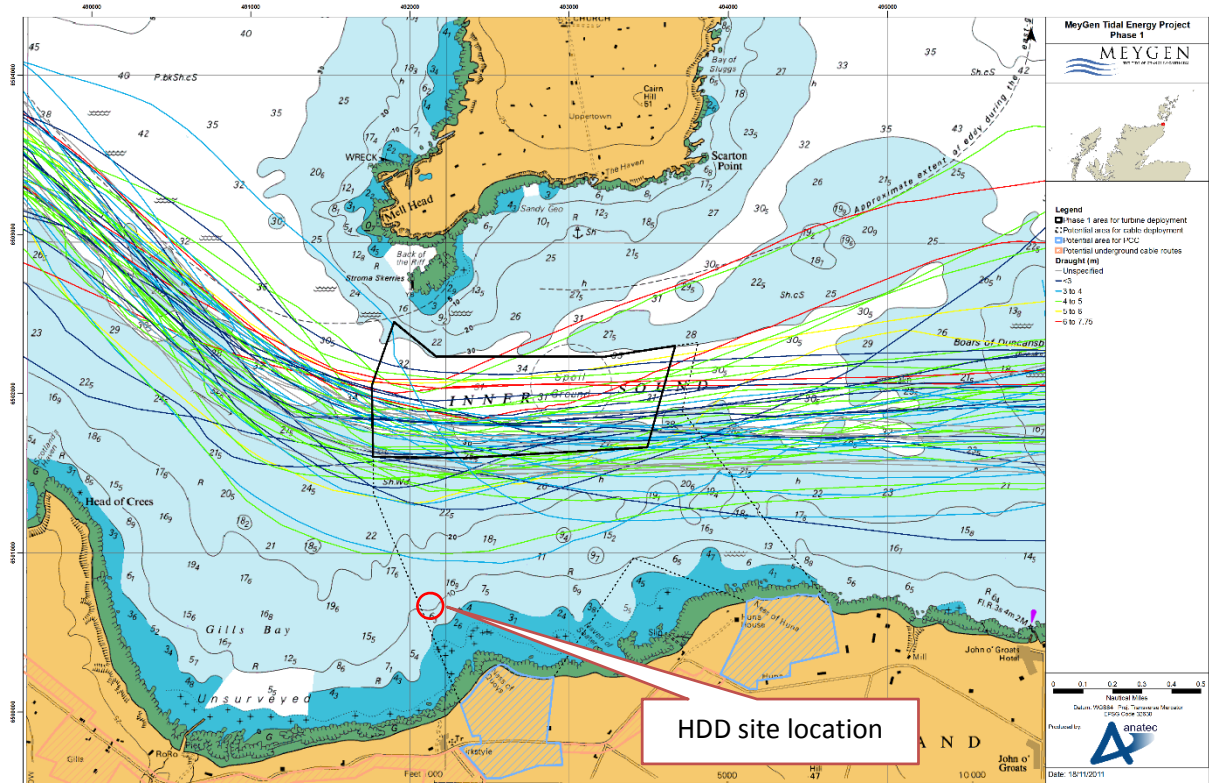
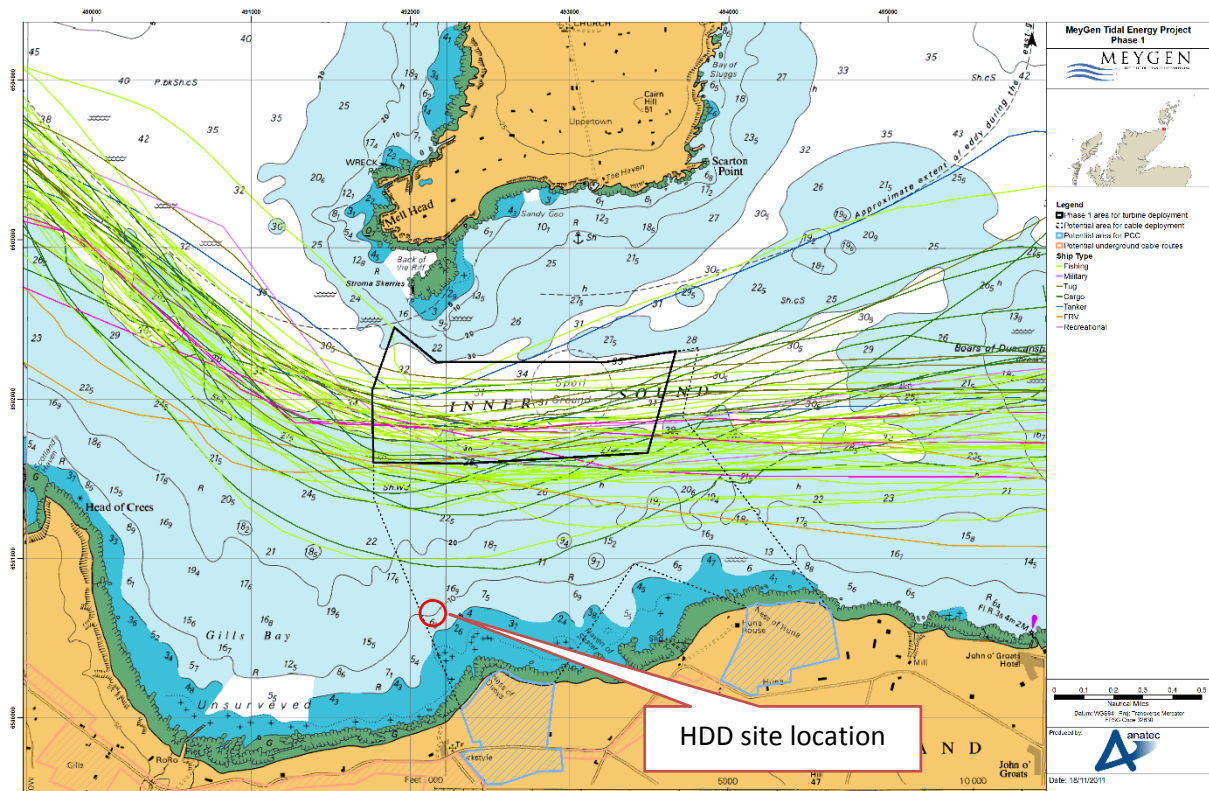


Figure 6 – AIS tracks of Pentlandina (2010 and 2011)





## 6 MEYGEN LTD. COMMITMENTS AND LEGISLATIVE COMMITMENTS

This section will provide an overview of the commitments made for navigation in the ES and SEIS and legislative and consenting requirements.

### 6.1 Environmental Statement and Supplementary Environmental Information Statement

A number of impacts were considered within the ES and mitigations identified for the construction phase. These are listed below in Table 4 with the mitigating actions proposed.

ES Mitigation	NSP Reference
<b>Collision risk with work vessel</b>	
Marine Safety Information broadcasts will be issued by HM Coastguard to inform mariners of the activity at the Development area (8 broadcasts per day covering Fair Isle, Cromarty and Hebrides Areas).	Section 9
The Development area will be issued as a temporary chart correction during the construction phase to be issued as a permanent correction and depicted on Admiralty Charts produced by the UKHO. This amendment will be via the existing Notice to Mariners and include standard chart markings.	Section 9
Navtex and Notices to Mariners will be issued including details of the MeyGen work	Section 9
Information on the work activity at the site will be circulated directly to local ports, ferry operators (e.g., Pentland Ferries), fishermen and recreational clubs.	Section 9
Details of the Development will be included in updated Kingfisher fishermen's awareness charts and FishSAFE.	Section 9
Details of the Development will be included in updated Sailing Directions.	Section 9
There will be liaison with local Harbour Masters to ensure they are aware of the activity and can notify visitors to their port.	Section 9
A working VHF channel will be provided to local users.	Section 9
Safety zone of appropriate dimensions will be applied for to protect working vessels on the site when restricted in ability to manoeuvre	Section 8
Operating procedures will be established to ensure work vessels do not block the channel when they are not actively working on the site. If it is not practicable for the work vessel to depart from the site they will use AIS and marks to indicate that any safety zone is not operational if they are not restricted in manoeuvrability.	Section 9 & 10
Collision risk management procedures will be developed to be used by working vessels specifying traffic monitoring and emergency response procedures.	Section 9 & 12

An Emergency Response Cooperation Plan (ERCoP) will be prepared for the Development incorporating the guidance provided in MGN 371. This will be submitted to the MCA for comment and approval.	Section 12
There will be a dedicated watchkeeper onboard working vessel(s)	Section 3
Local harbours will be used for the work where practicable.	Vessel Management Plan
<b>Traffic re-routeing due to work vessels and associated safety zones</b>	
Further consultation will be carried out on the safety zone dimensions with Marine Scotland, the MCA, DECC, the appointed contractor and local stakeholders prior to the application being made to DECC.	Section 8
Safety zones will be established on a 'rolling' basis, covering only the area of the site in which activity is taking place at a given time. Once that activity has been completed in that specific location, the safety zone will then 'roll on' to cover the next specific location (not the whole Development area).	Section 8
Work vessels will indicate their status on AIS and using appropriate marks/lights, e.g., if restricted in manoeuvrability. This will signify to passing traffic whether a Safety Zones is in place or not.	Section 11
<b>Working vessel gets into difficulty</b>	
Working vessels are selected and audited based on suitability for the job and the conditions in the Pentland Firth.	Section 3
Marine operating procedures are developed specifying allowable wave, tide and weather criteria.	Construction Method Statement
Procedures specify that work vessels should seek shelter (or return to base) when not working at the site.	Vessel Management Plan
Working personnel are trained in offshore survival and have suitable Personal Protective Equipment (PPE).	Section 3
The Construction company operates a Safety Management System.	Section 3
Passage plans are developed for vessels routeing between the Development area and the onshore base.	Vessel Management Plan
Work vessel movements are monitored from designated control centre,	Section 3 Marine

e.g., on AIS and reporting via VHF.	Coordinator
An Emergency Response Cooperation Plan (ERCoP) will be prepared for the Development following the template provided by the MCA in MGN 371. This will be submitted to the MCA for comment and approval.	Section 12

**Table 4 ES Construction mitigation****6.2 Safety Management Systems**

The NSP complies with the Principal Contractor's Construction Phase Health and Safety Plan (under the Construction (Design and Management) Regulations 2007) and their Health, Safety and Environment Manual.

**6.3 Consent Conditions**

A list of further commitments required by the Conditions of the S.36 consent and Marine Licence, relevant to the HDD Marine Works, are in Table 5. The NSP is part of suite of consent related documents. A full list of the S36 and Marine Licence conditions can be found in the EMP.

The NSP sets out the safe navigation systems that will be used in carrying out the HDD Marine Works as detailed in the CMS. CMS for the HDD Marine Works also complies with the procedures set out in the EMP and VMP. Each of these documents is consistent with each other.

Con	Condition summary	Document	Responsible for Notification
S36 9	-	Construction Method Statement	
S36 10	ECow	N/A	
S36 11	-	Environmental Management Plan	
S36 12	-	Project Environmental Monitoring Programme	
S36 13	-	Advisory Group	
S36 14	-	Vessel Management Plan	
S36 15	-	Operations and Maintenance Plan	
S36 16	Reporting Protocol for the Discovery of Marine Archaeology	Environmental Management Plan	
S36 17	-	Navigation Safety Plan	

ML 3.1.3	Notification of Vessels	Construction Method Statement / Vessel Management Plan	ECoW
ML 3.2.1.3	Marine Pollution Contingency Plan	Environmental Management Plan	
ML 3.2.1.4	Notification of Commencement	Construction Method Statement	ECoW
ML 3.2.1.5	ECoW	N/A	
ML 3.2.1.6	Promulgation of navigation warnings	Navigation Safety Plan	
ML 3.2.1.7	Marine Mammal Observer	Environmental Management Plan	
ML 3.2.2.1	Transport Audit Sheets	Construction Methods Statement	ECoW
ML 3.2.2.2	Notification of Deposits	Construction Methods Statement	ECoW

**Table 5 Other consent requirements****6.4 Legal Requirements, Licences and Guidance notes**

The NSP has been developed with due consideration of the following legislation:

- a) Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)
- b) UK Merchant Shipping Act 1995
- c) UK Maritime H&S Regulations
- d) International Convention for the Safety of Life at Sea (SOLAS), 1974
- e) MGN 371 Offshore renewable energy installations (OREIs)
- f) Offshore Wind and Marine Energy Health and Safety Guidelines, UK Renewables

Where practicable and relevant, the NSP will be influenced by the MGN 371 guidance and industry best-practice, including the development of an Emergency Response Co-operation Plan (ERCoP) pre-construction and in collaboration with the nearby offshore operators, it is considered that Search and Rescue issues can be well managed.

**7 NAVIGATIONAL SAFETY MEASURES**

Measure put in place to ensure the Navigational safety of the HDD Marine Works will

include:

- Notice to Mariners;
- Radio navigation warnings;
- Dedicated watchkeeper;
- Temporary construction lighting and marking; and
- Emergency Response Co-operation Plan
- Selection of well found and competently managed work vessels

These measures will be adopted in consideration of the COLREGS and the guidance of MGN 371.

## 8 CONSTRUCTION SAFETY ZONES

The HDD Marine Works will not specify a safety zone, but the vessel will request marine traffic to provide the region a suitably wide berth as there will have divers operating in the water (Figure 3).

The 4 point mooring system will have a radius of 75m with the vessel located close to the centre of the mooring spread (Figure 9).

- The Notice to Mariners will include details of the Marine Works Locations, all-encompassing dates and request the area is given a suitable wide berth.
- Navigation warnings issued via the 'Navteq' system.
- Radio warnings will be given every 3 hours by coast radio stations.
- "Securitee" message broadcast at commencement, during, and on completion of daily activities.
- Vessels involved will be keeping continuous listening watch on Channel 16 and will display appropriate lights and marks as required by the International Rules for Preventing Collisions at Sea.

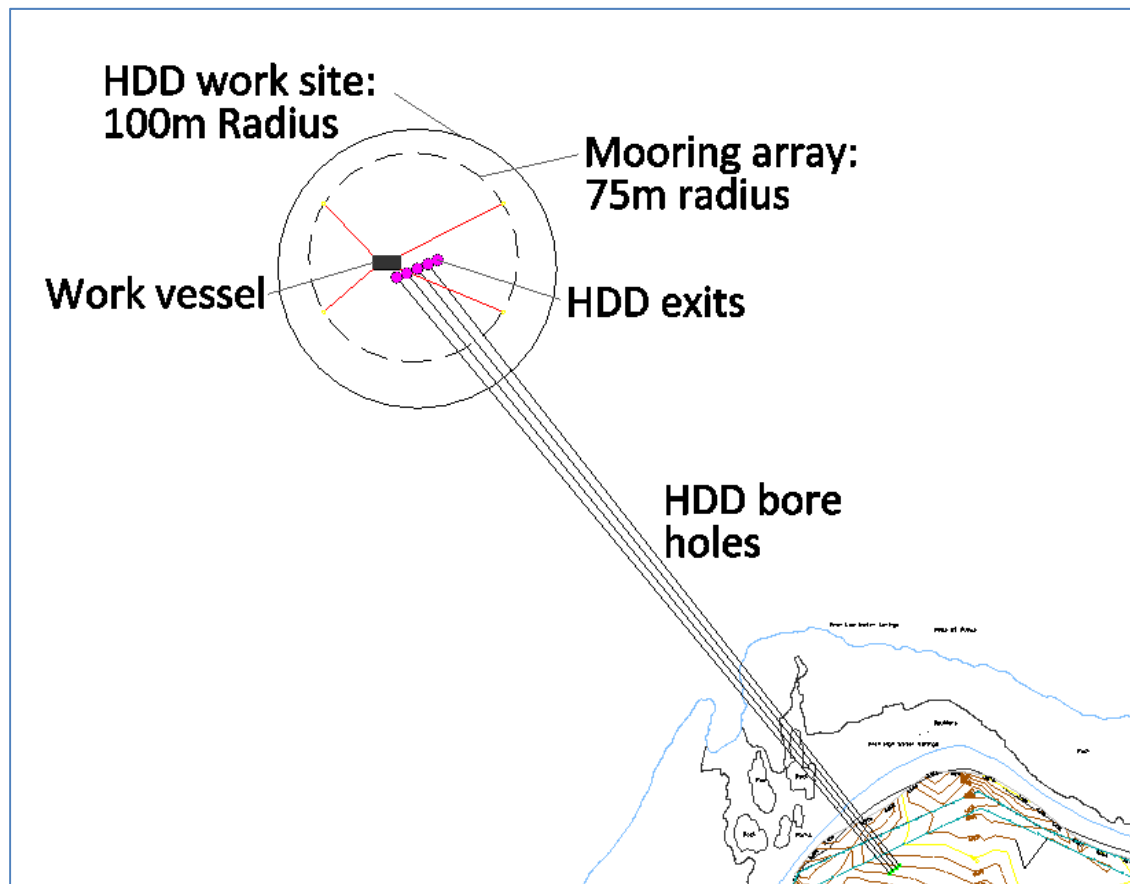


Figure 9 – HDD exit works site layout

## 9 NOTICE (S) TO MARINERS AND RADIO NAVIGATION WARNINGS

Notice to Mariners (Ntm's) will be issued stating:

- Contractor undertaking works and Contractor contact details
- Position, date and duration of works
- Vessels
- Bouyage and marking
- Specific navigation information and planned communication / warnings
- Seabed hazards that remain post operation

A sample NtM is included in Appendix A. NtM's will be sent to the following list in Table 6, including national and local stakeholders.

Contact	Email
UKHO	<a href="mailto:hdcfiles@ukho.gov.uk">hdcfiles@ukho.gov.uk</a>



UKHO	<a href="mailto:navwarnings@btconnect.com">navwarnings@btconnect.com</a>
UKHO	<a href="mailto:sdr@ukho.gov.uk">sdr@ukho.gov.uk</a>
HM Coastguard Shetland Marine Co-ordination Centre	<a href="mailto:wm.shetland@mcga.gov.uk">wm.shetland@mcga.gov.uk</a>
Marine Scotland Licensing Operations Team	<a href="mailto:ms.marinelicensing@scotland.gsi.gov.uk">ms.marinelicensing@scotland.gsi.gov.uk</a>
Pentland Ferries	<a href="mailto:kbanks@pentlandferries.co.uk">kbanks@pentlandferries.co.uk</a>
Scrabster Harbour	<a href="mailto:gordon.mackenzie@scrabster.co.uk">gordon.mackenzie@scrabster.co.uk</a>
Wick Harbour	<a href="mailto:malcolm.bremner@wickharbour.co.uk">malcolm.bremner@wickharbour.co.uk</a>
Gills Bay Harbour	<a href="mailto:b_mowat@yahoo.co.uk">b_mowat@yahoo.co.uk</a>
Orkney Island Council Marine Services	<a href="mailto:harbours@orkney.gov.uk">harbours@orkney.gov.uk</a>
Northlink Ferries	<a href="mailto:kris.bevan@northlinkferries.co.uk">kris.bevan@northlinkferries.co.uk</a>
Scottish Fishermen's Federation	<a href="mailto:sff@sff.co.uk">sff@sff.co.uk</a>
Orkney Fishermen's Society	<a href="mailto:stewart@ofsorkney.co.uk">stewart@ofsorkney.co.uk</a>
Orkney Fisheries Association	<a href="mailto:orkneyfisheries@btconnect.com">orkneyfisheries@btconnect.com</a>
Scottish Pelagic Fishermen's Association	<a href="mailto:ian.gatt@scottishpelagic.co.uk">ian.gatt@scottishpelagic.co.uk</a>
Royal Yachting Association	<a href="mailto:admin@ryascotland.org.uk">admin@ryascotland.org.uk</a>
Holy Loch Port	<a href="mailto:info@holylochport.co.uk">info@holylochport.co.uk</a>
Pentland Canoe Club	<a href="mailto:secretary@pentlandcanoeclub.org.uk">secretary@pentlandcanoeclub.org.uk</a>
Caithness Canoe Club	<a href="mailto:bill.ros1@btoopenworld.com">bill.ros1@btoopenworld.com</a>
James Fisher Marine Services	<a href="mailto:i.sargent@james-fisher.co.uk">i.sargent@james-fisher.co.uk</a>
James Fisher Marine Services	<a href="mailto:a.heslop@james-fisher.co.uk">a.heslop@james-fisher.co.uk</a>
James Fisher Marine Services	<a href="mailto:t.blackshaw@james-fisher.co.uk">t.blackshaw@james-fisher.co.uk</a>
MeyGen Ltd.	<a href="mailto:fraser.johnson@meygen.com">fraser.johnson@meygen.com</a>
MeyGen Ltd.	<a href="mailto:david.collier@meygen.com">david.collier@meygen.com</a>
MeyGen Ltd.	<a href="mailto:eddie.scott@meygen.com">eddie.scott@meygen.com</a>
MeyGen Ltd.	<a href="mailto:Ed.rollings@meygen.com">Ed.rollings@meygen.com</a>

**Table 6 NtM Contacts****9.1 Frequency of Notice to Mariners**

NtM's will be issued a minimum of 2 weeks prior to commencement of the works.

**9.2 Frequency and Approach to Radio Navigation Warning**

Navigation warnings will be promulgated using the GMDSS "Navtex" system which will be available to commercial vessels and some trawlers and leisure vessels.

Radio navigation warnings will be issued every 3 hours. By coast radio stations. These will be readily accessible to any vessel with an operable VHF station.

The primary, or a designated, work vessel will broadcast "Securitee" messages by VHF at commencement to works, during (hourly) and at completion of daily activities. These messages will be readily accessible to any vessel with an operable VHF station.



Vessels involved will be keeping continuous listening watch on Channel 16 and have a working channel pre-determined for general communications.

Vessels will display appropriate lights and marks as required by the International Rules for Preventing Collisions at Sea.

### 9.3 Temporary Chart Markings

The UKHO will be notified of the Development and request to issue a temporary chart correction for the HDD Marine Works area. This will be requested prior to the execution of the main construction works.

On completion of works a formal correction will be presented to HMSO for the permanent update of charts indicating sub-sea structure positions.

## 10 ANCHORING AREAS

The HDD Marine Works are in an area of low tidal flows in the Inner Sound, the works will use a Multicat vessel and 4 point mooring whilst carrying out the diving operations.

It is not intended that any vessels would anchor near to the HDD Marine Works site for any other reason than to carry out the dive operations.

Gills Bay (1.6km) will be used as a safe haven if necessary (see VMP).

## 11 TEMPORARY CONSTRUCTION LIGHTING AND MARKING

A construction site for the HDD Marine Works will be specified around the site to ensure the safety of the vessel secured within the temporary moorings and the divers operating on the seabed.

Works will only be undertaken during daylight hours, however under Colregs lights and shapes must be displayed from sunset to sunrise and at any other time deemed necessary therefore the vessel will be showing appropriate day signals and lights as required:

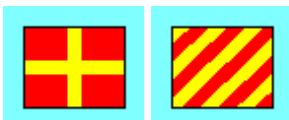
For a Vessel Restricted in Their Ability to Manoeuvre:

By day shapes consisting of a ball / diamond/ ball where it can best be seen, and if required all-round lights being Red/White/Red where they can best be seen.

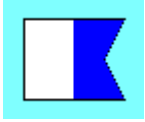
In addition when at anchor a ball in the forepart of the vessel and if required anchor lights for a vessel of her size.

Additionally the following Interco signals may be flown

- Flag - Romeo / Yankee: You should proceed at slow speed when passing me



- Flag- Alpha: I have a diver down, please pass well clear at slow speed.



The 4 point mooring array will use surface floats atop each of the temporary anchors. These will be lit as special mark, with suitable day mark and light, the nature of these will be specified in the NtM related to these works. The light sequences will be confirmed in association with the Northern Lighthouse Board.

## 12 EMERGENCY RESPONSE

Three levels of emergency response planning exists within the control and management of the HDD Marine Works:

### 12.1 Vessel Operations

Emergency response procedures are listed within the Method Statement within which the detailed means of executing the works is included. These procedures include:

- Man Overboard
- General MOB Procedure
- Fire & Explosion
- Personnel Injury or Medical Evacuation
- Serious Injury or Illness
- Medical Advice
- Request for medical assistance
- Evacuation of a sick or injured person from a vessel
- Adverse Weather Procedure
- Environmental Response Plan
- Clean up actions specific to hazardous materials
- Spill Notification
- Spill Documentation
- Immediate actions
- Clean-up actions
- Spill notification
- Spill Documentation
- Location and Content of a Spill Kit
- Post incident reporting
- Training

### 12.2 Principal Contractor

An ERCoP will be generated by the Principal Contractor to cover the HDD Marine Works in relation to the Development site. This document will be generated considerate of MGN 371 and issued a minimum of 2 weeks prior to the commencement of the work.



The ERCoP will be most the following relevant standards to take account:

- MGN 371 (M+F) Offshore Renewable Energy Installations Guidance on UK Navigational Practice, Safety and Emergency Response Issues
- MGN 372 (M+F) Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs

Principal contacts for the ERCoP are in Table 7.

Organisation	Name	Role	Telephone	Mobile
James Fisher Marine Services	Ian Sargent	Project Manager	+44 1565658812	
James Fisher Marine Services	Stan Groundwater	Marine Coordinator	+44 1565658824	
James Fisher Marine Services	Tony Blackshaw	HSE Advisor	+44 1565658817	
MeyGen Ltd	Ed Rollings	ECoW	+44 1316599662	
MeyGen Ltd	Fraser Johnson	Marine Package Manager	+441316599672	
Maritime and Coastguard Agency	-	Shetland Maritime Rescue Co-ordination Centre	+441595 692976	-
Marine Scotland		Marine Scotland Duty Officer	0300 244 4000	-
SEPA Hotline	-	-	0800 80 70 60	-
Marine Accident Investigation Branch	-	-	023 8023 2527	-

Health and Safety Executive	-	-	Incidents are reported online at <a href="http://www.hse.gov.uk/riddor/report.htm">http://www.hse.gov.uk/riddor/report.htm</a>
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**Table 7 ERCoP contacts****12.3 MeyGen Ltd.**

Atlantis Resources Ltd. (the majority shareholder of MeyGen Ltd.) has an Emergency Response Plan. The purpose of this document is to provide the management team of Atlantis with a clear and concise procedure to follow in the case of an emergency situation at any of the premises or sites under their control during the design, manufacture, transportation, installation, commissioning, operation, maintenance and eventual decommissioning of any tidal turbine device, power evacuation equipment, power generation equipment, or testing and commissioning equipment under their control.

**13 BUOYAGE**

The HDD Marine Works require a 4 point mooring system for the multicat vessel. The moorings will be laid on the marine works for HDD 1. These will remain in place until the completion of marine works for HDD 4. The vessel will mobilise and demobilise from these mooring for each dive operation in between. The moorings will be marked with as per Section 11. For more details of the construction methods for the HDD Marine Works see the CMS.

**14 NSP REVIEW AND CONSULTATION**

Under Condition 17 of the Section 36 the NSP will be reviewed and commented on by the licensing authority, SNH, and any other such ecological or other advisors that may be required at the discretion of the Scottish Ministers. The NSP must be approved by the licensing authority.

The NSP will be submitted to the licensing authority for distribution to the stakeholders and for approval.

Subsequent versions of the NSP will be submitted for the Construction Works to include procedures for turbine, foundation and cable installation.

Any changes to the NSP deemed necessary (working methods or procedures) must be reviewed and approved by the ECoW before it is submitted for approval to the licensing authority (Figure 10).

Version control will be conducted by the revision review block on the front page of the CMS.

Consultation responses to the CMS version and amendments made to document due to those responses will be logged in Table 8 below.

Rev no.	Stakeholder	Comment	Action	Rev no.
1	xx	xx	xx	2

Table 8 NSP Stakeholder comments

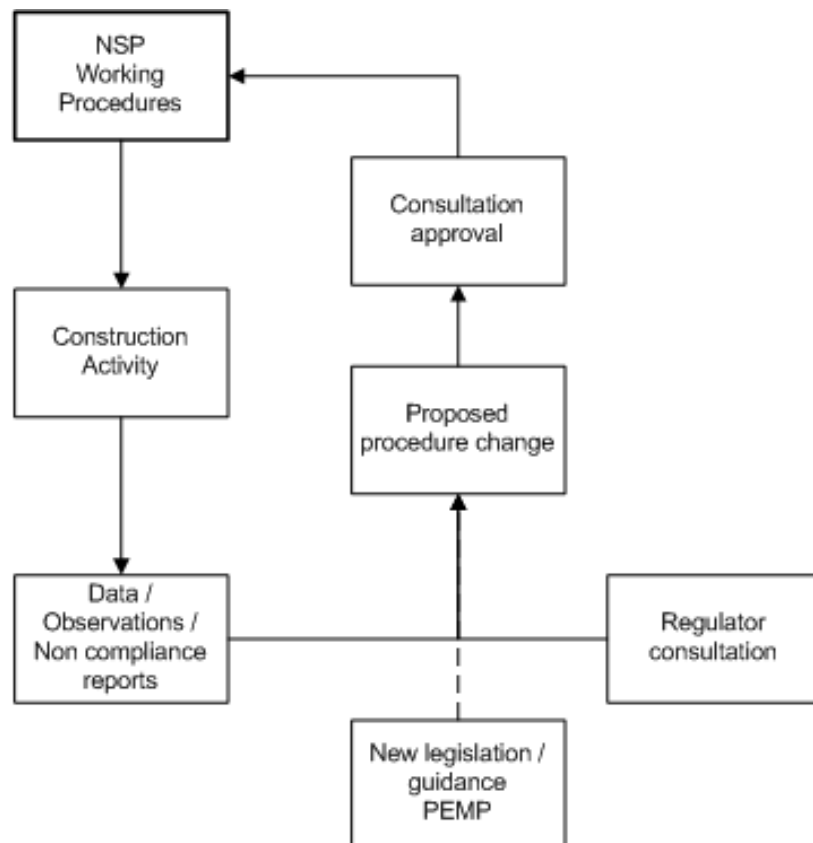


Figure 10 NSP Change Process

## **15 REFERENCES**

Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)

UK Merchant Shipping Act 1995

UK Maritime H&S Regulations

International Convention for the Safety of Life at Sea (SOLAS), 1974

MGN 371 (M+F) Offshore Renewable Energy Installations Guidance on UK Navigational Practice, Safety and Emergency Response Issues

MGN 372 (M+F) Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs

Offshore Wind and Marine Energy Health and Safety Guidelines, UK Renewables

**16 LIST OF ABBREVIATIONS**

Abbreviation	
CDM	Construction (Design and Management) Regulations 2007
CMS	Construction Method Statement
COSHH	Control of Substance Hazardous to Health
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERCoP	Emergency Response and Co-operation Plan
ERP	Emergency Response Procedures
EPS	European Protected Species
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HSE	Health, Safety and Environment
IOSH	Institute of Occupational Safety and Health
JNCC	Joint Nature Conservation Committee
NSP	Navigation Safety Plan
MCA	Maritime Coastguard Agency
MHWS	Mean High Water Springs
ML	Marine Licence under the Marine (Scotland) Act 2010
MLWS	Mean Low Water Springs
MMO	Marine Mammal Observer
PC	Principal Contractor – James Fisher Marine Services


PEMP	Project Environmental Monitoring Programme
RAMS	Risk Assessments and Method Statements
SAC	Special Area of Conservation
SCIMS	Seal Corkscrew Injury Monitoring Scheme
SEIS	Supplementary Environmental Information Statement
SEPA	Scottish Environment Protection Agency
SHESQ	Safety, Health, Environment, Security and Quality
SNCA	Statutory Nature Conservation Agency
SNH	Scottish Natural Heritage
SPA	Special Protected Area
S36	Section 36 of the Electricity Act 1989
TSC	Turbine Submarine Cable
TSS	Turbine Support Structure
TTG	Tidal Turbine Generator
VMP	Vessel Management Plan



**APPENDIX A - EXAMPLE NOTICE TO MARINERS****Notice to Mariners**

## Maritime Safety Information

James Fisher Marine Services	Stan Groundwater
Booths Park House	
Chelford Road	s.groundwater@james-fisher.co.uk
Knutsford	
Cheshire	tel 01856831380 mob [REDACTED]
WA16 8WZ	
<b>Work shall be undertaken by:</b>	Leask Marine Limited
	Tel No. 01856 874 725
	Mob No. [REDACTED]
	Email operations@leaskmarine.com
<b>All positions to be quoted in World Geodetic System 1984 [WGS84], lat. / long., in deg./ minutes. &amp; 3 decimal places of minutes.</b>	
<b>Works schedule and purpose</b>	
Date/s: xx/xx/2015 – xx/xx/2015	
Diving operations will be undertaken during slack water periods, out with that time C-Salvor will deploy cameras suspended below the vessel.	
<b><u>Vessel/s onsite</u></b>	
MV C-Salvor	

<b>Maximum extent of projected works</b>	<b>058° 38' 47.80856" N</b> <b>003° 07' 59.95327" W</b> Moorings will be located within <b>xm</b> of the above coordinates	
<b>Buoys and markers to be displayed on site</b>	Mooring buoys will be deployed / recovered for the duration Colour – Yellow	
	Light Flash Pattern	Yes 
<b>Area to be avoided</b>	As stated above	
<b>Seabed post operations</b>	xxx	
<b>Instructions to vessels</b>	Vessels involved will be keeping continuous listening watch on Channel 16 and will display appropriate lights and marks as required by the International Rules for Preventing Collisions at Sea. Mariners are requested to give the works a wide berth	

### Further information

Fig1 Area of operations site map

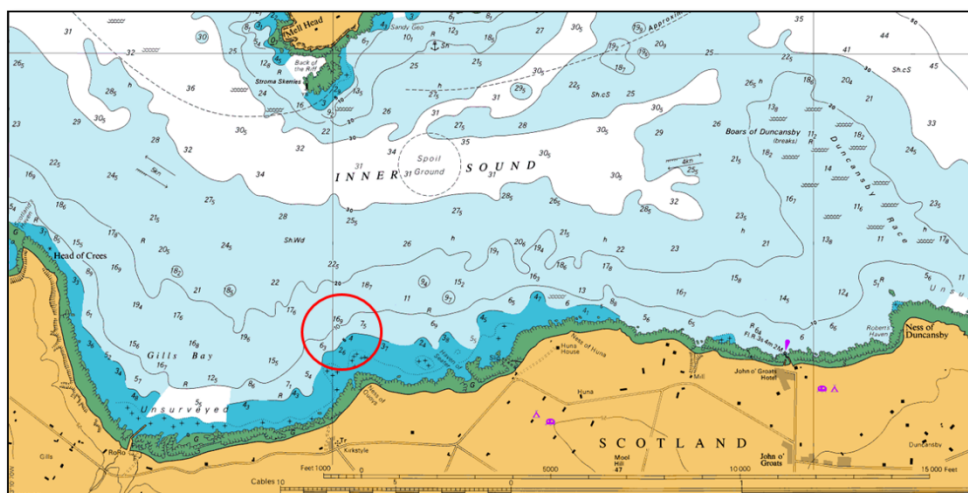



Fig2 C-Salvor for visual identification purposes.



Name	Stan Groundwater	Signature	JSG	Date	19/12/2014

**Promulgation List**

Contact	Email
UKHO	<a href="mailto:hdcfiles@ukho.gov.uk">hdcfiles@ukho.gov.uk</a>
UKHO	<a href="mailto:navwarnings@btconnect.com">navwarnings@btconnect.com</a>
UKHO	<a href="mailto:sdr@ukho.gov.uk">sdr@ukho.gov.uk</a>
HM Coastguard Shetland Maritime Coordination Centre 	<a href="mailto:wm.shetland@mcga.gov.uk">wm.shetland@mcga.gov.uk</a>
Marine Scotland Licensing Operations Team	<a href="mailto:ms.marinelicensing@scotland.gsi.gov.uk">ms.marinelicensing@scotland.gsi.gov.uk</a>
Pentland Ferries	<a href="mailto:kbanks@pentlandferries.co.uk">kbanks@pentlandferries.co.uk</a>
Scrabster Harbour	<a href="mailto:gordon.mackenzie@scrabster.co.uk">gordon.mackenzie@scrabster.co.uk</a>
Wick Harbour	<a href="mailto:malcolm.bremner@wickharbour.co.uk">malcolm.bremner@wickharbour.co.uk</a>
Gills Bay Harbour	<a href="mailto:b_mowat@yahoo.co.uk">b_mowat@yahoo.co.uk</a>
Orkney Island Council Marine Services	<a href="mailto:harbours@orkney.gov.uk">harbours@orkney.gov.uk</a>
Northlink Ferries	<a href="mailto:kris.bevan@northlinkferries.co.uk">kris.bevan@northlinkferries.co.uk</a>
Scottish Fishermen's Federation	<a href="mailto:sff@sff.co.uk">sff@sff.co.uk</a>
Orkney Fishermen's Society	<a href="mailto:stewart@ofsorkney.co.uk">stewart@ofsorkney.co.uk</a>
Orkney Fisheries Association	<a href="mailto:orkneyfisheries@btconnect.com">orkneyfisheries@btconnect.com</a>
Scottish Pelagic Fishermen's Association	<a href="mailto:ian.gatt@scottishpelagic.co.uk">ian.gatt@scottishpelagic.co.uk</a>
Royal Yachting Association	<a href="mailto:admin@ryascotland.org.uk">admin@ryascotland.org.uk</a>

Holy Loch Port	<a href="mailto:info@holylochport.co.uk">info@holylochport.co.uk</a>
Pentland Canoe Club	<a href="mailto:secretary@pentlandcanoeclub.org.uk">secretary@pentlandcanoeclub.org.uk</a>
Caithness Canoe Club	<a href="mailto:bill.ros1@btopenworld.com">bill.ros1@btopenworld.com</a>
James Fisher Marine Services	<a href="mailto:i.sargent@james-fisher.co.uk">i.sargent@james-fisher.co.uk</a>
James Fisher Marine Services	<a href="mailto:a.heslop@james-fisher.co.uk">a.heslop@james-fisher.co.uk</a>
James Fisher Marine Services	<a href="mailto:t.blackshaw@james-fisher.co.uk">t.blackshaw@james-fisher.co.uk</a>
MeyGen Ltd.	<a href="mailto:fraser.johnson@meygen.com">fraser.johnson@meygen.com</a>
MeyGen Ltd.	<a href="mailto:david.collier@meygen.com">david.collier@meygen.com</a>
MeyGen Ltd.	<a href="mailto:eddie.scott@meygen.com">eddie.scott@meygen.com</a>
MeyGen Ltd.	<a href="mailto:Ed.rollings@meygen.com">Ed.rollings@meygen.com</a>

Project Title/ Location	MeyGen Tidal Energy Project, Phase 1a. Inner Sound.
Date:	19/02/2015

# MeyGen Tidal Energy Project Phase 1

## Vessel Management Plan

### HDD Marine Works



James Fisher and Sons plc  
Marine Services Worldwide



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Rev	Prepared By	Sign Off	Checked By	Sign Off	Approved By	Sign Off	Date of Issue
1	Fraser Johnson						19/02/2015
2							

**Table of Contents**

EXECUTIVE SUMMARY .....	3
1 Introduction.....	4
2 Scope of Vessel Management Plan .....	4
3 Communications ROLES AND RESPONSIBILITES .....	8
4 Environmental Sensitivities .....	16
5 Environmental Commitments .....	18
6 Development Activities .....	20
7 Vessel Management and Coordination .....	24
8 Ports and Vessels .....	24
9 Linkages with Other Conditions.....	27
10 European Protected Species.....	28
11 Operational VMP (TBC) .....	29
12 VMP Review and Consultation .....	29
13 References .....	30
14 List of Abbreviations .....	32
Appendix A - Vessel particulars .....	34

**EXECUTIVE SUMMARY**

This Vessel Management Plan (VMP) has been prepared by MeyGen Ltd to set out the proposed method for discharging Condition 16 of the Section 36 Consent for the Development.

The purpose of the VMP is to ensure that the Developments marine activities are conducted in a safe manner considerate of consent conditions and industry best practice. The document will be periodically reviewed during the execution of the Development to provide detailed information relevant to the key activities to be undertaken through the construction and operational phases of the Development;

- I. HDD marine works
- II. TSC installation
- III. TSS installation
- IV. TTG installation
- V. Operations and Maintenance

Upon addition of above listed detailed information, the revised VMP will be reissued 3 months prior to the commencement of that phase of the Development.

The marine works must, at all times, be constructed and operated in accordance with the approved VMP. The VMP includes information relating to following details:

- a) The number, types and specification of vessels required;
- b) Working practices to minimise the unnecessary use of ducted propellers;
- c) How vessel management will be coordinated, particularly during construction but also during operation; and
- d) Location of working port(s), how often vessels will be required to transit between port(s) and the site and indicative vessel transit corridors proposed to be used.

The VMP presented within this document is considered sufficient to satisfy Condition 16 and enable the construction and operation of the Development to progress, subject to the NSP being implemented.

Details of vessels used to carry out any licensed activity will be notified to the Scottish Ministers in writing no later than 72 hours prior to the commencement of development.

The VMP will be submitted to the licensing authority and consulted on by SNH and any other such ecological or other advisors as may be required at the discretion of the Scottish Ministers.

**REVISION 1 ONLY CONSIDERS HDD MARINE WORKS. FURTHER VERSIONS OF THE VMP FOR OTHER CONSTRUCTION WORKS PHASES, OPERATIONS AND MAINTENANCE AND DECOMMISSIONING WILL BE UPDATED AND SUBMITTED FOR CONSULTATION AND APPROVAL PRIOR TO THAT PHASE COMMENCING.**

## 1 INTRODUCTION

The MeyGen Tidal Energy Project Phase 1 (“the Development”) received consent under Section 36 of the Electricity Act 1989 from the Scottish Ministers 9<sup>th</sup> October 2013 (“the S.36 Consent”). This Vessel Management Plan (VMP) is prepared to enable Condition 14 of the S.36 Consent (“the Condition”) to be discharged. Condition 14 states:

*The Company must, no less than 3 months prior to the Commencement of the Development, submit a Vessel Management Plan, in writing, to the Scottish Ministers for their written approval, in consultation with SNH and any such other ecological or other advisors as may be required at the discretion of the Scottish Ministers. The Vessel Management Plan must include, but is not limited to, the following issues:*

- a) Individual vessel details;*
- b) Number of vessels;*
- c) Whether ducted propellers will be in operation;*
- d) How vessel management will be coordinated, particularly during construction but also during operation; and*
- e) Location of working port(s), how often vessels will be required to transit between port(s) and the site and the routes used.*

*The Development must be constructed and operated in accordance with the Vessel Management Plan, and the Vessel Management Plan must, so far as is reasonably practicable, be consistent with the CMS, the EMP, the PEMP, the Operations and Maintenance Programme, and the Navigational Safety Plan.*

*Reason: To minimise the disturbance to seal haul outs, marine mammals and basking sharks as well as consideration of mitigation measures for cork screw injuries to seals.*

This document sets out the proposed VMP that MeyGen Ltd intends to undertake, to allow the Condition to be discharged.

## 2 SCOPE OF VESSEL MANAGEMENT PLAN

Phase 1a of the Development is a 6MW, 4 tidal turbines initial phase to be installed and operatives under the restriction placed on the Development by Condition 2 of the S.36 Consent.

This document is currently the VMP for the marine works associated with the Horizontal Directional Drilling (HDD) Works for Phase 1a **only** (“**HDD Marine Work**”).

Given the Phase 1a programme for construction and operation works associated with Phase 1a it has been agreed with the licensing authority that the VMP and other related consent documents can be updated for the installation of the Phase 1a infrastructure (4 x Tidal Turbine Generators (TTG), 4 x Gravity-base Turbine Support Structures (TSS) and Turbine



Subsea Cables (TSC) and submitted at a later date “**the Construction Works**”. MeyGen Ltd. will produce and update relevant documents for these construction works; these will be submitted and get approval prior to commencement of these works.

The VMP will apply to the HDD Marine Works and vessels transiting between the site and associated ports.

The VMP forms part of a suite of documents related to the consent conditions that MeyGen Ltd. seek to discharge:

- Environmental Management Plan (EMP) (S.36 Consent, Condition 11) including Marine Pollution Contingency Plan (Marine Licence, Condition 3.2.13), Reporting Protocol for the Discovery of Marine Archaeology (S.36 Consent, Condition 16);
- Construction Method Statement (S.36 Consent, Condition 9); and
- Navigation Safety Plan (NSP) (S.36 Consent, Condition 17).

The VMP is in accordance with the Environmental Statement (ES) and Supplementary Environmental Information Statement (SEIS) which identified the construction activities to have the potential to disturb/harm Grey seal and Harbour seal. The ES and SEIS mitigation measures have been detailed and documented in the EMP. The EMP commits MeyGen Ltd. to safeguarding the environment through the identification, avoidance and mitigation of the potential negative environmental impacts associated with the development, construction and operation of the tidal array. The VMP will be an integral element of the EMP.

It is intended that this VMP will be regularly reviewed throughout the planning and development of specific marine activities and revisions approved by the Scottish Ministers in accordance with the Condition.

The document contains the following sections:

- Communications, Roles and Responsibilities;
- Environmental Sensitivities;
- Environmental Commitments;
- Vessels (numbers, types and specification);
- Vessels (working practices);
- Vessel Management and Coordination;
- Ports and Vessels;
- Linkages with Other Conditions;
- European Protected Species (EPS);
- Outline Operational VMP; and
- Consultation.

## 2.1 HDD Marine Works Summary

HDD Marine Works are required for the 4 x HDD bores that are to be drilled from the Ness of Quoy out to the selected target exit point on the seabed (Figure 1).

Each HDD bore requires the following 4 dives at the exit point:

- 1) Identifying the exit point of the HDD bore on the seabed;
- 2) Cut the 'bullnose' from the HDD liner;
- 3) Connecting and disconnecting equipment to the drill string to clean and prove the HDD liner; and
- 4) Fit a seal to the end of the HDD liner to prevent debris entering.

The dive activities to be executed in the HDD Marine Works are programmed to require a single day. The vessels will therefore mobilise to site in the morning of the activity and demobilise back to their home port within the same 24 hour period.

The dive operations will take place from a multicat vessel on a 4 point mooring system. The mooring system will be deployed in the operation for HDD bore 1 and remain in-situ until HDD bore 4 operations are complete, upon which it will be removed. Details of the navigation safety measures are included in the NSP (MEY-1A-40-HSE-002-D-  
NavigationSafetyPlan).

The HDD bores will be completed in sequence so the HDD Marine Works are separated by approximately 1 month (Figure 2). This is dependent on the HDD bore drilling progress as well as having suitable weather and tide windows for the works.

A full description of the HDD Marine Works is available in the CMS (MEY-1A-40-HSE-001-D-  
ConstructionMethodStatementHDD).

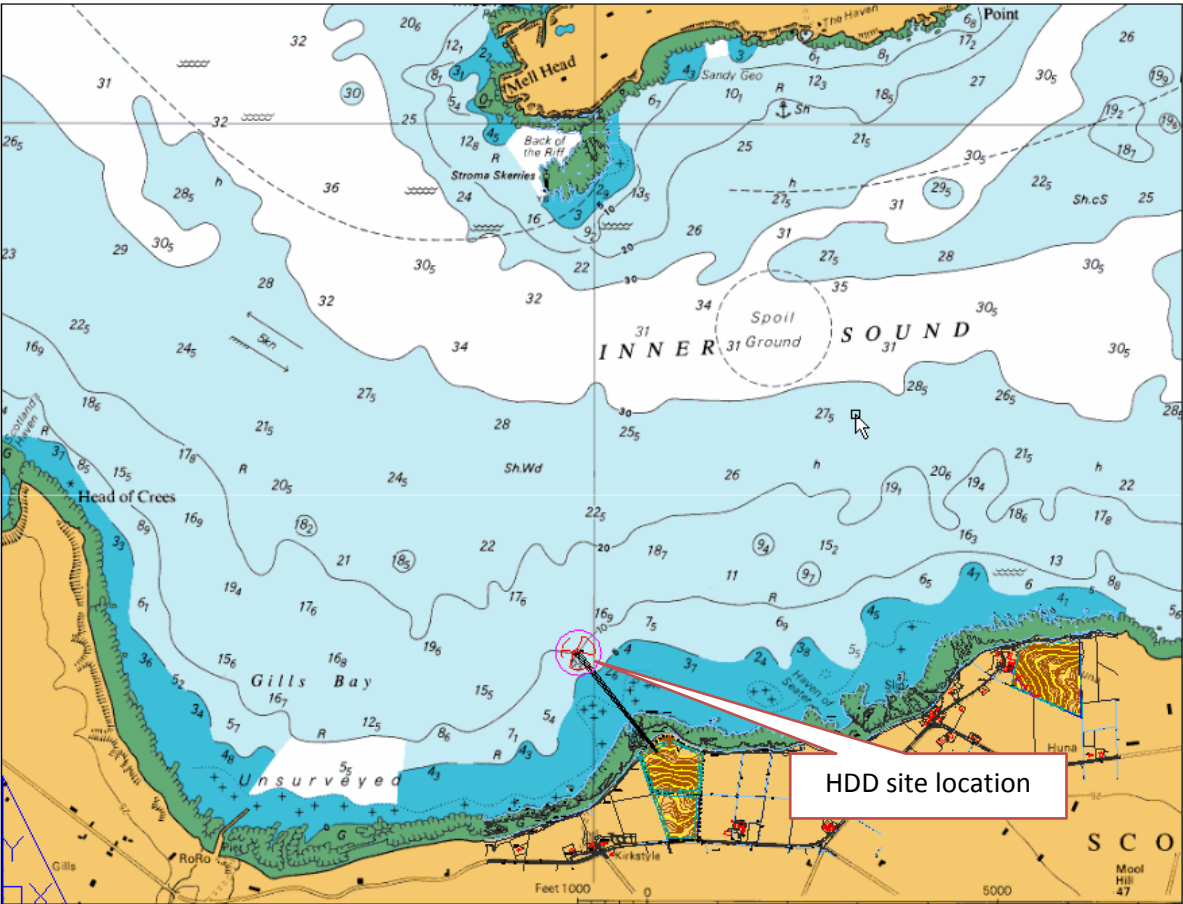


Figure 1 HDD Marine Works Location

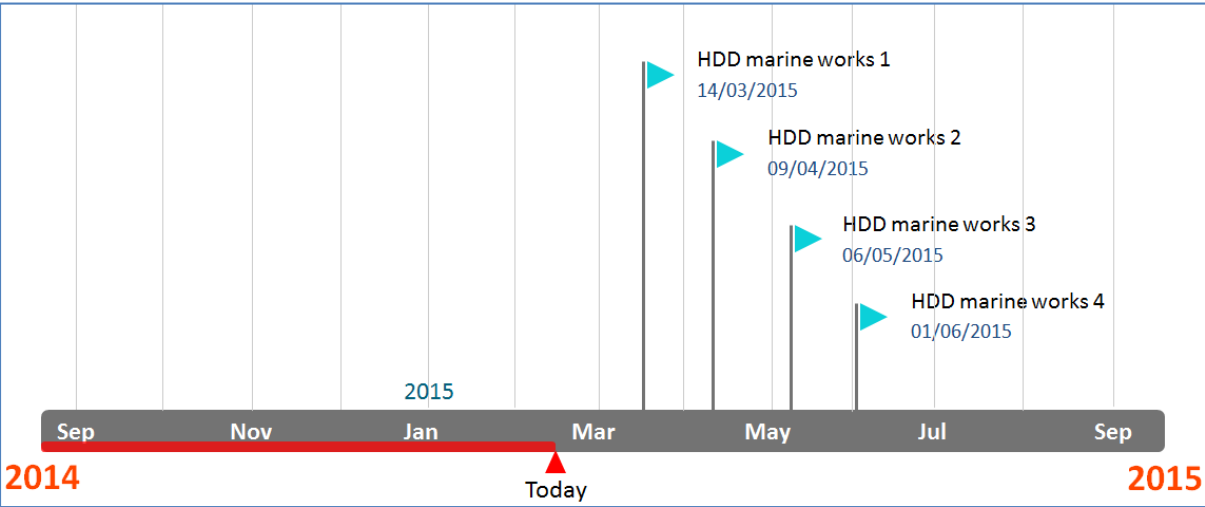


Figure 2 HDD Marine Works Programme

### 3 COMMUNICATIONS ROLES AND RESPONSIBILITIES

This section details the project team roles, responsibilities and lines of communication during the construction and operation of the Development.

#### 3.1 Responsibilities and Ownership

The Principal Contractor (PC) will have the ultimate responsibility for ensuring the implementation of the VMP.

The Ecological Clerk of Works (ECoW) will provide quality assurance and approval of any version of the VMP.

Any updates to the VMP by the PC will require the ECoW to check compliance with current legislation, consent conditions and related documents. Updated VMP will then be submitted to Scottish Ministers for approval.

#### 3.2 Organisational Chart

The organisational chart for the HDD Marine Works is below in Figure 3. This includes how communication as part of the VMP will be conducted in normal working procedures and in the case of emergencies.

The organisation chart presents the key interfaces, lines of communication and responsibilities with regards to the flow of requirements and provision of mitigating actions across the HDD Marine Works.

Details are provided in the Table 1 below for contacts relevant to the delivery of this plan. These details may change and the CMS will be updated when necessary.

Name	Role	Organisation	Telephone	Mobile
Ian Sargent	Project Manager	James Fisher Marine Services Ltd.	01565 658812	
Stan Groundwater	Marine Coordinator	James Fisher Marine Services Ltd.	01565658824	
Tony Blackshaw	HSE Advisor	James Fisher Marine Services Ltd.	01565 658817	
Ed Rollings	ECoW	MeyGen Ltd	+441316599662	
Fraser Johnson	Marine Package Manager	MeyGen Ltd	+441316599672	

**Table 1 Contact Details**

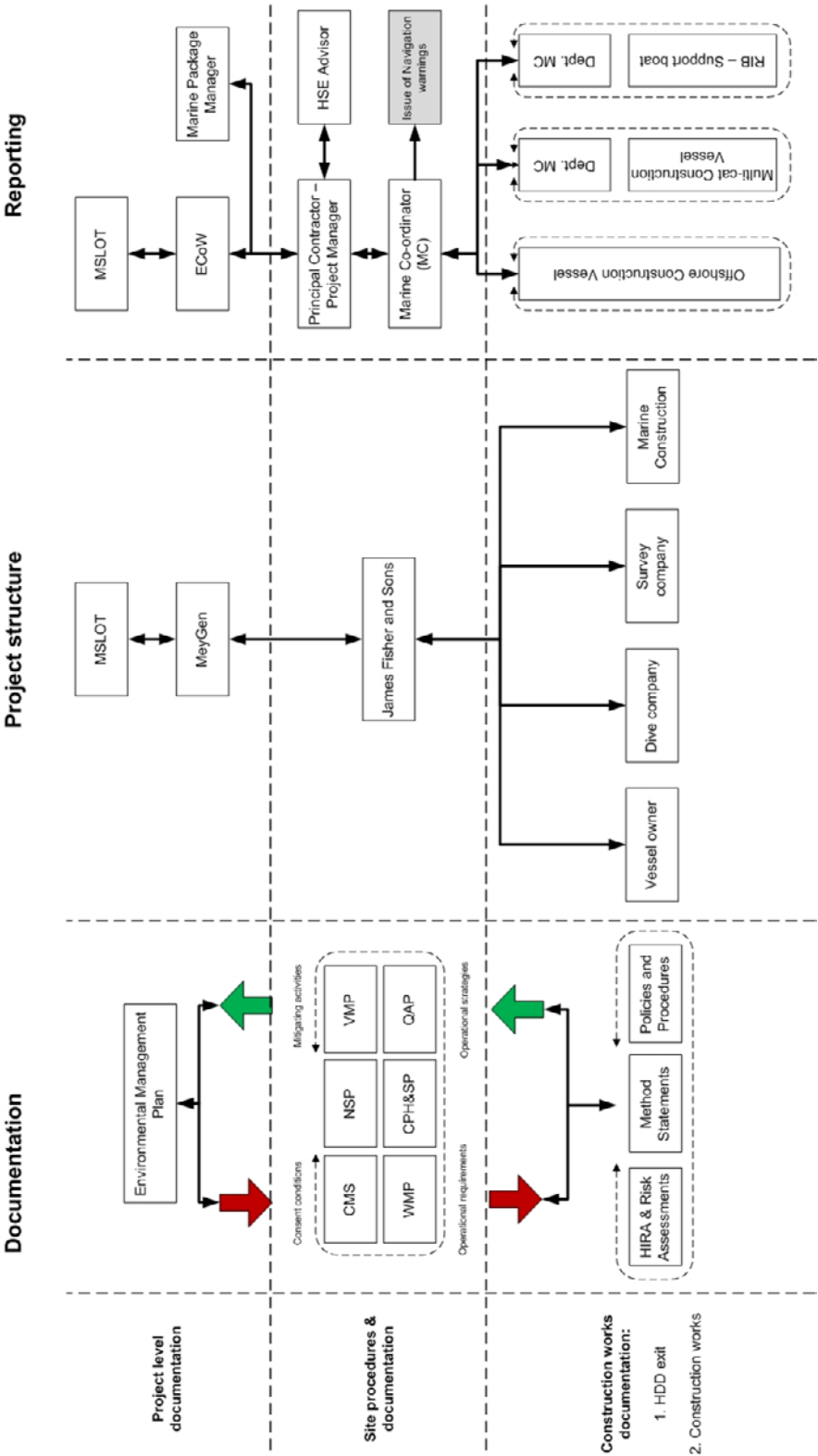


Figure 3 – Key interfaces and organisation chart

**3.3 MeyGen - Ecological Clerk of Works**

- Review and approve all consent related documents (S36 Condition 10).
- Review / comment on content of Site Inductions and Toolbox Talks.
- Review / comment on Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and controls.
- Inspect the site / vessel on a regular basis to ensure effective implementation/operation of all environmental mitigation measures.
- Audit PC procedures, inspections, investigation and reporting.
- Ensure compliance with approve consent related documents, environmental legislation and requirements and address any shortfalls with the PC (S36 Condition 10).
- Review environmental incidents / near misses and PC investigations
- Report compliance and incidents to the licensing authority and other necessary regulatory authorities.
- Notify the licensing authority of vessel details (ML Condition 3.1.3)
- Notify the licensing authority of the commencement date (ML Condition 3.2.1.4)
- Provide Transport Audit Sheets for works to the licensing authority (ML Condition 3.2.2.1)
- Notify the licensing authority of deposits by MHWS (ML Condition 3.2.2.2)
- Ensuring any protected species licenses are in place for the Development (S36 Condition 10)

**3.4 Principal Contractor – James Fisher Marine Services Ltd.****3.4.1 Project Manager**

- Facilitate dissemination of specific environmental requirements to the project team.
- Oversee the implementation and review of environmental procedures throughout the project.
- Review and approve all consent related documents, including, but exhaustive, CMS, VMP and NSP.
- Monitor the environmental performance of the project through maintaining an overview of incidents, inspections and audits.
- Ensure that environmental considerations form an integral part of Design and Implementation of the Works and to include environmental reviews as part of regular project meetings.
- Review and approve Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and mitigation.

- Ensure that all environmental incidents are reported to the ECoW and MeyGen in accordance detailed reporting requirements and the respective regulatory bodies (where required) as soon as possible.
- Review environmental matters with the ECoW and MeyGen and respective regulatory bodies on a regular basis and as per project requirements.
- Ensure that arrangements for liaison with Development respective regulatory bodies on all environmental issues is appropriate and maintained.
- Implement and maintain a project communications strategy to manage project public relations and complaints.
- Produce weekly and monthly reports and submit to MeyGen Package Manager and ECoW.
- Ensure contractors are approved, operates a Safety Management System, confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.

#### 3.4.2 HSE Advisor

Key roles and responsibilities of the HSE Advisor include, but are not limited to the following:

- Verify compliance with relevant legislation.
- Prepare, implement, review and update consent related documents (in conjunction with the Project Management Team) in accordance with consent condition, James Fisher Marine Services procedures and current legislation.
- Advise the project team on environmental related decision making
- Review Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and mitigation.
- Approve Toolbox Talks and Site / Vessel Inductions and ensure content promotes effective environmental management, specific works and Site / Vessel sensitivities and communicate associated lessons learnt.
- Provide support to the Marine Coordinator and workforce on any environmental matters that may arise.
- Audit contractors to confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.
- Ensure suitable consideration is given to the period and frequency of environmental monitoring (particularly with respect to higher risk areas).
- Inspect and audit the site / vessels on a regular basis to ensure effective implementation / operation of any environmental mitigation measures.
- Ensure compliance with environmental requirements and address any shortfalls.
- Provide inspection reports to the project management detailing any issues that must be addressed


- Undertake investigations into environmental incidents or near misses to determine the root/direct cause and present the findings, recommendations and lessons learnt.
- Monitor hazardous observations and incidents trends in relation to environmental aspects and impacts and initiate actions as required to minimise the potential environmental impacts and reduce risk in a timely and effective manner.

### 3.4.3 Marine Coordinator

- Responsible for all construction operations Marine Coordination including vessel / site HSE during construction operations.
- Ensure that all contractors have received and understood the Site / Vessel induction.
- Undertake Toolbox Talks to promote effective environmental management and communicate associated lessons learnt.
- Monitor and disseminate weather information and forecasts
- Production of marine safety alerts including issuing Notice to Mariners to agreed stakeholder list.
- Responsible for collating, communicating and responding to statutory navigation notices.
- Liaise with port authorities.
- Implement / operate environmental mitigation measures as approved in the consent related documents at the site / vessel.
- Coordinating, ensuring compliance for and recording all vessel movements and personnel movements offshore.
- Emergency response coordination.
- Produce daily reports and submit to the PC Project Manager, MeyGen Package Manager and ECoW.
- Keep Transport Audit Sheets for all materials listed in the licence to be deposited as part of the works
- Keep audit reports stating the nature and quantity of all substances and objects deposited below MHWS under the authority of the licence.

## 3.5 Contractors

### 3.5.1 Vessel Master

- Overriding authority and responsibility to make decisions with respect to safe navigation of the vessel and matters related to HSE.
- Dedicated watch-keeper on board the vessel, or nominate suitable qualified deputy.
- The persons present on board must adhere to the Vessel Master's instructions.
- Adhere to IMO International Regulations for the Prevention of Collisions at Sea 



- Ensure that all contractors have received and understood the vessel induction.

### 3.5.2 All Other Staff

- To understand and implement procedures relevant to their role as laid out.
- To conduct their work with a view to eliminating/reducing the environmental impact of the Development and to raise any environmental concerns with Marine Coordinator or Project Manager.
- To report all environmental incidents to the Marine Coordinator and Vessel Master as soon as possible.

## 3.6 Communication

Environmental issues will be formally communicated through the arrangements on Site / Vessel in Table 2.

Meeting/briefing	Frequency	Attendees
Safety, Health, Environment, Security and Quality (SHESQ) and Progress Meeting	Weekly	See paragraph below
Daily site / vessel team briefs	Daily	All work parties
Risk Assessment/Method Statement briefings	Each job task	All members of the working party
Toolbox Talks including environmental practices and mitigation measures	Before mobilisation, or a minimum of one per week	All site / vessel personnel
Site / Vessel Induction	On first attendance at site / vessel <u>BEFORE</u> any work is undertaken	All persons attending site / vessel

**Table 2 Communication and Meetings**

### 3.6.1 SHESQ and Progress Meeting

The PC shall convene weekly Site / Vessel meetings with all contractors on Site / Vessel to communicate, discuss and consult any change in conditions, working practices and environmental arrangements, procedures and overall environmental performance.

The ECoW and representatives from MeyGen and other interested Third Parties shall have an open invitation to attend these weekly Site / Vessel meetings. Each contractor on Site / Vessel shall nominate a person to attend these meetings with the appropriate authority to act on those contractors behalf. SHESQ and Progress Meetings shall be augmented by additional meetings at intervals dictated by the requirements of the contract or at key stages of the works.

Minutes of all such meetings shall be produced and held on file for record purposes, with copies supplied to each contractor on Site / Vessel, the CDM Co-ordinator and ECoW.

### 3.6.2 Extraordinary meetings

Extraordinary meetings would be held in order to deal with special environmental issues that may arise during the project such as environmental incidents. These meetings shall be organised by the HSE Advisor with the aim of ensuring a timely response and resolution to any identified issues.

### 3.6.3 Daily Site / Vessel team meetings

Daily site team meetings will take place at the Onshore / Offshore site between the PC and contractors. Any environmental concern shall be addressed at this meeting.

### 3.6.4 Risk Assessment / Method Statement briefings

These briefings will take place before each construction task and attended by all directly involved in the task. Environmental requirements and mitigation measures will be instructed and reviewed.

### 3.6.5 Site / Vessel inductions

Inductions, conducted before anyone commences work on the project are utilised to raise awareness for personnel regarding Site / Vessel rules, emergency response procedures and environmental protection arrangements. The inductions include a test to confirm understanding.

### 3.6.6 Site notice boards

Site / Vessel notice boards will contain relevant Site / Vessel information relating to Health, Safety and Environmental issues. The Site / Vessel will also have appropriate signage in place to highlight awareness of environmental hazards. Other communications media, such as newsletters and posters will also be posted on notice boards to communicate awareness of environmental matters.

## 3.7 Reporting

The PC will communicate the following to the ECoW and contractors on site:

- Details of audits and inspections;
- Details and statistics for environmental incidents and near misses;
- Details of any pending and actual enforcement action in respect of any environmental incidents;
- Any other pertinent environmental issues identified;
- Transport Audit Sheets; and
- Audit reports for the nature and quantity of all substances and objects deposited below MHWS.

The PC will provide these in:

- Daily logs and reports when construction activities are taking place on site / vessels;
- Weekly progress reports

- Monthly reports (additionally, confirming the status of the project, implementation of environmental commitments and mitigation measures, monthly and cumulative statistics, training delivered, environmental initiatives undertaken, amendments to the any of the consents related documents)

### 3.7.1 External Communication

The Marine Coordinator is responsible for:

- Documenting, issuing, communicating and responding to statutory navigation notices for the Development; and
- Emergency Response and Co-operation Procedures are in place for such events. The communication and reporting protocols for such an event can be found in the Emergency Response and Co-operation Plan (see NSP).

The ECoW is responsible for:

- Notification to the licensing authority detailed in the consent condition;
- Reporting monthly to the licensing authority once works have commenced with:
  - Details of audits and inspections;
  - Details and statistics for environmental incidents and near misses;
  - Details of any pending and actual enforcement action in respect of any environmental incidents;
  - Any other pertinent environmental issues identified;
  - Transport Audit Sheets; and
  - Audit reports for the nature and quantity of all substances and objects deposited below MHWS.
- Meeting with the licensing authority and statutory agencies and the local community; and
- Receiving, documenting and responding to any environmental communication from third parties.

### 3.8 Training

The purpose of environmental training is to ensure that all site personnel have the knowledge to successfully implement the environmental requirements of the project.

In order to ensure that the environmental mitigation measures are implemented on site, the following environmental training Table 3 in will be required.

Training	Target Persons
Induction (which will include environmental aspects such as environmental sensitivities and controls, pollution prevention, waste management and emergency preparedness)	All persons attending Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel, and visitors)

Training	Target Persons
and response)	
Environmental Toolbox Talks	Toolbox talks will be carried out at a minimum of one per week appropriate to the construction works being carried out on Site / Vessel at that time.  All persons carrying out work on site (site personnel, contractors on site) shall attend.
Environmental Bulletins / Legislation Briefings / Best Practice Briefings	All persons carrying out work on Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel) shall attend.
Job specific training e.g. <ul style="list-style-type: none"> <li>• IOSH Working with Environmental Responsibilities / IOSH Managing Environmental Responsibilities.</li> <li>• Use of Pollution Prevention Equipment.</li> <li>• Site Waste Management.</li> </ul>	As identified for personnel with environmental responsibilities
Project specific information, including relevant elements of: <ul style="list-style-type: none"> <li>• the EMP, CMS, NSP, VMP</li> <li>• Consent Conditions</li> </ul>	Briefed out and available for reference to all Site / Vessel staff.

**Table 3 Training**

Any person working on the Site / Vessel will be competent and trained sufficiently to undertake their work in a safe and efficient manner. Each Contractor will ensure that their personnel maintain the necessary level of competence for their work & will maintain the training records on site & make them available for review and audit. Records of training will be maintained and made available for inspection.

#### 4 ENVIRONMENTAL SENSITIVITIES

Chapter 11 of the Environmental Statement, Marine Mammals, identifies harbour porpoise, grey seal and common seal as the key sensitivities during construction work.

In Scotland cetaceans (whales and dolphins) and pinnipeds (seals) are protected under a wide range of national and international legislation (full details in the EMP).

Marine mammals are considered to be potentially sensitive to the following aspects of the proposed works:

- Noise (vessel);
- Disturbance (vessel presence and movement);
- Ship strike and collision with ducted propeller; and
- Pollution and spillage

Impacts of noise, disturbance and pollution are covered under the EMP and CMS. The VMP is particularly related to mitigating the risk of vessel strike and corkscrew injuries due to ducted propellers, however the mitigation associated with the VMP goes some way to mitigating the risks of noise and physical disturbance by the vessel as well.

#### **4.1 Ship strike and collision with ducted propellers**

While both cetaceans and pinniped are potentially exposed to risk of ship strike and propeller strike, there is currently significant concern regarding the risk of corkscrew injuries to seals, initially attributed to ducted propeller system such as a Kort nozzle or some types of Azimuth thrusters. For the Development and the proximity of the HDD Marine Works to areas of importance for seals (protected haul out sites at Gills Bay and Stroma (Figure 4)), and the far greater numbers of individuals mean that they are the key concern.

Since the submission of the ES there has been ongoing research into the issue of spiral injuries in seals which has confirmed that the characteristic wounds can be caused by a seal being drawn through ducted propeller system such as a Kort nozzle or some types of Azimuth thrusters (Thompson *et al.*, 2010, Bexton *et al.*, 2012; Onoufriou & Thompson, 2014). To date the observed seal strandings appear to be restricted to juvenile grey seal and female harbour seal with seasonal differences evident between the species: grey seal newly weaned pups in the winter and common seal adults or pregnant females in the summer (Brownlow, 2013).

In experimental studies (Onoufriou & Thompson, 2014) it has been shown that using a combination of propeller and seal sizes, smaller seals were more likely to show the characteristic spiral lacerations; while larger seal models often became stuck in the ducted propeller system. The results of these trials and observed stranded seals suggested that there are still a number of uncertainties as to the frequency of occurrence, and mechanisms for this type of injury.

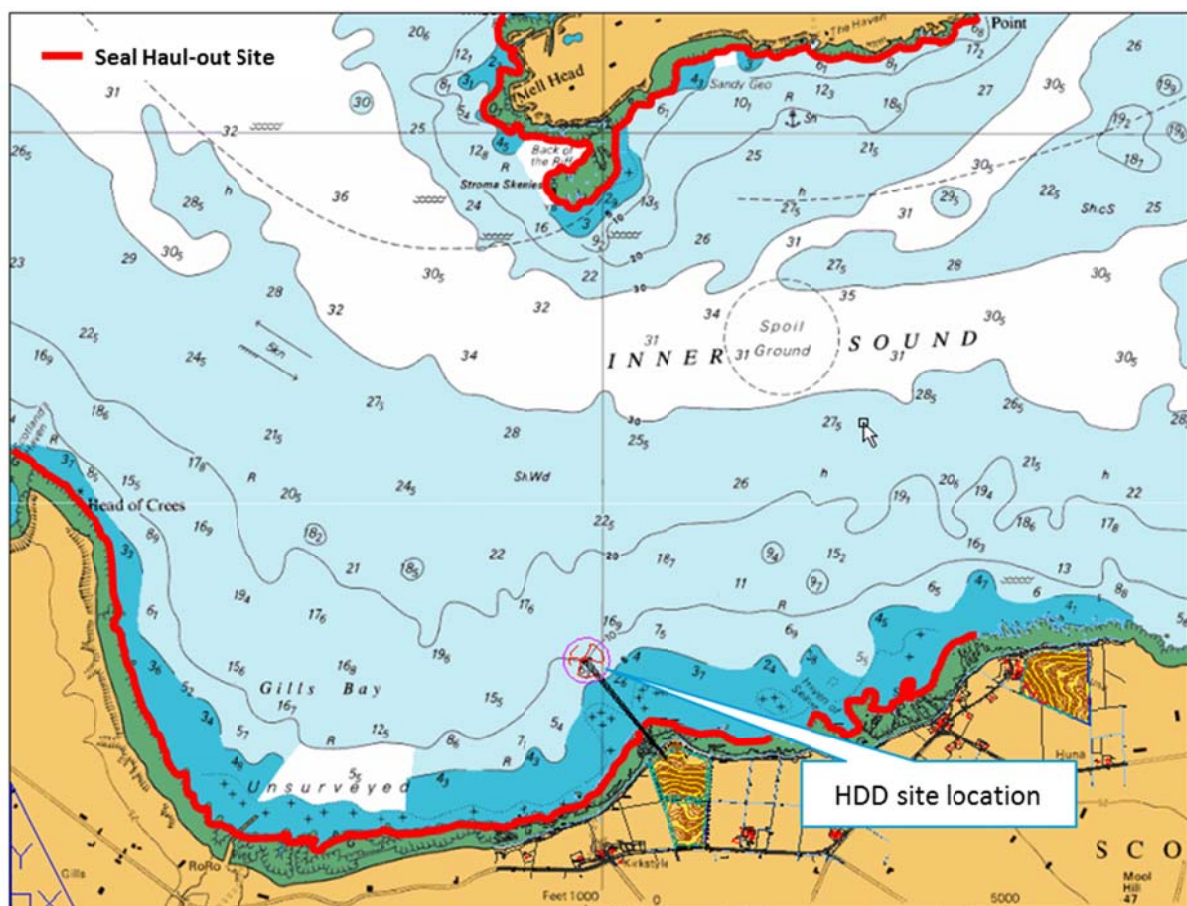
The most recent known research (Thompson *et al.*, 2015; van Neer *et al.*, 2015) there is strong evidence that predatory behaviour by grey seals, rather than ship propeller injuries, is likely to be the main cause of spiral seal deaths. Although this evidence does not completely eliminate ship propellers, it is now less likely that they are a key factor, and the SNCBs have now provided interim advice (JNCC, 2015) on this issue, an update to the earlier (April 2012) advice, in order to clarify the agreed recommendations to regulators and industry.

The most recent advice suggests that, based on incontrovertible evidence, grey seal predation on weaned grey seal pups and young harbour seal can cause the characteristic spiral injuries that were the subject of preceding studies. The advice states that

*'it is considered very likely that the use of vessels with ducted propellers may not pose any increased risk to seals over and above normal shipping activities and therefore mitigation measures and monitoring may not be necessary in this regard, although all possible care should be taken in the vicinity of major seal breeding and haul-out sites to avoid collisions'.*

This new advice provides a new perspective on the preceding Statutory Nature Conservation Agency (SNCA) Guidance (2012) on the potential risk of seal corkscrew injuries which at that time suggested levels of risk and recommendations for mitigation.

The Development is more than 60km from the nearest grey seal Special Area of Conservation (SAC, Faray and Holm of Faray), and harbour seal SAC (Sanday). The presence of the Gills Bay and Stroma haul out sites relatively close to the development site, does suggest a need for careful management of works at the site, but no direct mitigation measures are advised (SNCA, 2012). In the light of the new advice, and given that the HDD Marine Works will use a multicat vessel without ducted propellers, the HDD Marine Works are considered to be low risk.



**Figure 4 Location of HDD Marine Works in relation to designated seal haul out sites**

## 5 ENVIRONMENTAL COMMITMENTS

A list of commitments made by MeyGen in the ES, Marine Licence and Environmental

Statement to mitigate the impact of vessel activity on marine mammals can be found in Table 4.

Whilst the VMP has due regard to the NSP and safe navigation and health and safety practices.

Section 36 (S36), Marine Licence (ML), or Environmental Statement (ES) Commitment	Condition, or commitment
s36	<p>The monitoring set out in the PEMP or, as the case may be, an amended PEMP, (which must be agreed by the Scottish Ministers, in consultation with SNH and any other ecological, or such other advisors as required at the discretion of the Scottish Ministers), must be implemented by the Company. The Company must submit written reports of such monitoring to the Scottish Ministers at timescales to be determined by the Advisory Group.</p> <p>In particular, the following aspects should be considered and advice provided regarding the monitoring of the following aspects:</p> <ul style="list-style-type: none"> <li>a) Hydro dynamics / benthic surveys, export cable route and turbine locations and modelling to validate EIA predictions;</li> <li>b) Collision / encounter interactions with the tidal turbines for diving birds, marine mammals and fish of conservation concern;</li> <li>c) Disturbance and displacement of birds, marine mammals and basking sharks during construction and operation. This must also link to the species protection plan for seals at haul outs; and</li> <li>d) Migratory salmonids</li> </ul> <p>Subject to any legal restrictions regarding the treatment of the information, the results must be made publicly available by the Scottish Ministers, or by such other party appointed at their discretion.</p>
ML	<p>3.2.1.7 Monitoring of marine mammals</p> <p>Prior to the commencement of the works the licensee must agree in writing the details of the appointment of a Marine Mammal Observer (MMO) with the licensing authority. The MMO must, as a minimum, maintain a record of any sightings of marine mammals and maintain a record of the action taken to avoid any disturbance being caused to marine mammals. The licensee must provide the licensing authority with the MMO's records no later than six months following commencement of the works, and at six monthly intervals thereafter.</p>
ES	<p>The principles of the JNCC guidance on protection of marine European Protected Species (EPS) from injury and disturbance (JNCC, 2010) and of relevant guidelines on minimising the risk of injury to marine mammals will be adopted as necessary (for example, reducing the duration of noise emitting activities).</p>
ES	<p>MeyGen commit to undertaking frequent reviews of the literature regarding spiral injuries in seals and ducted propellers and to regularly discuss advances in understanding of this topic with relevant regulatory and advisory bodies. MeyGen will apply appropriate mitigation, as deemed necessary in consultation with Marine Scotland and SNH, should vessels with ducted propellers be used, to avoid any significant impacts.</p>



Section 36 (S36), Marine Licence (ML), or Environmental Statement (ES) Commitment	Condition, or commitment
ES	All vessels associated with Project operations will comply with IMO/MCA codes for prevention of oil pollution and any vessels over 400 GT will have on board SOPEPs. All vessels associated with Project operations will carry on board oil and chemical spill mop up kits. Where possible vessels with a proven track record for operating in similar conditions will be employed. Vessel activities associated with installation, operation, routine maintenance and decommissioning will occur in suitable conditions to reduce the chance of an oil spill resulting from the influence of unfavourable weather conditions.

**Table 4 Marine Mammal Commitments****5.1 Legal Requirements and Licences**

Licence / Consent	Legislation	Granted
Section 36 Consent	Electricity Act 1989	09/10/2013
Marine Licence (licence number 04577/14/0)	Marine (Scotland) Act 2010	31/01/2014
Decommissioning Programme	Energy Act 2005	xx

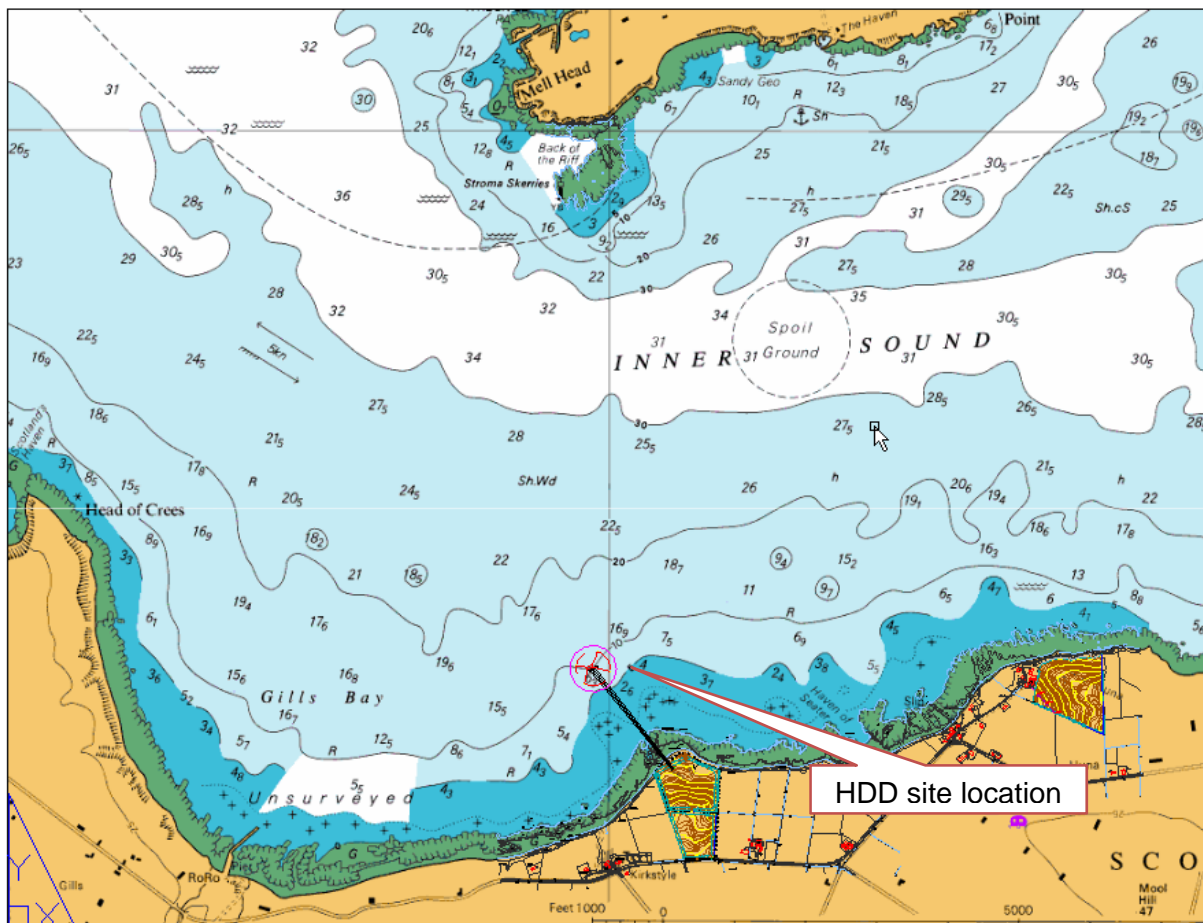
**6 DEVELOPMENT ACTIVITIES**

This section has been divided into the four main marine activities. These sections will be completed as part of the work undertaken to fully engineer and detail the marine activities required to execute the work.

**6.1 HDD Marine Works**

The HDD Marine Work will be undertaken over the HDD exit points located approximately 550m north of the Ness of Quoy, in the vicinity of 492193.40E 6500642.30N (UTM30).





**Figure 5 – HDD exit location**

Further information on the construction methods proposed can be found in the CMP (MEY-1A-40-HSE-001-D-ConstructionMethodStatementHDD).

#### 6.1.1 Vessels (numbers, types and specification)

The HDD Marine Works will utilise a single 26m Multi-cat vessel, the C-Salvor or C-Odyssey, Figure 6 & Figure 7Figure 3, owned and operated by Lease Marine. The C-Odyssey has been designed and built specifically for marine renewables. The vessel specification proposed to be used on the HDD Marine Works is provided in Appendix A.



**Figure 6 – The MV C-Salvor**



**Figure 7 – The MV C-Odessey**

#### 6.1.2 Operational Health and Safety

The works undertaken will be controlled and managed within the procedures detailed in the:

- I. Leask Marine integrated safety management System
- II. Specific Scopes of work that outline method statements for the work to be executed, including:
  - a. Emergency Response Planning for:

- i. Environmental Response (Marine Pollution Contingency Plan – EMP)
- ii. Man Overboard
- iii. Personnel Injury or medical evaluation

#### 6.1.3 Vessels Working Practices

Vessels working practices are provided in vessel specific documents:

- I. C-Salvor Procedures Manual, and the;
- II. C-Odyssey Procedures Manual.

Details contained within these documents include:

- Crew Pre-Sail Familiarisation/Induction
- Passenger Pre-Sail Induction
- Masters Standing Orders
- Masters Standing Orders Acknowledgement Form
- Masters Terms of Reference
- Leask Marine Health and Safety Policy Statement
- Leask Marine Environmental Statement
- Leask Marine Disciplinary Code
- Leask Marine Drug and Alcohol Policy
- Leask Marine Emergency Contact List
- Bridge Equipment Familiarisation
- Deck Equipment Familiarisation
- Engine Room Familiarisation

#### 6.1.4 Environmental Working Practices

With regard to the EMP and details in Section 4.1, a dedicated Seal Corkscrew Injury Monitoring Scheme (SCIMS) following the SNCA (2012) guidance is not considered necessary for the HDD Marine Works. However, a number of measures are proposed to encourage best practice and minimise any potential (although small) risk of vessel collisions. These measures include:

- The spatial separation of 300m of the proposed works (including mooring spread) from MLWS of the nearest known sensitive areas for seals, the designated haul out site at Gills Bay (Figure 4), see CMS;
- The proposed vessel transit routes to HDD Marine Works site ensure that the vessels keep an adequate separation distance from any sensitive seal haul-out sites wherever possible, see VMP ;
- Use of an anchor spread to maintain the position on site, avoiding the potential for vessel movement on site. The anchor spread will be deployed once, at the beginning of the HDD Marine Works, with the vessel mobilising to and demobilising from the anchor spread for each of the HDD bores until completion of the HDD Marine Works, when it will be removed from site.
- Training of all on site / on vessel personnel regarding the importance and sensitivity of marine mammals and their legislative protection;

Provision of advice to staff detailing the types of activity potentially disturbing, and therefore to be avoided; and

- Maintenance of a daily marine mammal log (APPENDIX A) by the Principal Contractor, into which any interaction will be noted. It is important to make clear that such a log is likely to record many approaches by marine mammals to the vessels and personnel undertaking HDD Marine Works. Marine mammals are intelligent and naturally curious about any in water construction works, regularly approaching vessels engaged in marine works.

## **6.2 Construction Works (TBC)**

### **6.2.1 Vessels (numbers, types and specification)**

TBC

### **6.2.2 Operational Health and Safety**

TBC

### **6.2.3 Vessels Working Practices**

TBC

### **6.2.4 Environmental Working Practices**

TBC

## **7 VESSEL MANAGEMENT AND COORDINATION**

Due to the limited number of vessels being used for the works, vessel management and co-ordination will be undertaken by the Marine Co-ordinator who will be located on the multi-cat vessel being used for the HDD Marine Works.

## **8 PORTS AND VESSELS**

### **8.1 HDD Marine Works**

#### **8.1.1 Mobilisation transit route**

Vessels transiting to and from the site during mobilisation and demobilisation will do so from Stromness to the HDD Works site north of the Ness of Quoy, Figure 8.





**Figure 8 – Transit route between vessel home port and HDD work site**

### 8.1.2 Locations of Working Port(s)

Gills Bay Harbour will be used for periods between diving operations if it is necessary to demobilise from the HDD Marine Works site. Should vessels require to overnight local to the works site, Gills Bay and Scrabster will be used for overnight berthing. Indicative transit routes between these ports are shown in Figure 9 & Figure 10.

**Figure 10 – Transit route between Scrabster HDD work site**

Where navigation permits vessels will maintain a suitable distance from identified seal haul-out sites during transits. These sites will be specified by the ECoW and issued to vessel crews as Master Standing Orders.

#### 8.1.3 Frequency of Vessel Movement

The programme and methods used for the HDD Marine Works is supplied in the CMS

The dive activities to be executed in the HDD Marine Works are programmed to require a single day. The vessels will therefore mobilise to site in the morning of the activity and demobilise back to their home port within the same 24 hour period.

The diver will be mobilised and demobilised from Gills Bay on the day of the works. They will be collected at 08:30 and returned by 17:00.

The HDD bores will be completed in sequence so the HDD Marine Works are separated by approximately 1 month (Figure 2). This is dependent on the HDD bore drilling progress as well as having suitable weather and tide windows for the works.

#### 8.1.4 Vessel holding areas

It is likely that vessels will use Gills Bay as a holding area should there is a delay in the works program. For delays of longer than 12 hours it is likely that the vessel will return to its home port if weather permits.

### 8.2 Construction Works (TBC)

TBC

## 9 LINKAGES WITH OTHER CONDITIONS

The VMP is part of suite of consent related documents. Table 5 of documents and related conditions are relevant to the VMP. A full list of the S36 and Marine Licence conditions is in the EMP.

Con	Condition summary	Document	Responsible for Notification
S36 9	-	Construction Method Statement	
S36 10	ECoW	N/A	
S36 11	-	Environmental Management Plan	
S36 12	-	Project Environmental Monitoring Programme	
S36 13	-	Advisory Group	

S36 14	-	Vessel Management Plan	
S36 15	-	Operations and Maintenance Plan	
S36 16	Reporting Protocol for the Discovery of Marine Archaeology	Environmental Management Plan	
S36 17	-	Navigation Safety Plan	
ML 3.1.3	Notification of Vessels	Construction Method Statement / Vessel Management Plan	ECoW
ML 3.2.1.3	Marine Pollution Contingency Plan	Environmental Management Plan	
ML 3.2.1.4	Notification of Commencement	Construction Method Statement	ECoW
ML 3.2.1.5	ECoW	N/A	
ML 3.2.1.6	Promulgation of navigation warnings	Navigation Safety Plan	
ML 3.2.1.7	Marine Mammal Observer	Environmental Management Plan	
ML 3.2.2.1	Transport Audit Sheets	Construction Methods Statement	ECoW
ML 3.2.2.2	Notification of Deposits	Construction Methods Statement	ECoW

**Table 5 Other relevant conditions****10 EUROPEAN PROTECTED SPECIES**

As detailed in the EMP, no EPS licence is required for the HDD Marine Works.



## 11 OPERATIONAL VMP (TBC)

### 11.1 Vessels (numbers, types and specification)

### 11.2 Vessels (working practices)

### 11.3 Vessel Management and Coordination

### 11.4 Ports and Vessels

## 12 VMP REVIEW AND CONSULTATION

Under Condition 14 of the Section 36 the VMP will be reviewed and commented on by the licensing authority, SNH, and any other such ecological or other advisors that may be required at the discretion of the Scottish Ministers. The VMP must be approved by the licensing authority.

The VMP will be submitted to the licensing authority for distribution to the stakeholders and for approval.

Subsequent versions of the VMP will be submitted for the Construction Works to include procedures for turbine, foundation and cable installation.

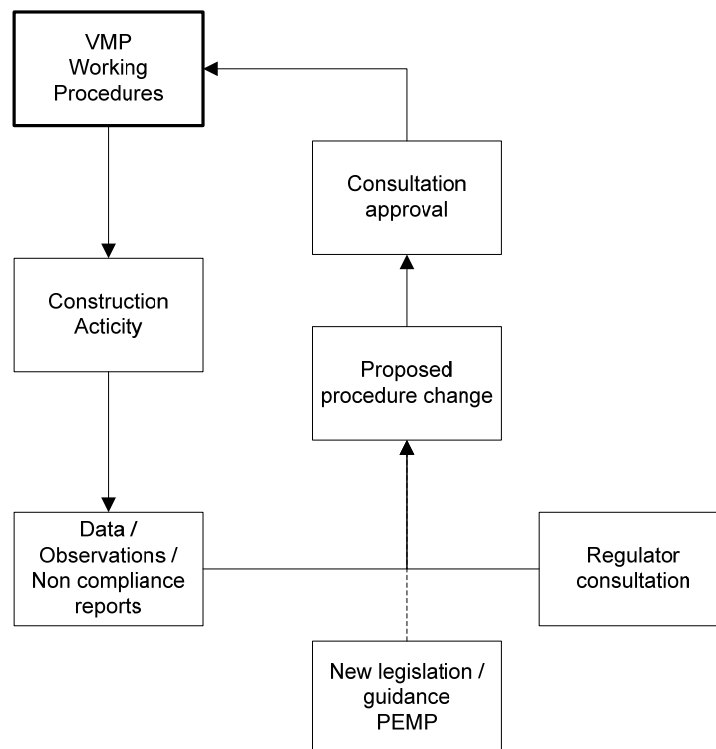
Any changes to the VMP deemed necessary (working methods or procedures) must be reviewed and approved by the ECoW before it is submitted for approval to the licensing authority (Figure 11).

Version control will be conducted by the revision review block on the front page of the CMS.

Consultation responses to the CMS version and amendments made to document due to those responses will be logged in Table 6 below.

Rev no.	Stakeholder	Comment	Action	Rev no.
1	xx	xx	xx	2

**Table 6 VMP Stakeholder comments**



**Figure 11 VMP Change Process**

### 13 REFERENCES

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**14 LIST OF ABBREVIATIONS**

Abbreviation	
CDM	Construction (Design and Management) Regulations 2007
CMS	Construction Method Statement
COSHH	Control of Substance Hazardous to Health
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERCoP	Emergency Response and Co-operation Plan
ERP	Emergency Response Procedures
EPS	European Protected Species
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HSE	Health, Safety and Environment
IOSH	Institute of Occupational Safety and Health
JNCC	Joint Nature Conservation Committee
NSP	Navigation Safety Plan
MCA	Maritime Coastguard Agency
MHWS	Mean High Water Springs
ML	Marine Licence under the Marine (Scotland) Act 2010
MLWS	Mean Low Water Springs
MMO	Marine Mammal Observer
PC	Principal Contractor – James Fisher Marine Services Ltd.

PEMP	Project Environmental Monitoring Programme
RAMS	Risk Assessments and Method Statements
SAC	Special Area of Conservation
SCIMS	Seal Corkscrew Injury Monitoring Scheme
SEIS	Supplementary Environmental Information Statement
SEPA	Scottish Environment Protection Agency
SHESQ	Safety, Health, Environment, Security and Quality
SNCA	Statutory Nature Conservation Agency
SNH	Scottish Natural Heritage
SPA	Special Protected Area
S36	Section 36 of the Electricity Act 1989
TSC	Turbine Submarine Cable
TSS	Turbine Support Structure
TTG	Tidal Turbine Generator
VMP	Vessel Management Plan

## APPENDIX A - VESSEL PARTICULARS



### M.V. C-Odyssey



<b>General</b>		<b>Propulsion System</b>	
Type of vessel	Multiworker Twenty6	Main engines	2 x caterpillar C32
Year built	2011	Total power	2,400bhp at 1,800 rpm
Category	MCA Cat 1	Propulsion	2x fixed pitch propellers in nozzles 1,500mm
Basic functions	Up to 150 miles from safe haven	<b>Generators</b>	
	Marine renewables support vessel		1 off 78 KVA
	Dive support		1 off 35 KVA
	Towage		
	Anchor handling		
Passengers	Fuel and water transfer	<b>Performance</b>	
	12 plus crew		Bollard pull
<b>Dimensions</b>		Speed	10 knots
Length	26m	<b>Deck Equipment</b>	
Beam	10.5m	Towing winch	60ton
Depth	3.5m	Anchor handling (combined lift)	60 ton 120 ton
Draught	2.5m	Tugger winch	3 x 15 ton
<b>Tank Capabilities</b>		Towing hook	SWL25 ton
Fuel/oil	100m³	Capstan	5 ton
Black/grey water	9m³	Bow roller	5,000mm SWL 120 ton
Fresh water	45m³	Aft roller	3,000mm SWL 60 ton
Dirty oil	0.9m³	Deck carrying capacity	100 ton
Ballast water	88m³	Deck crane (forward)	Hs 185t/m 7000kg@18.5m
<b>Accommodation</b>		Deck crane (aft)	Hs 60t/m 4630kg@10m
Cabins	2 off twin berth		
	2 off single berth		
Large mess room, galley and laundry			

Crowness Park, Hatston Industrial Estate, Kirkwall, Orkney, KW15 1GF

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*Making Marine Renewables Work*

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of Diving Contractors



### M.V. C-Salvor (ex Multrasalvor)



#### General

Type of vessel Damen Dredge Helper  
Year built 1994  
Category MCA Cat 2  
Basic functions Up to 60 miles from safe haven  
Marine renewables support vessel  
Dive support  
Towage  
Anchor handling  
Fuel and water transfer

Passengers 12

#### Dimensions

Length 23.3m  
Beam 9.5m  
Depth 2.75m  
Draught 2.3m

#### Tank Capabilities

Fuel oil 66m<sup>3</sup>  
Fresh water 45m<sup>3</sup>  
Lubrication oil 0.75m<sup>3</sup>  
Dirty / bilge oil 7.5m<sup>3</sup>

#### Propulsion System

Main Engines 2 x Cummins KTA 19 M2  
Total Power 864 kW  
Propulsion 2 x Promarin fixed propeller

#### Generators

1 off 86 kW at 1500 rpm  
1 off 41 kW at 1500 rpm

#### Performance

Bollard pull 16.4 tons  
Speed 8.9 knots

#### Deck Equipment

Winch Hydraulic anchor handling / towing  
winch EMCE 2.3523, SWL 40.0 tons  
Wire Capacity 300m, 32 mm  
Tugger winches 3 x 12 ton Hydraulic mooring winches  
Deck capacity 50 ton  
Stern roller SR 2490  
Deck crane 26 tons/5.65 m, 10 tons/12.25  
Towing hook Mampaey WLL 17 tons  
Spare towing wire 300m, 32 mm

#### Accommodation

Cabins 2 off twin berth

Crowness Park, Hatston Industrial Estate, Kirkwall, Orkney, KW15 1GF

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Project Title/ Location	MeyGen Tidal Energy Project, Phase 1a. Inner Sound.
Date:	19/02/2015

# MeyGen Tidal Energy Project Phase 1

## Construction Method Statement:

### HDD Marine Works



James Fisher and Sons plc  
Marine Services Worldwide



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Rev	Prepared By	Sign Off	Checked By	Sign Off	Approved By	Sign Off	Date of Issue
1	Fraser Johnson		Ian Sargent		Ed Rollings		19/02/2015
2							



## Table of Contents

Executive Summary .....	3
1 Introduction.....	4
2 Scope of Construction method statement .....	5
3 Communication, Roles and Responsibilities .....	6
3.1 Responsibilities and Ownership .....	6
3.2 Organisation Chart and Reporting .....	6
3.3 MeyGen - Ecological Clerk of Works .....	8
3.4 Principal Contractor – James Fisher Marine Services .....	8
3.5 Contractors .....	10
3.6 Communication .....	11
3.7 Reporting .....	12
3.8 Training .....	13
4 Programme.....	14
5 Construction Methods and Procedures .....	15
5.1 HDD Works .....	15
5.2 HDD Marine Works .....	16
5.3 Environmental Mitigation.....	19
6 Emergency Preparedness and Response.....	22
7 Licences and Legal Requirements .....	23
8 Linkages with Other Strategies and SHE Management Systems .....	23
9 CMS Review and Consultation.....	23
10 List of Abbreviations .....	25

**EXECUTIVE SUMMARY**

This Construction Method Statement (CMS) has been prepared by MeyGen Ltd. to set out the proposed method for discharging the Condition 9 of the Section 36 Consent for the Development.

The document details the construction methods proposed for the Development, how construction related mitigation detailed in the Environmental Management Plan is to be delivered, the construction procedures and good working practices for installing the Development, how this document integrates with the wider environmental management of the Development, and how communication will be maintained between the Principal Contractor and MeyGen Ltd. on this Development.

The CMS presented within this document is to satisfy Condition 9 and enable construction of the Development to progress, subject to the CMS being implemented.

The CMS will be submitted to the licensing authority and consulted on by SNH, SEPA, MCA, the Planning Authority, NLB, and any such other advisors as may be required at the discretion of the Scottish Ministers, and will be used, where appropriate, to inform the discharge of other Conditions within the Section 36 Consent which refer to it.

**THIS DOCUMENT ONLY CONSIDERS HDD MARINE WORKS. FURTHER CONSTRUCTION WORKS WILL BE DOCUMENTED IN SEPARATE CMS SUBMITTED FOR CONSULTATION AND APPROVAL PRIOR TO THAT PHASE COMMENCING.**

## 1 INTRODUCTION

The MeyGen Tidal Energy Project Phase 1 (“the Development”) received consent under Section 36 of the Electricity Act 1989 from the Scottish Ministers on 9<sup>th</sup> October 2013 (“the S.36 Consent”). This Construction Method Statement (CMS) is prepared to enable Condition 9 of the S.36 Consent (“the Condition”) to be discharged. Condition 9 states:

*The Company must, prior to the Commencement of the Development, submit to the Scottish Ministers a Construction Method Statement (“CMS”), in writing, endorsed by the Ecological Clerk of Works, as referred to in Condition 10 of this consent, to the Scottish Ministers for their approval, following consultation with SNH, the Scottish Environment Protection Agency, the Maritime and Coastguard Agency, the Planning Authority, Northern Lighthouse Board, and any such other advisors as may be required at the discretion of the Scottish Ministers. Unless otherwise agreed in writing by the Scottish Ministers, construction of the Development must proceed in accordance with the approved CMS. The CMS must include, but is not limited to, the following information:*

- a) Commencement dates;*
- b) Working methods including the scope, frequency and hours of operations;*
- c) Duration and Phasing Information of key elements of construction, for example– turbine structures, foundations, turbine locations, inter-array cabling and land fall cabling;*
- d) Details of the location of the turbines, grid export cable(s), method of installation (including techniques and equipment) and depth of cable laying and cable landing sites;*
- e) Details of mitigation measures to prevent adverse impacts to species and habitats during construction;*
- f) Details of how all contractors and sub-contractors will be made aware of environmental sensitivities, what requirements they are expected to adhere to and how chains of command will work;*
- g) Confirmation of reporting mechanisms used to provide Scottish Ministers and relevant consultees with regular updates on construction activity, including any environmental issues encountered and how these have been addressed;*
- h) Vessel specification, routing, including location of vessel ports; and*
- i) Pollution prevention measures including contingency plans.*

*The CMS must, so far as is reasonably practicable, be consistent with the Environmental Management Plan, the Project Environmental Monitoring Programme, the Vessel Management Plan and the Navigational Safety Plan.*

**Reason:** *To ensure the appropriate construction management of the Development, taking into account mitigation measures to protect the environment and other users of the marine area.*

This document sets out the proposed CMS that MeyGen Ltd, intends to undertake, to allow the Condition to be discharged. Scope of Construction Method Statement

## 2 SCOPE OF CONSTRUCTION METHOD STATEMENT

Phase 1a of the Development is a 6MW, 4 tidal turbines initial phase to be installed and operatives under the restriction placed on the Development by Condition 2 of the S.36 Consent.

This document is the CMS for the marine works associated with the Horizontal Directional Drilling (HDD) Works for Phase 1a **only** (“**HDD Marine Works**”).

Given the Phase 1a programme for construction works associated with Phase 1a it has been agreed with the licensing authority that the CMS and other related consent documents for the installation of the Phase 1a infrastructure (4 x Tidal Turbine Generators (TTG), 4 x Gravity-base Turbine Support Structures (TSS) and Turbine Subsea Cables (TSC) can be submitted at a later date “**the Construction Works**”. MeyGen Ltd. will produce and update relevant documents for these construction works; these will be submitted and get approval prior to commencement of these works.

The CMS forms part of a suite of documents related to the consent conditions that MeyGen Ltd. seek to discharge:

- Environmental Management Plan (EMP) (S.36 Consent, Condition 11) including Marine Pollution Contingency Plan (Marine Licence, Condition 3.2.13), Reporting Protocol for the Discovery of Marine Archaeology (S.36 Consent, Condition 16);
- Vessel Management Plan (VMP) (S.36 Consent, Condition 14); and
- Navigation Safety Plan (NSP) (S.36 Consent, Condition 17).

The CMS is in accordance with the construction methods assessed in the Environmental Statement (ES) and Supplementary Environmental Information Statement (SEIS) and includes details of how the construction related mitigation steps documented in the EMP are to be delivered. The EMP commits MeyGen Ltd. to safeguarding the environment through the identification, avoidance and mitigation of the potential negative environmental impacts associated with the development, construction and operation of the tidal array. The CMP will be an integral element of the EMP.

The CMS contains the following sections:

- Roles and Responsibilities;
- Programme;
- Construction Methods and Procedures (including mitigation);
- Emergency Preparedness and Response;
- Licences and Legal Requirements;
- Linkages with Other Conditions;
- Linkages with Other Strategies and SHE Management Systems;

- CMS Review and Consultation; and
- Technical Appendices Containing Detailed Construction Methodologies.

### 3 COMMUNICATION, ROLES AND RESPONSIBILITIES

This section details the project team roles, responsibilities and lines of communication during the construction and operation of the Development.

#### 3.1 Responsibilities and Ownership

The Principal Contractor (PC) will have the ultimate responsibility for ensuring the implementation of the CMS.

The Ecological Clerk of Works (ECoW) will provide quality assurance and approval of any version of the CMS.

Any updates to the CMS by the PC will require the ECoW to check compliance with current legislation, consent conditions and related documents. Updated CMS will then be submitted to Scottish Ministers for approval.

#### 3.2 Organisation Chart and Reporting

The organisational chart for the HDD Marine Works is below in . This includes how communication as part of the CMS will be conducted in normal working procedures and in the case of emergencies.

The organisation chart presents the key interfaces, lines of communication and responsibilities with regards to the flow of requirements and provision of mitigating actions across the HDD Marine Works.

Details are provided in the Table 1 below for contacts relevant to the delivery of this plan. These details may change and the CMS will be updated when necessary.

Name	Role	Organisation	Telephone	Mobile
Ian Sargent	Project Manager	James Fisher Marine Services	01565 658812	
Stan Groundwater	Marine Coordinator	James Fisher Marine Services	01565658824	
Tony Blackshaw	HSE Advisor	James Fisher Marine Services	01565 658817	
Ed Rollings	ECoW	MeyGen Ltd	+441316599662	
Fraser Johnson	Marine Package Manager	MeyGen Ltd	+441316599672	

**Table 1 Contact Details**

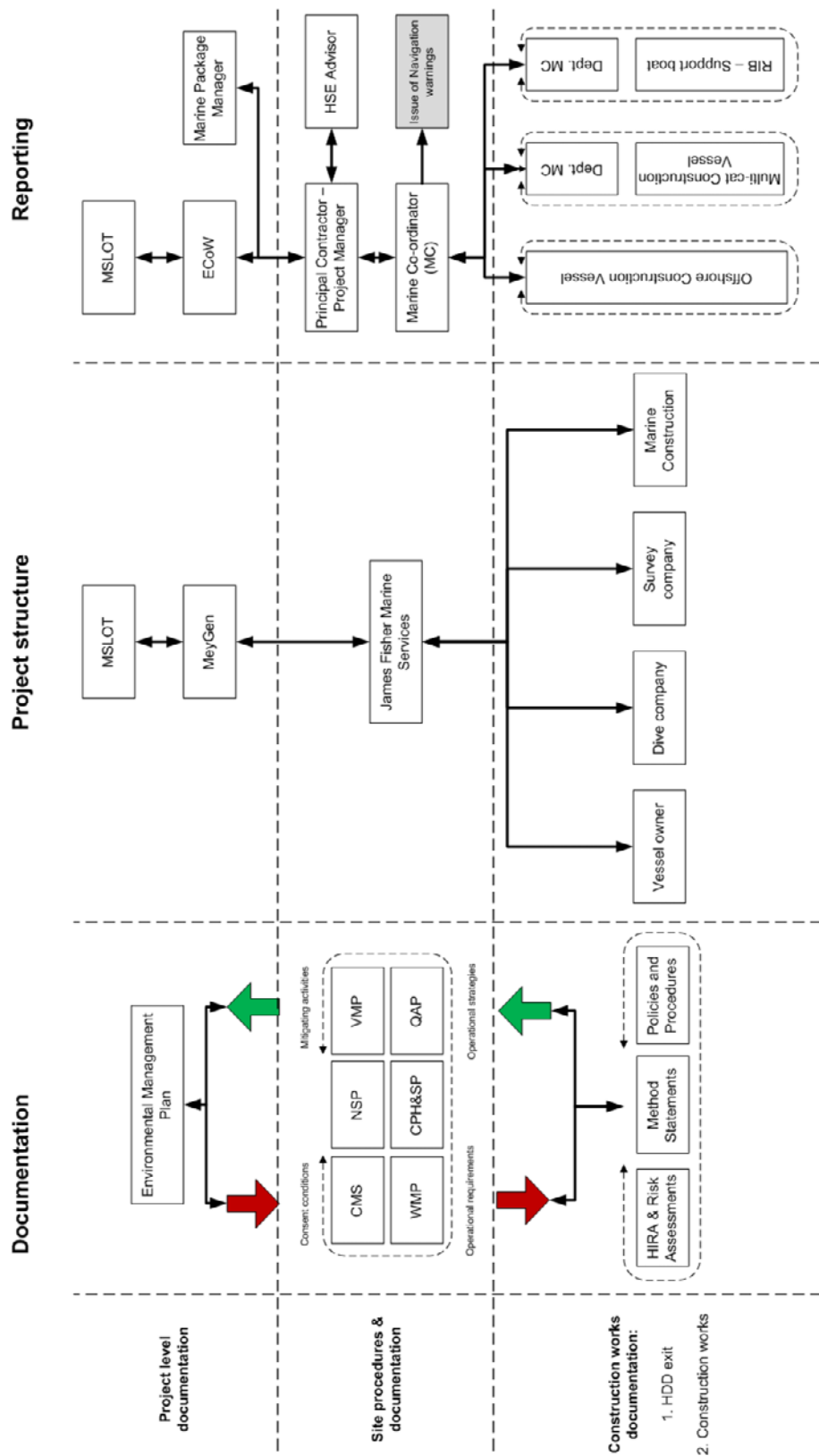


Figure 1 Project Organogram

**3.3 MeyGen - Ecological Clerk of Works**

- Review and approve all consent related documents (S36 Condition 10).
- Review / comment on content of Site Inductions and Toolbox Talks.
- Review / comment on Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and controls.
- Inspect the site / vessel on a regular basis to ensure effective implementation/operation of all environmental mitigation measures.
- Audit PC procedures, inspections, investigation and reporting.
- Ensure compliance with approve consent related documents, environmental legislation and requirements and address any shortfalls with the PC (S36 Condition 10).
- Review environmental incidents / near misses and PC investigations
- Report compliance and incidents to the licensing authority and other necessary regulatory authorities.
- Notify the licensing authority of vessel details (ML Condition 3.1.3)
- Notify the licensing authority of the commencement date (ML Condition 3.2.1.4)
- Provide Transport Audit Sheets for works to the licensing authority (ML Condition 3.2.2.1)
- Notify the licensing authority of deposits by MHWS (ML Condition 3.2.2.2)
- Ensuring any protected species licenses are in place for the Development (S36 Condition 10)

**3.4 Principal Contractor – James Fisher Marine Services****3.4.1 Project Manager**

- Facilitate dissemination of specific environmental requirements to the project team.
- Oversee the implementation and review of environmental procedures throughout the project.
- Review and approve all consent related documents, including, but exhaustive, CMS, VMP and NSP.
- Monitor the environmental performance of the project through maintaining an overview of incidents, inspections and audits.
- Ensure that environmental considerations form an integral part of Design and Implementation of the Works and to include environmental reviews as part of regular project meetings.
- Review and approve Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and mitigation.
- Ensure that all environmental incidents are reported to the ECoW and MeyGen in

accordance detailed reporting requirements and the respective regulatory bodies (where required) as soon as possible.

- Review environmental matters with the ECoW and MeyGen and respective regulatory bodies on a regular basis and as per project requirements.
- Ensure that arrangements for liaison with Project respective regulatory bodies on all environmental issues is appropriate and maintained.
- Implement and maintain a project communications strategy to manage project public relations and complaints.
- Produce weekly and monthly reports and submit to MeyGen Package Manager and ECoW.
- Ensure contractors are approved, operates a Safety Management System, confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.

#### 3.4.2 HSE Advisor

Key roles and responsibilities of the HSE Advisor include, but are not limited to the following:

- Verify compliance with relevant legislation.
- Prepare, implement, review and update consent related documents (in conjunction with the Project Management Team) in accordance with consent condition, James Fisher Marine Services procedures and current legislation.
- Advise the project team on environmental related decision making
- Review Risk Assessments and Method Statements (RAMS) as and where necessary with respect to environmental impacts and mitigation.
- Approve Toolbox Talks and Site / Vessel Inductions and ensure content promotes effective environmental management, specific works and Site / Vessel sensitivities and communicate associated lessons learnt.
- Provide support to the Marine Coordinator and workforce on any environmental matters that may arise.
- Audit contractors to confirm that they are suitably qualified in their line of work and have undertaken suitable environmental training to cover tasks to be undertaken.
- Ensure suitable consideration is given to the period and frequency of environmental monitoring (particularly with respect to higher risk areas).
- Inspect and audit the site / vessels on a regular basis to ensure effective implementation / operation of any environmental mitigation measures.
- Ensure compliance with environmental requirements and address any shortfalls.
- Provide inspection reports to the project management detailing any issues that must be addressed



- Undertake investigations into environmental incidents or near misses to determine the root/direct cause and present the findings, recommendations and lessons learnt.
- Monitor hazardous observations and incidents trends in relation to environmental aspects and impacts and initiate actions as required to minimise the potential environmental impacts and reduce risk in a timely and effective manner.

#### 3.4.3 Marine Coordinator

- Responsible for all construction operations Marine Coordination including vessel / site HSE during construction operations.
- Ensure that all contractors have received and understood the Site / Vessel induction.
- Undertake Toolbox Talks to promote effective environmental management and communicate associated lessons learnt.
- Monitor and disseminate weather information and forecasts
- Production of marine safety alerts including issuing Notice to Mariners to agreed stakeholder list.
- Responsible for collating, communicating and responding to statutory navigation notices.
- Liaise with port authorities.
- Implement / operate environmental mitigation measures as approved in the consent related documents at the site / vessel.
- Coordinating, ensuring compliance for and recording all vessel movements and personnel movements offshore.
- Emergency response coordination.
- Produce daily reports and submit to the PC Project Manager, MeyGen Package Manager and ECoW.
- Keep Transport Audit Sheets for all materials listed in the licence to be deposited as part of the works
- Keep audit reports stating the nature and quantity of all substances and objects deposited below MHWS under the authority of the licence.

### 3.5 Contractors

#### 3.5.1 Vessel Master

- Overriding authority and responsibility to make decisions with respect to safe navigation of the vessel and matters related to HSE.
- Dedicated watch-keeper on board the vessel, or nominate suitable qualified deputy.
- The persons present on board must adhere to the Vessel Master's instructions.
- Adhere to IMO International Regulations for the Prevention of Collisions at Sea.

- Ensure that all contractors have received and understood the vessel induction.

### 3.5.2 All Other Staff

- To understand and implement procedures relevant to their role as laid out.
- To conduct their work with a view to eliminating/reducing the environmental impact of the Project and to raise any environmental concerns with Marine Coordinator or Project Manager.
- To report all environmental incidents to the Marine Coordinator and Vessel Master as soon as possible.

## 3.6 Communication

Environmental issues will be formally communicated through the arrangements on Site / Vessel in Table 2.

Meeting/briefing	Frequency	Attendees
Safety, Health, Environment, Security and Quality (SHESQ) and Progress Meeting	Weekly	See paragraph below
Daily site team briefs	Daily	All work parties
Risk Assessment/Method Statement briefings	Each job task	All members of the working party
Toolbox Talks including environmental practices and mitigation measures	Before mobilisation, or a minimum of one per week	All Site / Vessel personnel
Site / Vessel Induction	On first attendance at site <u>BEFORE</u> any work is undertaken	All persons attending Site / Vessel

**Table 2 Communication and Meetings**

### 3.6.1 SHESQ and Progress Meeting

The PC shall convene weekly Site / Vessel meetings with all contractors on Site / Vessel to communicate, discuss and consult any change in conditions, working practices and environmental arrangements, procedures and overall environmental performance.

The ECoW and representatives from MeyGen and other interested Third Parties shall have an open invitation to attend these weekly Site / Vessel meetings. Each contractor on Site / Vessel shall nominate a person to attend these meetings with the appropriate authority to act on those contractors behalf. SHESQ and Progress Meetings shall be augmented by additional meetings at intervals dictated by the requirements of the contract or at key stages of the works.

Minutes of all such meetings shall be produced and held on file for record purposes, with copies supplied to each contractor on Site / Vessel, the CDM Co-ordinator and ECoW.

### 3.6.2 Extraordinary meetings

Extraordinary meetings would be held in order to deal with special environmental issues that may arise during the project such as environmental incidents. These meetings shall be organised by the HSE Advisor with the aim of ensuring a timely response and resolution to any identified issues.

### 3.6.3 Daily site team meetings

Daily site team meetings will take place at the Onshore / Offshore site between the PC and contractors. Any environmental concern shall be addressed at this meeting.

### 3.6.4 Risk Assessment / Method Statement briefings

These briefings will take place before each construction task and attended by all directly involved in the task. Environmental requirements and mitigation measures will be instructed and reviewed.

### 3.6.5 Site / Vessel inductions

Inductions, conducted before anyone commences work on the project are utilised to raise awareness for personnel regarding Site / Vessel rules, emergency response procedures and environmental protection arrangements. The inductions include a test to confirm understanding.

### 3.6.6 Site / Vessel notice boards

Site / Vessel notice boards will contain relevant Site / Vessel information relating to Health, Safety and Environmental issues. The Site / Vessel will also have appropriate signage in place to highlight awareness of environmental hazards. Other communications media, such as newsletters and posters will also be posted on notice boards to communicate awareness of environmental matters.

## 3.7 Reporting

The PC will communicate the following to the ECoW and contractors on Site / Vessel:

- Details of audits and inspections;
- Details and statistics for environmental incidents and near misses;
- Details of any pending and actual enforcement action in respect of any environmental incidents;
- Any other pertinent environmental issues identified;
- Transport Audit Sheets; and
- Audit reports for the nature and quantity of all substances and objects deposited below MHWS.

The PC will provide these in:

- Daily logs and reports when construction activities are taking place on site / vessels;

- Weekly progress reports
- Monthly reports (additionally, confirming the status of the project, implementation of environmental commitments and mitigation measures, monthly and cumulative statistics, training delivered, environmental initiatives undertaken, amendments to the any of the consents related documents)

### 3.7.1 External Communication

The Marine Coordinator is responsible for:

- Documenting, issuing, communicating and responding to statutory navigation notices for the Development; and
- Emergency Response and Co-operation Procedures are in place for such events. The communication and reporting protocols for such an event can be found in the Emergency Response and Co-operation Plan (NSP).

The ECoW is responsible for:

- Notification to the licensing authority detailed in the consent condition;
- Reporting monthly to the licensing authority once works have commenced with:
  - Details of audits and inspections;
  - Details and statistics for environmental incidents and near misses;
  - Details of any pending and actual enforcement action in respect of any environmental incidents;
  - Any other pertinent environmental issues identified;
  - Transport Audit Sheets; and
  - Audit reports for the nature and quantity of all substances and objects deposited below MHWS.
- Meeting with the licensing authority and statutory agencies and the local community; and
- Receiving, documenting and responding to any environmental communication from third parties.

## 3.8 Training

The purpose of environmental training is to ensure that all site personnel have the knowledge to successfully implement the environmental requirements of the project.

In order to ensure that the environmental mitigation measures are implemented on site, the following environmental training Table 3 in will be required.

Any person working on the site/vessel will be competent and trained sufficiently to undertake their work in a safe and efficient manner. Each Contractor will ensure that their personnel maintain the necessary level of competence for their work & will maintain the training records

on site & make them available for review and audit.

Training	Target Persons
Induction (which will include environmental aspects such as environmental sensitivities and controls, pollution prevention, waste management and emergency preparedness and response)	All persons attending Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel, and visitors)
Environmental Toolbox Talks	Toolbox talks will be carried out at a minimum of one per week appropriate to the construction works being carried out on Site / Vessel at that time.  All persons carrying out work on site (site personnel, contractors on site) shall attend.
Environmental Bulletins / Legislation Briefings / Best Practice Briefings	All persons carrying out work on Site / Vessel (Site / Vessel personnel, contractors on Site / Vessel) shall attend.
Job specific training e.g. <ul style="list-style-type: none"> <li>• IOSH Working with Environmental Responsibilities / IOSH Managing Environmental Responsibilities.</li> <li>• Use of Pollution Prevention Equipment.</li> <li>• Site Waste Management.</li> </ul>	As identified for personnel with environmental responsibilities
Project specific information, including relevant elements of: <ul style="list-style-type: none"> <li>• the EMP, CMS, NSP, VMP</li> <li>• Consent Conditions</li> </ul>	Briefed out and available for reference to all Site / Vessel staff.

**Table 3 Training**

Any person working on the Site / Vessel will be competent and trained sufficiently to undertake their work in a safe and efficient manner. Each Contractor will ensure that their personnel maintain the necessary level of competence for their work & will maintain the training records on site & make them available for review and audit. Records of training will be maintained and made available for inspection.

#### 4 PROGRAMME

The high level programme for the HDD Marine Works is shown in Figure 2. The Programme is subject to change and will be regularly updated during the course of the Development.

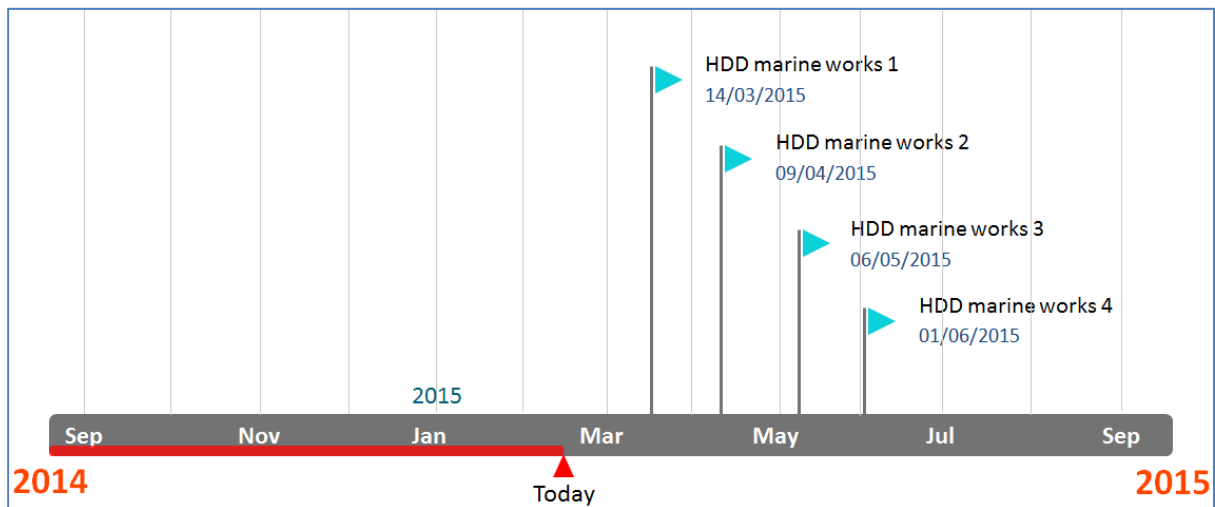


Figure 2 HDD Marine Works Programme

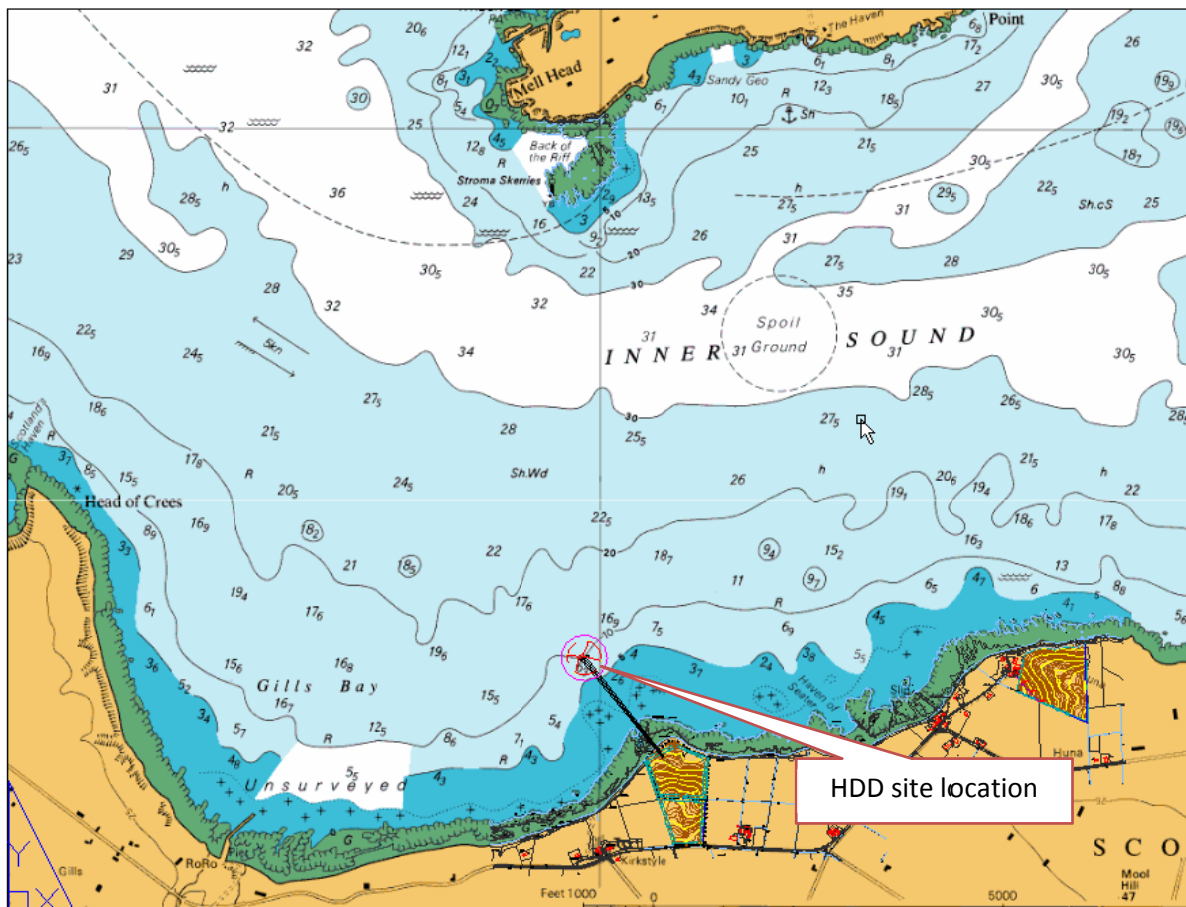
## 5 CONSTRUCTION METHODS AND PROCEDURES

### 5.1 HDD Works

4 x HDD Bores are to be drilled from the onshore Ness of Quoy Power Conversion Centre to target exit locations on the seabed (Figure 3). The HDD bores are drilled using a 16' (406mm) drill bit. As the drilling is undertaken, the exact location of the drill head is monitored as it proceeds along its path and provide real-time information as to its location and depth. This will be achieved using a Real-Time Constant Rate Gyroscope based guidance system which is impervious to magnetic interference.

During the drilling process, drilling fluid (bentonite mud) is pumped down the inside of the drill string where it cools the guidance system and drilling motor. The drilling fluid then flows out of the drill bit via nozzles and flushes drilled cuttings back to surface as it flows up the annulus. The drilling fluid also lubricates and supports the borehole. Before the drill is punched out onto the seabed the drill string will be pulled from the bore and re-run performing a 'wiper trip' to condition the drilling mud and remove cuttings from the bore. When the drill punches out onto the seabed drilling muds will immediately stop cycling; a small amount of bentonite and cuttings will be released into the marine environment (bentonite will flocculate on contact with salt water).

As described in the EMP (Marine Pollution Contingency Plan) a small amount of bentonite drilling mud and cuttings will be released into the marine environment. As stated in Marine Licence Condition 3.1.9 *any drill cuttings associated with the use of water-based drilling muds situated within the outer boundary of the works need not be removed from the seabed.*



**Figure 3 HDD Marine Works Location**

## 5.2 HDD Marine Works

Construction methods and procedures for the HDD Marine Works will be set out for (but shall not be limited to) the following:

- Identifying the exit point of the 4 x HDD bores on the seabed;
- Cut the 'bullnose' from the HDD liner;
- Connecting and disconnecting equipment to the drill string to clean and prove the HDD liner; and
- Fit a seal to the end of the HDD liner to prevent debris entering.

The following sequence outlines the HDD Marine Works process.

### 5.2.1 Pre-mobilisation

- No less than one month prior to commencement of works the ECoW will notify the licensing authority, in writing, the date of commencement and confirm this date no less than 24 hours before commencement (ML 3.2.1.4)
- The PC will confirm:

1. the vessel,
2. vessel master,
3. vessel IMO number, and
4. vessel owner and operator

to be used on the works to the ECoW, so that the ECoW can notify the licensing authority, in writing, no less than 72 hours prior to commencement of the works (ML 3.1.3)

- Notice to Mariners will be issued a minimum of 2 weeks prior to commencement of the works, an example is provided in Appendix A of the NSP.
- Weather forecasts will be reviewed at regular intervals to ensure the appropriate site conditions.

#### 5.2.2 Mobilisation

- All communications and meetings will be held as per Section 3.6.
- Inventories for all tools, materials and liquids will be completed before loading onto the vessel.
- Vessel environmental mitigation measures will be checked to ensure compliance with the EMP (RHK-1A-40-HSE-D-001-EnvironmentalManagementPlanHDD).
- Vessel will leave selected port and transit to site on the route described in the VMP (MEY-1A-40-HSE-003-D-VesselManagementPlanHDD)

#### 5.2.3 Vessel and Moorings

The HDD Marine Works will utilise a single 26m Multi-cat vessel (see the VMP for vessel specification). The vessel will be anchored within a 4 point temporary mooring arrangement to ensure the vessel hold station during the subsea dive work.



- a) Cut off the cable duct bull nose. This involves sawing through a 315mm SDR-11 polyethylene pipe, using a pneumatic saw. The bull nose will be recovered to the vessel deck for safe disposal.

- b) The drilling team will then pump a foam pig down the cable duct from the onshore site, trailing a draw rope. The divers will unclip the foam pig and attach a 267mm Brush, (5mm larger than ID), and a 230mm Mandrel, (10% less than ID), to the draw rope.

The drilling team will pull the brush and mandrel back through the cable duct on the draw rope, brushing and proving it. A second draw rope will be trailed into the duct behind the mandrel from the seabed.

- c) The divers will then bolt a Viking Johnson Aquagrip connector to the cable duct stub to temporary seal off the end of the HDD bore liner and left in situ ready for the next phase of the installation

These dives shall be undertaken in accordance with the programme (Figure 2), subject to the availability of a suitable period of calm weather, calm seas and good visibility.

#### 5.2.6 Demobilisation from Bore 1

- The vessel will disconnect from the mooring spread, ensure that the moorings are correctly marked and lit (see NSP for further details),
- Check tools, materials and liquids are all on board and accounted for on inventories.
- Return to port via the route described in the VMP.
- At port, waste materials and liquids will be taken onshore and disposed of in accordance with the waste management plan. (James Fisher Marine Services Waste Management Plan included in the EMP)

#### 5.2.7 HDD Bores 2, 3, 4

For HDD Bores 2, 3, 4, the procedure will be repeated with the vessel mobilising to site, mooring and demobilising from the mooring spread that is left in-situ. On completion of HDD Marine Works for HDD Bore 4 the vessel will be demobilised and return to port.

The mooring spread will remain in position to aid the installation works of the Turbine Submarine Cable.

#### 5.2.8 Contingency Diving

Should the drilling operation create loose material at the seabed exit point that cannot be pushed away by the drilling assembly, divers may be required to assist in its removal. This will be undertaken in accordance with the Waste Management Plan (see EMP)

### 5.3 Environmental Mitigation

The EMP describes the mitigation measures and methodologies to be used for the HDD Marine Works. These have been taken from the mitigation described in the ES and SEIS. These are summarised below.

### 5.3.1 Vessels

#### Navigation Safety

Navigation safety notices, warnings and demarcations will be conducted under the procedures of and to meet the requirements of the NSP.

#### Marine Mammals

Mitigation measures detailed for the protected of marine mammal species will be conducted under the procedures of and to meet the requirements of the EMP and VMP. These include:

- Training of all on site / on vessel personnel regarding the importance and sensitivity of marine mammals and their legislative protection;
- Provision of advice to staff detailing the types of activity potentially disturbing, and therefore to be avoided; and
- Maintenance of a daily marine mammal log by the Principal Contractor, into which any interaction will be noted. It is important to make clear that such a log is likely to record many approaches by marine mammals to the vessels and personnel undertaking HDD Marine Works. Marine mammals are intelligent and naturally curious about any in water construction works, regularly approaching vessels engaged in marine works.

#### Pollution Prevention

Mitigation measures detailed for the prevention of marine pollution from oil and chemical spills and objects overboard will be conducted under the procedures of and to meet the requirements of the Marine Pollution Contingency Plan in the EMP.

#### Invasive Non-Native Species Management

A short non-native management report will be provided by the Principal Contractor to Marine Scotland for each vessel arrival on site and used in HDD Marine Works, including the details listed in the management plan in the EMP.

#### Waste Management

Waste management will be conducted under the procedures of and to meet the requirements of the Waste Management Plan in the EMP.

### 5.3.2 Moorings

#### Navigation Safety

Navigation safety notices, warnings and demarcations will be conducted under the procedures of and to meet the requirements of the NSP.

#### Marine Mammals

Mitigation measures detailed for the protected of marine mammal species will be conducted under the procedures of and to meet the requirements of the EMP and VMP. These include:

- Training of all on site / on vessel personnel regarding the importance and sensitivity of marine mammals and their legislative protection;
- Provision of advice to staff detailing the types of activity potentially disturbing, and therefore to be avoided; and
- Maintenance of a daily marine mammal log by the Principal Contractor, into which any interaction will be noted. It is important to make clear that such a log is likely to record many approaches by marine mammals to the vessels and personnel undertaking HDD Marine Works. Marine mammals are intelligent and naturally curious about any in water construction works, regularly approaching vessels engaged in marine works.

#### Pollution Prevention

Mitigation measures detailed for the prevention of marine pollution from oil and chemical spills and objects overboard will be conducted under the procedures of and to meet the requirements of the Marine Pollution Contingency Plan in the EMP.

#### Archaeology

A reporting protocol for the discovery of marine archaeology has been produced to address the accidental discovery of marine cultural material during development, maintenance and monitoring. Full details and requirements of the Reporting Protocol for the Discovery of Marine Archaeology are in the EMP.

#### 5.3.3 Dive Activity

#### Navigation Safety

Navigation safety notices, warnings and demarcations will be conducted under the procedures of and to meet the requirements of the NSP.

#### Marine Mammals

Mitigation measures detailed for the protected of marine mammal species will be conducted under the procedures of and to meet the requirements of the EMP and VMP. These include:

- Training of all on site / on vessel personnel regarding the importance and sensitivity of marine mammals and their legislative protection;
- Provision of advice to staff detailing the types of activity potentially disturbing, and therefore to be avoided; and
- Maintenance of a daily marine mammal log by the Principal Contractor, into which any interaction will be noted. It is important to make clear that such a log is likely to record many approaches by marine mammals to the vessels and personnel undertaking HDD Marine Works. Marine mammals are intelligent and naturally

curious about any in water construction works, regularly approaching vessels engaged in marine works.

#### Pollution Prevention

Mitigation measures detailed for the prevention of marine pollution from oil and chemical spills and objects overboard will be conducted under the procedures of and to meet the requirements of the Marine Pollution Contingency Plan in the EMP.

#### Archaeology

A reporting protocol for the discovery of marine archaeology has been produced to address the accidental discovery of marine cultural material during development, maintenance and monitoring. Full details and requirements of the Reporting Protocol for the Discovery of Marine Archaeology are in the EMP.

#### 5.3.4 Alternatives

No alternative mitigation methods are required for the HDD Marine Works if contingency dives are required.

## **6 EMERGENCY PREPAREDNESS AND RESPONSE**

Pollution prevention measures included in the EMP (Marine Pollution Contingency Plan) will be adhered to at all times on vessels and working at quayside.

Emergency Response Procedures are an intrinsic part of the Scope of Works relating specifically to the works being executed, the ERCoP is detailed in the NSP.

These procedures include:

- Man Overboard
- General MOB Procedure
- Fire & Explosion
- Personnel Injury or Medical Evacuation
- Serious Injury or Illness
- Medical Advice
- Request for medical assistance
- Evacuation of a sick or injured person from a vessel
- Adverse Weather Procedure
- Environmental Response Plan
- Clean up actions specific to hazardous materials
- Spill Notification
- Spill Documentation
- Immediate actions
- Clean-up actions
- Spill notification
- Spill Documentation
- Location and Content of a Spill Kit

- Post incident reporting
- Training

## 7 LICENCES AND LEGAL REQUIREMENTS

Licence / Consent	Legislation	Granted
Section 36 Consent	Electricity Act 1989	09/10/2013
Marine Licence (licence number 04577/14/0)	Marine (Scotland) Act 2010	31/01/2014
Decommissioning Programme	Energy Act 2005	xx

**Table 4 Consent**

## 8 LINKAGES WITH OTHER STRATEGIES AND SHE MANAGEMENT SYSTEMS

The NSP complies with the Principal Contractor's Construction Phase Health and Safety Plan (under the Construction (Design and Management) Regulations 2007) and their Health, Safety and Environment Manual.

## 9 CMS REVIEW AND CONSULTATION

Under Condition 9 of the Section 36 the CMS will be reviewed and commented on by the licensing authority and SNH, SEPA, MCA, NLB, the planning authority and any other such advisors that may be required at the discretion of the Scottish Ministers. The CMS must be approved by the licensing authority.

The CMS will be submitted to the licensing authority for distribution to the stakeholders and for approval.

Any changes the CMS deemed necessary (working methods or procedures) must be reviewed and approved by the ECoW before it is submitted for approval to the licensing authority (Figure 5).

Version control will be conducted by the revision review block on the front page of the CMS.

Consultation responses to the CMS version and amendments made to document due to those responses will be logged in Table 5 below.

Rev no.	Stakeholder	Comment	Action	Rev no.
1	xx	xx	xx	2

Table 5 CMS Stakeholder comments

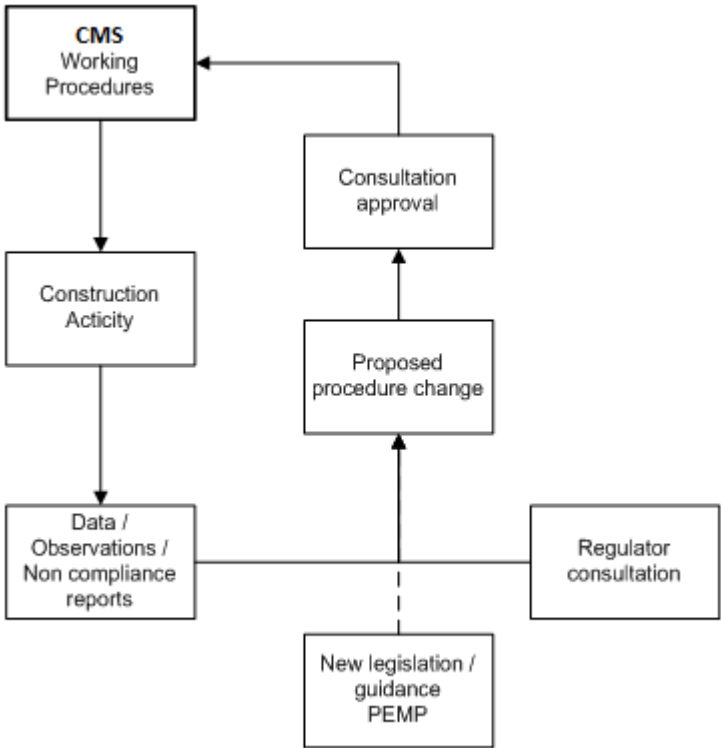




Figure 5 CMS Change Process

## 10 LIST OF ABBREVIATIONS

Abbreviation	
CDM	Construction (Design and Management) Regulations 2007
CMS	Construction Method Statement
COSHH	Control of Substance Hazardous to Health
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERCoP	Emergency Response and Co-operation Plan 
ERP	Emergency Response Procedures
EPS	European Protected Species
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HSE	Health, Safety and Environment
IOSH	Institute of Occupational Safety and Health
JNCC	Joint Nature Conservation Committee
NSP	Navigation Safety Plan
MCA	Maritime Coastguard Agency 
MHWS	Mean High Water Springs
ML	Marine Licence under the Marine (Scotland) Act 2010
MLWS	Mean Low Water Springs
MMO	Marine Mammal Observer
PC	Principal Contractor – James Fisher Marine Services



PEMP	Project Environmental Monitoring Programme
RAMS	Risk Assessments and Method Statements
SAC	Special Area of Conservation
SCIMS	Seal Corkscrew Injury Monitoring Scheme
SEIS	Supplementary Environmental Information Statement
SEPA	Scottish Environment Protection Agency
SHESQ	Safety, Health, Environment, Security and Quality
SNCA	Statutory Nature Conservation Agency
SNH	Scottish Natural Heritage
SPA	Special Protected Area
S36	Section 36 of the Electricity Act 1989
TSC	Turbine Submarine Cable
TSS	Turbine Support Structure
TTG	Tidal Turbine Generator
VMP	Vessel Management Plan

## Queiros J (Joao)

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**From:** Steven Driver <StevenD@nlb.org.uk>  
**Sent:** 25 March 2015 08:38  
**To:** Queiros J (Joao)  
**Cc:** Harris WA (William)  
**Subject:** RE: MeyGen Phase 1 - request for comments on post consent documents - HDD works  
**Attachments:** O8\_04\_149.doc

Hi Joao,

Please find attached Northern Lighthouse Board's response letter to request RE: MeyGen Phase 1 – request for comments on post consent documents - HDD works

If any further information is required please get in touch.

Yours

Steven Driver  
Coastal Inspector  
Northern Lighthouse Board  
Office Tel: 0131 473 3155  
Mobile Tel: [REDACTED]  
Email: [stevend@nlb.org.uk](mailto:stevend@nlb.org.uk)

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**From:** Joao.Queiros@scotland.gsi.gov.uk [mailto:Joao.Queiros@scotland.gsi.gov.uk]  
**Sent:** 26 February 2015 15:26  
**To:** navigation  
**Subject:** MeyGen Phase 1 – request for comments on post consent documents - HDD works

Dear Sir / Madam,

ELECTRICITY ACT 1989

*The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000*

*The Electricity (Applications for Consent) Regulations 1990*

**MARINE (SCOTLAND) ACT 2010**

*The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)*

MeyGen Ltd, having received consent under the above legislation and in order to discharge conditions of their Section 36 consent and condition of the Marine Licence number 04577/14/0, has submitted to the licensing authority the documents attached.

As a consultee on the Section 36 and/or on Marine Licence conditions, we would appreciate any comments you have on the **Navigation Safety Plan** and the **Construction Method Statement**, and their suitability to discharge the conditions. Please note that we do not seek comments on the Consent / Licence, nor on the conditions which will not be amended.

Please forward any comments to the Marine Scotland Licensing Operations Team, at [MS.MarineLicensing@scotland.gsi.gov.uk](mailto:MS.MarineLicensing@scotland.gsi.gov.uk) and before the **26<sup>th</sup> March 2015**.

The Decision Letter and Conditions, as well as other relevant documents, can be found on our [website](#).

Yours faithfully,  
Joao Queiros

**Joao Queiros**

[marinescotland](#)

Marine Renewables Casework Officer  
Marine Scotland Licensing Operations Team

Scottish Government  
Marine Laboratory | 375 Victoria Road  
Aberdeen, AB11 9DB  
Phone: +44 (0)1224 295 513 | S/B: +44 (0)1224 876 544  
[Joao.Queiros@scotland.gsi.gov.uk](mailto:Joao.Queiros@scotland.gsi.gov.uk) / [ms.marinelicensing@scotland.gsi.gov.uk](mailto:ms.marinelicensing@scotland.gsi.gov.uk)  
<http://www.scotland.gov.uk/marinescotland>

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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Web: [www.nlb.org.uk](http://www.nlb.org.uk)  
Phone: 0131 473 3100  
Fax: 0131 220 2093

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Gallanach Road  
Oban, Argyll  
PA34 4LS

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Fax: 01631 565871

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# Northern Lighthouse Board

**CAPTAIN PHILLIP DAY**  
**DIRECTOR OF MARINE OPERATIONS**

Your Ref: MeyGen Phase 1 – request for comments  
On post consent documents – HDD works  
Our Ref: SD/OPS/ML/O8-04-149

84 George Street  
Edinburgh EH2 3DA  
Switchboard: 0131 473 3100  
Fax: 0131 220 2093  
Website: [www.nlb.org.uk](http://www.nlb.org.uk)  
Email: [enquiries@nlb.org.uk](mailto:enquiries@nlb.org.uk)



Joao Queiros  
Marine Renewables Casework Officer  
Marine Scotland Licensing Operations Team  
Scottish Government  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

25 March 2015

Dear Joao

## **ELECTRICITY ACT 1989**

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, The Electricity (Applications for Consent) regulations 1990

## **MARINE (SCOTLAND) ACT 2010**

The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)

Thank you for your correspondence dated 26 February 2015 regarding MeyGen Ltd's request for comments on their Navigation Safety Plan and Construction Method Statement for Phase 1 (HDD marine works) in regard to their suitability to discharge the conditions given in their Marine Licence.

### **Navigation Safety Plan;**

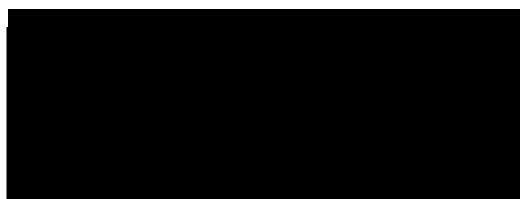
Northern Lighthouse Board is content with the Navigation Safety Plan for Phase 1 HDD marine works.

With regard to point **11. Temporary Construction Lighting and Marking** Northern Lighthouse Board will supply specifications for lit special mark buoys on request.

### **Construction Method Statement;**

Northern Lighthouse Board has no comment the Construction Method Statement for Phase 1 HDD marine works.

If any further information is required please do not hesitate to contact us.



**For the safety of all**

Certified to: ISO 9001:2000 · The International Safety Management Code (ISM) · OH SAS 18001

