

Project Title/ Location	MeyGen Tidal Energy Project, Phase 1a. Inner Sound.
Date:	20/05/2016

MeyGen Tidal Energy Project Phase 1

Navigation Safety Plan:

Construction Works



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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	21
6 meygen ltd. commitments and Legislative Commitments.....	25
7 Navigational Safety Measures	29
8 Construction Safety Zones.....	29
9 Notice (s) to Mariners and Radio Navigation Warnings.....	31
10 Anchoring Areas	33
11 Temporary Construction Lighting and Marking.....	33
12 Emergency Response	35
13 Buoyage	37
14 NSP Review and Consultation.....	37
15 References	39
16 List of Abbreviations	40
Appendix A - Example Notice to Mariners.....	42

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 updated 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 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.

THIS DOCUMENT ONLY CONSIDERS THE CONSTRUCTION WORKS. A NSP FOR THE HDD MARINE WORKS HAS BEEN APPROVED BY SCOTTISH MINISTERS (MEY-1A-40-HSE-002-NAVIGATIONSAFETYPLANHDD), FURTHER NSPs FOR, OPERATIONS AND MAINTENANCE AND DECOMMISSIONING WILL BE 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 9th 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 operated under the restriction placed on the Development by Condition 2 of the S.36 Consent.

This document, as agreed with the licensing authority, updates the original Navigational Safety Plan (MEY-1A-40-HSE-005-F-NSPConstructionWorks) submitted 29/07/2015, to include reference to using a Jack-Up Vessel (JUV) as well as, or instead of, a Dynamic Positioning Offshore Construction Vessel (DP OCV) during installation of the Turbine Support Structures (TSS) and Tidal Turbine Generators (TTGs).

Although the Turbine Subsea Cables (TSC) have now been installed (August 2015), to ensure consistency with the original NSP, reference to the TSCs is still included in this document as part of the overall ‘**Construction Works**’ for the Phase 1a infrastructure. **The Construction Works** also include 4 x Tidal Turbine Generators (TTG) and 4 x Gravity-base Turbine Support Structures (TSS).

MeyGen has produced a NSP for the HDD Marine Works (MEY-1A-40-HSE-002-F-NavigationSafetyPlanHDDWorks), which was consulted on and approved by Scottish Ministers.

The NSP will apply to the Construction Works and vessels / JUV 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 Construction 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 Construction Works.

Details of contacts relevant to the delivery of this plan are included in the Construction Phase Emergency Response Cooperation Plan (CPERCoP) and the Construction Phase Health and Safety Plan (CPH&SP).

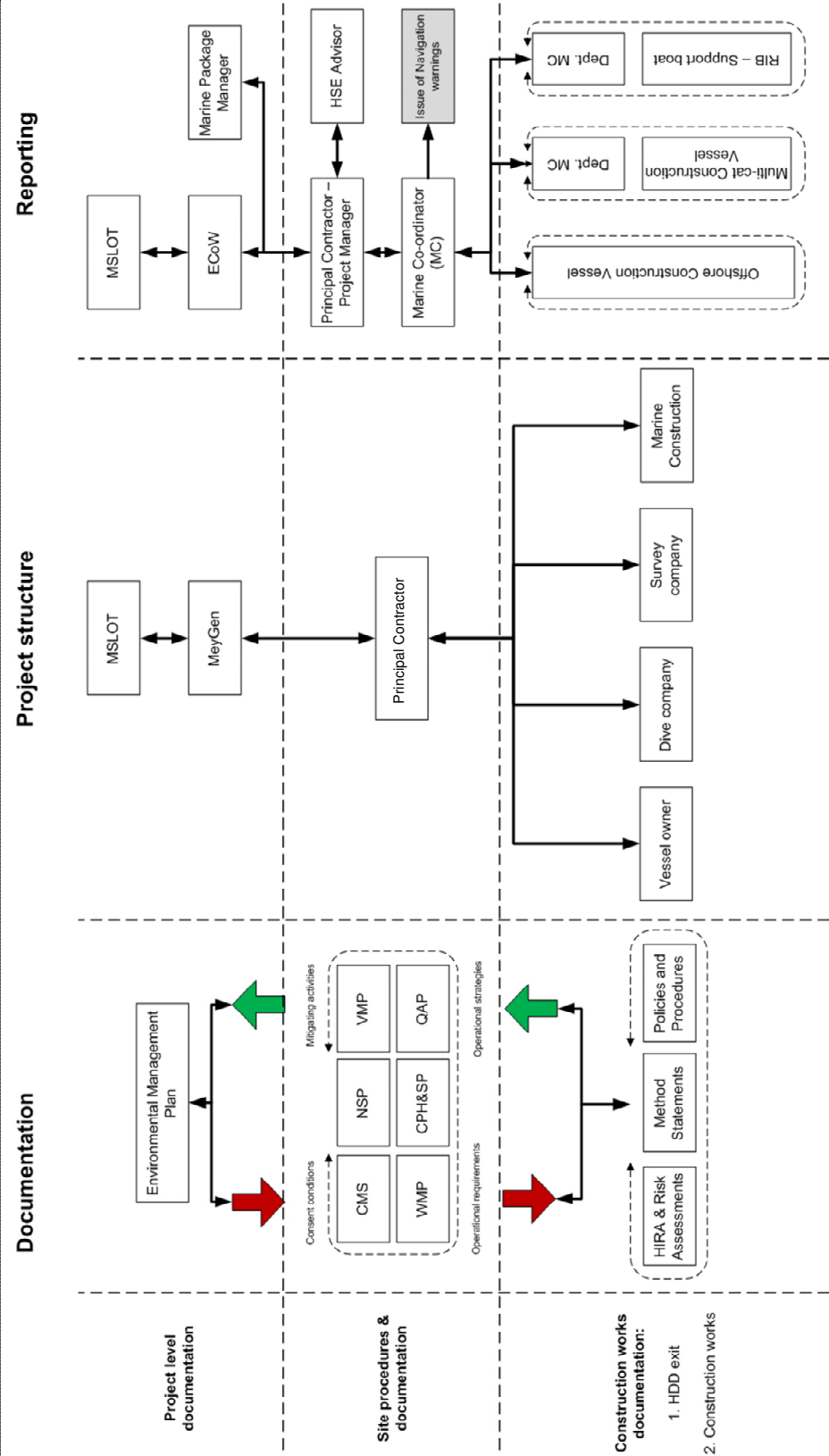


Figure 1 – Key interfaces and organisation chart

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 / JUV 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 / JUV 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

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

The HSE Advisor is nominated by the Principal Contractor. 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, Principal Contractor 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 / JUV Inductions and ensure content promotes effective marine operational management, specific works and site / vessel / JUV 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 / JUV 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 site / vessel / JUV HSE during construction operations.
- Ensure that all contractors have received and understood the Site / Vessel / JUV 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 / JUV.
- Coordinating, ensuring compliance for and recording all vessel / JUV 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 / JUV Master

- Overriding authority and responsibility to make decisions with respect to safe navigation of the vessel/ JUV and matters related to HSE.
- Dedicated watch-keeper on board the vessel / JUV, or nominate suitable qualified deputy.
- The persons present on board must adhere to the Vessel / JUV Master's instructions.

- Adhere to IMO International Regulations for the Prevention of Collisions at Sea, UK Merchant Shipping legislation (including ensuring appropriately trained and qualified crew and personnel on board) and other primary marine legislation or codes applicable to the vessel's / JUV size.
- Adhere to vessel / JUV owner's (or managers), charterer and clients standing navigational orders and operational guidelines subject to the overall safety of the vessel / JUV.
- Ensure that all contractors have received and understood the vessel / JUV 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 / JUV Master as soon as possible.

3.6 Communication

Environmental issues will be formally communicated through the arrangements on site / vessel / JUV in Table 1.

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 / JUV personnel
Pre commencement navigational meeting	Once before task commences	Vessel / JUV Master, Marine co-ordinator, Harbour Master.
Site / Vessel / JUV Induction	On first attendance at site / vessel / JUV <u>BEFORE</u> any work is undertaken	All persons attending site / vessel / JUV
Passage Planning Meeting	Prior to each departure	Master, Bridge Team

Table 1 Communication and Meetings

3.6.1 SHESQ and Progress Meeting

The PC shall convene weekly site / vessel / JUV meetings with all contractors on site / vessel / JUV 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 / JUV meetings. Each contractor on site / vessel / JUV 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 / JUV, 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 / JUV 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 / JUV Inductions

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

3.6.6 Site / vessel / JUV notice boards

Site / vessel / JUV notice boards will contain relevant site / vessel / JUV information relating to Health, Safety and Environmental issues. The site / vessel / JUV 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 / JUV:

- 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 (MEY-1A-40-HSE-004-D-TransportAuditSheet) (beginning of each month);
- Audit reports for the nature and quantity of all substances and objects deposited below MHWS (MEY-1A-70-HSE-005-D-DepositAuditSheet) (every 6 Months); and
- Marine Mammal reports (MEY-1A-70-TEM_009-MarineMammalReport) (daily during marine operations).

The PC will provide these in:

- Daily logs and reports when construction activities are taking place on site / vessels / JUV;
- Weekly progress reports; and
- 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 2 in will be required.

Training	Target Persons
Vessel / JUV 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, emergency preparedness and response and shipboard operations under STCW requirements)	All persons attending site / vessel / JUV (site / vessel / JUV personnel, contractors on site / vessel / JUV, 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 / JUV (site / vessel / JUV personnel, contractors on site / vessel / JUV) shall attend.
Job specific training e.g. <ul style="list-style-type: none"> • IOSH Working with Environmental Responsibilities / IOSH Managing Environmental Responsibilities. • Use of Pollution Prevention Equipment. • Site Waste Management. 	As identified for personnel with environmental responsibilities
Project specific information, including relevant elements of: <ul style="list-style-type: none"> • the EMP, CMS, NSP, VMP • Consent Conditions 	Briefed out and available for reference to all site / vessel / JUV staff.

Table 2 Training

Any person working on the site / vessel / JUV 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 Construction Works method and programme can be found in the Construction Method Statement (MEY-1A-40-HSE-004-D-CMSConstructionWorks).

4.1 Turbine Subsea Cable (TSC) Works Summary

The installation process will pull 4 x TSC from offshore via the HDD ducts to onshore and then lay the TSC along to the seabed to the 4 x TSS locations. Full installation details can be found in the Construction Method Statement (MEY-1A-40-HSE-004-F-CMSConstructionWorks).

The installation will use:

- 1 Cable Laying Vessel (CLV); and
- 1 multi-cat type vessel.

The key elements of the TCS installation are:

- Complete TSC route and TTG seabed survey using ROV / Drop-down camera from the multi-cat vessel prior to operations.
- Divers from a multi-cat will remove the HDD exit cap, install a bellmouth to the HDD liner and a pull the winch wire through the HDD liner.
- Mobilise the Cable Laying Vessel (CLV);
- The TSC will be mobilised direct from the cable manufacturer (Hartlepool);
- The CLV will transit to site, position and hold station to the north of HDD exit points.
- The TSC will be paid out from the CLV, floated and directed by a multi-cat vessel towards the HDD exit point.
- The TSC will be connected to the pre-installed winch wire in HDD bore.
- An onshore winch will then begin to pull the TSC through the HDD bore as it is paid out from the CLV.
- The Multi-cat will monitor progress and release the floats attached to the TSC.
- When the TSC has reached the onshore site it will be temporarily secured.
- The CLV will then begin to lay the TSC along the design route towards the TSS locations (Figure 2 and **Error! Reference source not found.3**).
- TSC is set down near the Turbine Support Structure (TSS) and laid down with a temporary dead man anchor.
- Cable stability measures will be marshalled from Scrabster Harbour, loaded onto a suitable DP OCV I.
- Cable stability measures will be overboarded from the DP OCV crane into position determined by previous analysis

- Demobilise vessels
- The process will be repeated for 4 x TSC.

4.2 Turbine Support Structure (TSS) Works Summary

The TSS Works includes the installation of the 4 x TSS and ballast blocks at their target locations. Full installation details can be found in the Construction Method Statement (MEY-1A-40-HSE-004-F-CMSConstructionWorks).

Two approaches are being considered for installation of the TSSs. These include:

- Installation Approach 1 (Jack-Up Vessel (JUV) and DP Offshore Construction Vessel (OCV)) vessel); and
- Installation Approach 2 (DP Offshore Construction Vessel (OCV)).

The key elements of the TSS installation process are:

4.2.1 Installation Approach 1 – JUV and DP OCV

- Mobilisation of JUV and DP OCV prepared with the necessary grillages and sea fastenings.
- The 2 x TSS tripod will be loaded from Nigg Energy Park onto the JUV for transit to site. Transit may be assisted by a tug with the JUV under tow between Nigg and the MeyGen site.
- The JUV will prepare for the installation operation at a suitable off-site holding location identified during the pre-installation survey.
- On arrival at the site, the JUV waits for slack tide before moving into position over the TSS location.
- The JUV will elevate to an operating height above the sea.
- Lifting rigging incorporating hydraulic release shackles and monitoring equipment (sub-sea cameras and acoustic beacons) will be used to lift and locate the TSS on the seabed.
- The sea fastenings would be released, the TSS weight taken by the JUV crane and moved overboard to wait for acceptable tidal flow conditions. The tidal rate would be closely monitored using live current data. As soon as the reducing tidal flow has reached the acceptable agreed rate, the lift would be lowered towards the seabed.
- A Remotely-Operated Vehicle (ROV) will provide a live video feed of the installation of the TSS onto the seabed.
- Following the installation of the TSS, a Platform Supply Vessel (PSV) would be used to bring 6 ballast blocks from Scrabster Harbour to the MeyGen site.
- The PSV would be mobilised and prepared with suitable grillages for the carriage of the ballast blocks.
- A shore crane would be used to load 6 ballast blocks onto the PSV for transport to the MeyGen site.
- Upon completing the installation of the TSS, the PSV would be called alongside the JUV and while the PSV holds station on DP OCV, the JUV would lift a pair of ballast blocks from the PSV and install these blocks onto the TSS.

- A Remotely-Operated Vehicle (ROV) will provide a live video feed of the installation of the ballast blocks on the TSS.
- This operation would be repeated three times.

The JUV would then jack down and move to the next installation location before the operation is repeated. The entire process would then be repeated to install the remaining two TSSs.

4.2.2 Installation Approach 2 – DP OCV

- Mobilisation of the DP OCV prepared with the necessary grillages and sea fastenings to suit carriage of the TSS.
- 2 x TSS are loaded directly from Nigg Energy Park onto DP OCV and transit to site.
- The DP OCV will prepare for the installation operation off site at a suitable holding location identified during the pre-installation survey.
- The DP OCV waits for slack tide before moving into position over a TSS location.
- The DP OCV will hold position over the TSS location using DP.
- A lift frame incorporating sub-sea cameras and acoustic beacons, will be used on the DP OCV along with traditional rigging. This would be attached to the TSS lifting points through the use of hydraulically actuated pins.
- The sea fastenings would be released, the TSS weight taken by the vessels crane and moved overboard to wait for acceptable tidal flow conditions. The tidal rate would be closely monitored using live current data. As soon as the reducing tidal flow has reached the acceptable agreed rate, the lift would be lowered towards the seabed.
- A Remotely-Operated Vehicle (ROV) will provide a live video feed of the installation of the TSS onto the seabed.
- The DP OCV will prepare the next tripod lift at a suitable holding location whilst waiting for the next slack tide.
- The DP OCV will complete the 2nd tripod lift using the same method.
- Following the 2nd tripod installation a second DP OCV will install the ballast blocks collected from Scrabster Harbour.
- This second vessel would be mobilised and prepared with suitable grillages for the carriage of the ballast blocks;
- A vessels crane would be used to load 6 ballast blocks onto the Seafasteners for transport to the MeyGen site.
- The DP OCV will sequentially install ballast blocks to the TSS. One per slack tide window. The DP OCV will plan and prepare for each subsequent lift in between slack tides.
- A Remotely-Operated Vehicle (ROV) will provide a live video feed of the installation of the ballast blocks on the TSS.
- This sequence would be repeated for the second TSS installed in the previous activity.

This sequence would then be repeated for the 3rd and 4th TSS and ballast blocks.

4.3 Tidal Turbine Generator (TTG) Works Summary

Two types of TTG will be installed during Phase 1a, 1 x Atlantis TTG and 3 x Andritz Hammerfest TTG. The installation methods are largely similar, with both involving positioning the TTG on the TSS and connecting mechanical and electrical connectors, however, some differences exist, largely related to methods of electrical connection.

As with the TSSs, two approaches for installation of the TTGs are being considered based on using either:

- 1 DP Offshore Construction Vessel (DP OCV); or
- 1 Jack-Up Vessel (JUV).

4.3.1 Atlantis TTG installation

The key elements of installation for the Atlantis Resources Limited (ARL) TTG are summarised below:

- TTG and associated components and equipment are assembled at Nigg Energy Park. A DP OCV / JUV is prepared with the necessary grillages and sea-fastening.
- TTG and equipment is loaded onto the DP OCV / JUV.
- The DP OCV / JUV transits to site from port. Transit of the JUV may be assisted by a tug with the JUV on tow between Nigg and the MeyGen site.
- The DP OCV / JUV will prepared for the installation operations at a suitable off-site holding location identified during the pre-installation survey.
- The DP OCV / JUV waits for slack tide before moving into position over the TSS location.
- The DP OCV will hold position over the TSS / TTG location on DP.
- The JUV will elevate to an operating height above the sea.
- The end of TSC is retrieved from the seabed, and fixed to a back-pack cable management system.
- The back-pack structure is installed onto the TSS using an ROV to monitor installation.
- An active lift frame incorporating sub-sea cameras, acoustic beacons, gyros and inclinometers will be used for the TTG. This would be attached to the TTG lifting points through the use of hydraulically actuated pins.
- When approaching the slack tide the turbine would be moved overboard to wait for acceptable tidal flow conditions. The tidal rate would be closely monitored using live current data. As soon as the reducing tidal flow has reached the acceptable agreed rate, the lift would be lowered towards the substructure.
- The TTG connection will be monitored using the active lift frame, with small positional corrections being made by crane driver.
- Once the TTG is positioned on the TSS, the lift frame would be remotely disengaged from the TTG lifting points and recovered to the surface.
- Installing the TTG on the TSS the electrical connection in the back-pack is made.
- The DP OCV / JUV would then move off site with the installation complete.

A Remotely-Operated Vehicle (ROV) will provide a live video feed of the installation of the TSS onto the seabed and ensure the installation parameters are met.

4.3.2 Andritz Hammerfest Hydro (AHH) TTG installation

The key elements of installation for the Atlantis TTG are summarised below:

- TTG with TSC tail and equipment are assembled at Scrabster Harbour.
- A DP OCV / JUV is prepared with the necessary grillages and sea-fastening.
- TTG and equipment is loaded onto the DP OCV / JUV.
- The DP OCV / JUV transits to site from port. Transit of the JUV may be assisted by a tug with the JUV on tow between Nigg and the MeyGen site.
- The DP OCV / JUV waits for slack tide before moving onto DP station at the TSS location.
- The DP OCV will hold position over the TSS / TTG location on DP.
- The JUV will elevate to an operating height above the sea.
- The TSC is retrieved to the vessel / JUV deck and the TTG cable tail is connected to the TSC.
- An active lift frame incorporating sub-sea cameras, acoustic beacons, gyros and inclinometers will be used for the TTG. This would be attached to the TTG lifting points through the use of hydraulically actuated pins.
- When approaching the slack tide, the turbine would be moved overboard to wait for acceptable tidal flow conditions. The tidal rate would be closely monitored using live current data. As soon as the reducing tidal flow has reached the acceptable agreed rate, the lift would be lowered towards the substructure.
- The TTG connection will be monitored using the active lift frame, with small positional corrections being made by crane driver.
- The TTG and TSC tail are lowered simultaneously using a tandem lift operation. The TTG is installed on the TSS.
- The end of TSC is retrieved from the seabed via an ROV.
- Both TSC and TSC tail will be clamped on deck and a dry-mate jointing operation commences.
- The connected TSC will then be laid back on the seabed
- OCV / JUV is demobilised.
- The operation will be repeated for 3 x Andritz Hammerfest TTG.

4.4 TSS / TTG locations

The position / locations of the TTGs are shown in Table 3 and Figure 2. Turbine No.	Model	Eastings	Northings
1	AHH 1	491819.6 E	6502207.8 N
2	AHH 2	491776.6 E	6502123.6 N
3	AHH 3	492026.2 E	6502159.8 N
4	ARL 1	492008.0 E	6502020.0 N

Table 3 TTG locations – UTM30 / WGS84

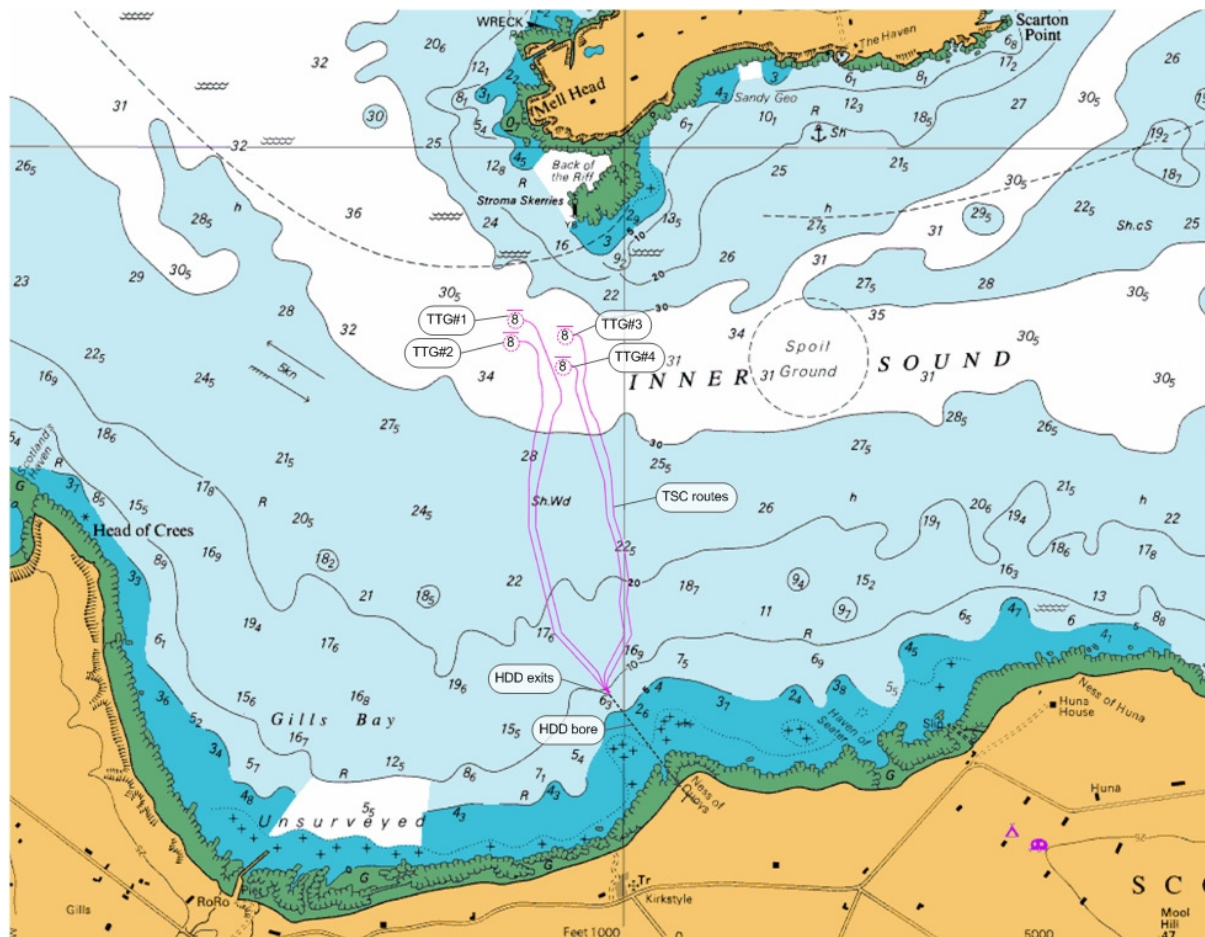


Figure 2 TSC route and TTG positions

4.5 Programme

The programme for TSS and TTG installation is presented in Figure 3 below.



Figure 3 TSS and TTG installation 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 . 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.

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 . An illustration of the relative traffic density within the area is presented in Figure 5 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 6. 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 in the Inner Sound by type and draught is presented in Figure 7 and Figure 8. Draughts for 62 of the 63 vessels have therefore been ascertained.

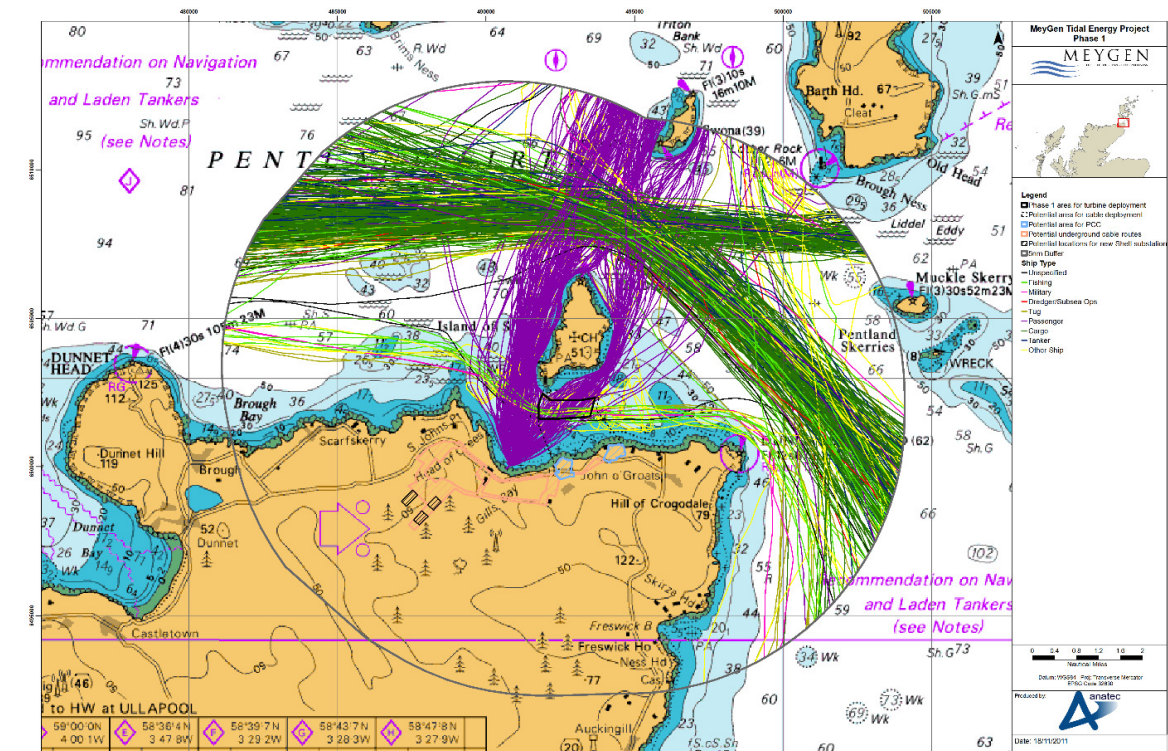


Figure 4 AIS tracks by ship type within 5nm of the Development (Summer, 2011)

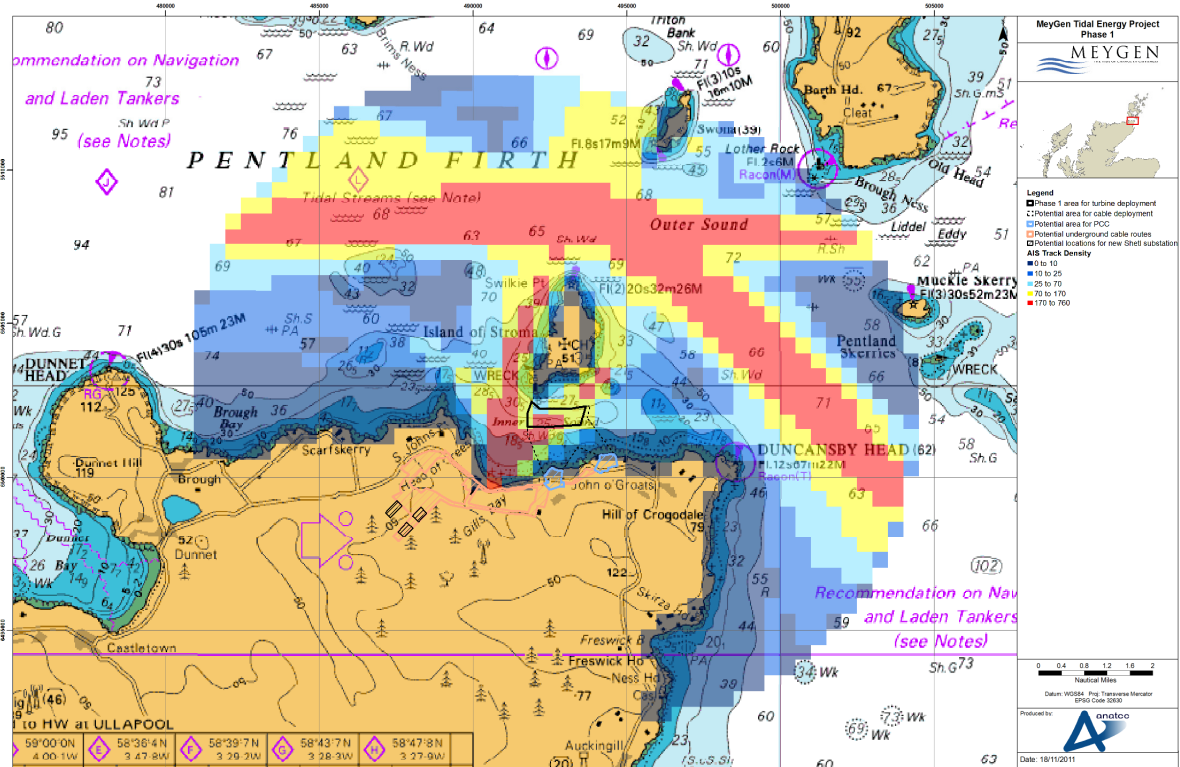


Figure 5 AIS density (2010 and 2011)

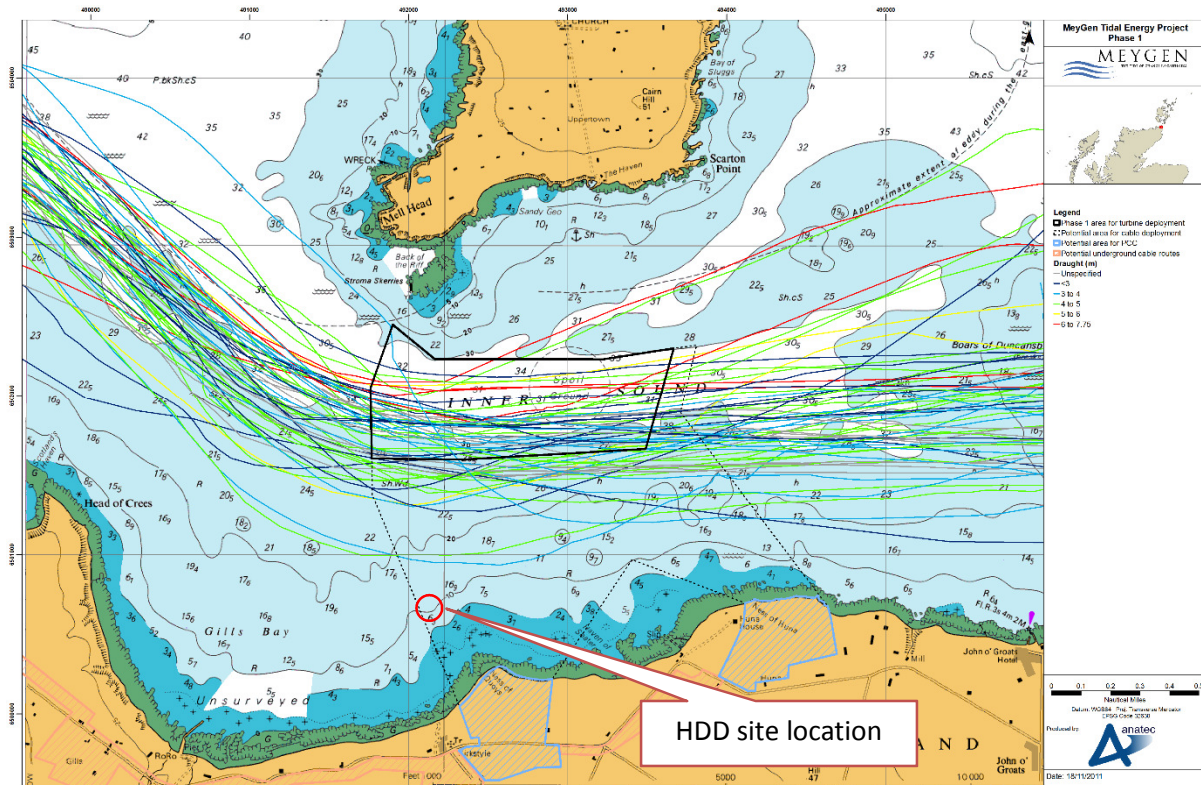


Figure 8 AIS tracks by draught within Inner Sound (2010 and 2011)

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 (ES) 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
Collision risk with work vessel	
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
Traffic re-routing due to work vessels and associated safety zones	
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	Section 8

zone will then 'roll on' to cover the next specific location (not the whole Development area).	
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
Working vessel gets into difficulty	
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, e.g., on AIS and reporting via VHF.	Section 3 Marine 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 Construction Works, are in Table . 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 Construction Works as detailed in the CMS. CMS for the Construction 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 Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response issues.
- f) MGN 372 Offshore Renewable Energy Installations (OREIs):Guidance to Mariners Operating in the Vicinity of UK OREIs
- g) 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 Construction 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

8.1 TSC Installation

The TSC Installation requires a Multicat and CLV. Works will not specify a safety zone, but the vessel will request marine traffic to provide the region a suitably wide berth.

The 3 point mooring system for the Multicat will have a radius of 75m with the vessel located close to the centre of the mooring spread (Figure).

- 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 'Navtex' 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.

8.2 TSS /TTG Installation

The TSS / TTG installation requires a single DP vessel / JUV. Works will not specify a safety zone, but the DP OCV/ JUV will have restricted movement when operating and request marine traffic to provide the region a suitably wide berth.

- 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 'Navtex' 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 / JUV 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.

The DP OCV / JUV will be located on the TTG locations for the installation of the TSS and TTG (**Error! Reference source not found.**3 and Figure 2).

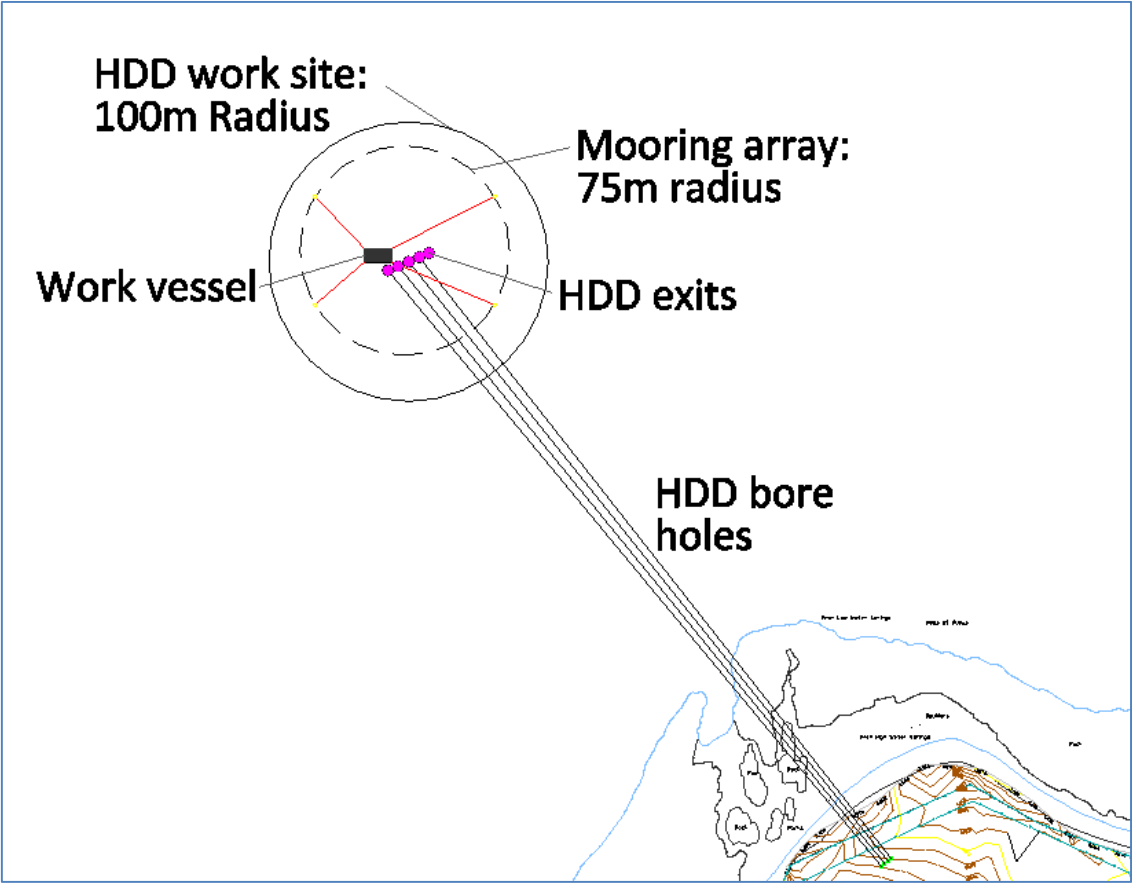


Figure 9 HDD exit works site layout

9 NOTICE (S) TO MARINERS AND RADIO NAVIGATION WARNINGS

For all Construction Works, Notice to Mariners (NtM's) will be issued stating:

- Contractor undertaking works and Contractor contact details;
- Position, date and duration of works;
- Vessels / JUV;
- Bouyage and marking;
- Specific navigation information and planned communication / warnings; and
- 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	Redacted
UKHO	
UKHO	
HM Coastguard Shetland Maritime Rescue Co-ordination Centre	
Marine Scotland Licensing Operations Team	
Pentland Ferries	
Scrabster Harbour	
Wick Harbour	
Gills Bay Harbour	
Orkney Island Council Marine Services	
Northlink Ferries	
Northern Lighthouse Board	
Scottish Fishermen's Federation	
Orkney Fishermen's Society	
Orkney Fisheries Association	
Scottish Pelagic Fishermen's Association	
Royal Yachting Association	
Holy Loch Port	
Pentland Canoe Club	
Caithness Canoe Club	
MeyGen Ltd.	
MeyGen Ltd.	
MeyGen Ltd.	
MeyGen Ltd.	

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

Vessels / JUV 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 Construction 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 Construction Works are in an area of high tidal flows in the Inner Sound.

It is not intended that any vessels would anchor near to the Construction Works site for any other reason than to carry out the dive operations during the TSC installation phase only.

The TSC installation will use a Multicat vessel and 3 point mooring whilst carrying out the diving operations at the HDD exit location (See Figure for details on mooring spread).

Gills Bay (1.6km) will be used as a safe haven for the Multicat vessels whilst Scrabster (27km) will be used for the larger DP OCV / JUV (see MEY-1A-40-HSE-006-F-ConstructionWorksVMP).

11 TEMPORARY CONSTRUCTION LIGHTING AND MARKING

11.1 TSC Installation

11.1.1 Multi-Cat

A construction site for the Construction Works will be specified around the site to ensure the safety of the vessels operating at that time.

The Multicat vessel will be used for dive related operations. 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.

Rule 27 - Vessels not under command or restricted in their ability to manoeuvre (Figure 20).

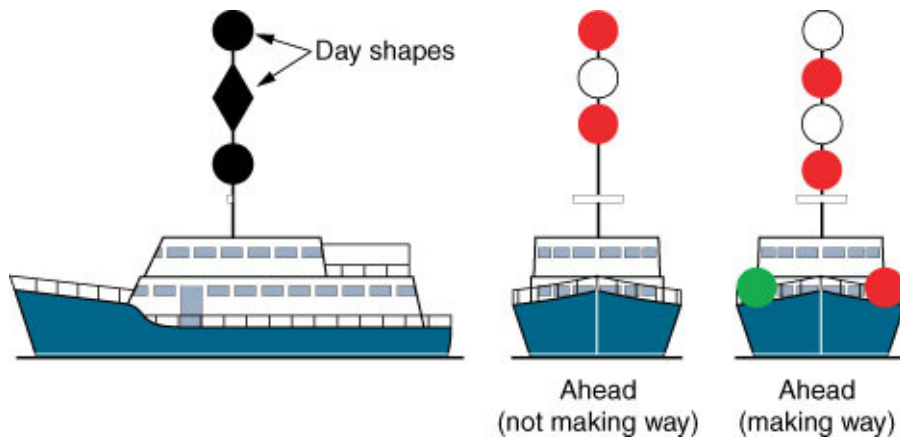
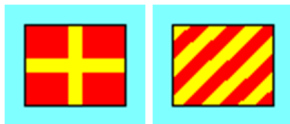


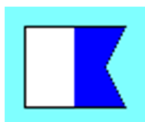
Figure 20 Rule 27 diagram

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 3 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.

11.1.2 CLV

For a Vessel Restricted in Their Ability to Manoeuvre:

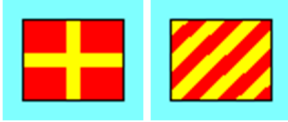
By day shapes consisting of a ball / diamond/ ball where it can best be seen, and if required all-round lights being Red/White/Red where they can best be seen.

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

Rule 27 - Vessels not under command or restricted in their ability to manoeuvre (Figure 20).

Additionally, the following Interco signals may be flown:

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



11.2 TSS and TTG Installation

For a Vessel Restricted in Their Ability to Manoeuvre (including a JUV):

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.

Rule 27 - Vessels not under command or restricted in their ability to manoeuvre (including JUVs) (Figure 20).

Additionally, the following Interco signals may be flown:

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



12 EMERGENCY RESPONSE

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

12.1 Vessel / JUV 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 / JUV
- 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 has been 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 agreed with the MCA prior to the commencement of the works. The content and layout of this supplement is designed to comply with the MCA requirements for the Emergency Response Cooperation Plan. (Guidance dated November 4th 2014).

The ERCoP will be following relevant standards to take account of:

- 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

The MeyGen Construction Phase Emergency Response Cooperation Plan, (CPERCOP), has been designed to be a simple document, with the minimum possible amount of descriptive background information and supporting material. The plan is a supplement to the Emergency Response Plan which is drawn up to identify controls for site specific emergency scenarios. Its purpose is to present such supporting information, where necessary, in a separate document, so that the users of the Emergency Response Plan are not burdened with unnecessary information (FSH-1A-40-HSE-013-D-ConstructionPhaseEmergencyRespCooperationPlan).

Given that the ERCoP is a live document relevant contact details for the Principal Contractor are included the ERCoP. This ensures contact details for the ERCoP are fully up to date at the time the works commence.

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

13.1 TSC Installation

The TSC installation requires a 3 point mooring system for the Multicat vessel. The moorings will be laid on the marine works for HDD 1 (See HDD Marine Works documents). These will remain in place until the completion of marine works for the TSC installation. The vessel will mobilise and demobilise from these mooring for each dive operation in between.

13.2 TSS / TTG Installation

There is no requirement for buoys for the TSS and TTG installation works.

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 3).

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

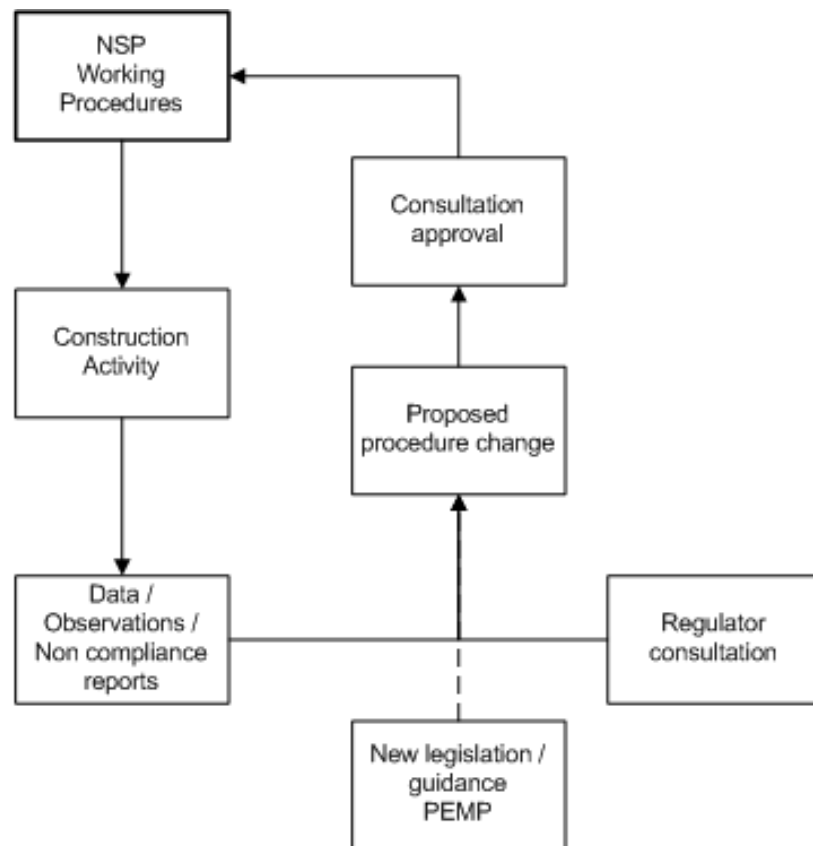


Figure 31 NSP Change Process

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	
ARL	Atlantis Resources Limited
AHH	Andritz Hammerfest Hydro
CDM	Construction (Design and Management) Regulations 2007
CLV	Cable Laying Vessel
CMS	Construction Method Statement
COSHH	Control of Substance Hazardous to Health
DP OCV	Dynamic Positioning Offshore Construction Vessel
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERCoP	Emergency Response 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
JUV	Jack-Up Vessel
NSP	Navigation Safety Plan
MCA	Maritime and Coastguard Agency


Abbreviation	
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
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
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978
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	Redacted
Booths Park House	
Chelford Road	Redacted
Knutsford	
Cheshire	Redacted
WA16 8WZ	
Work shall be undertaken by:	Leask Marine Limited Redacted
All positions to be quoted in World Geodetic System 1984 [WGS84], lat. / long., in deg./ minutes. & 3 decimal places of minutes.	
Works schedule and purpose	
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.	
<u>Vessel/s onsite</u>	
MV C-Salvor	

Maximum extent of projected works	<p>058° 38' 47.80856" N</p> <p>003° 07' 59.95327" W</p> <p>Moorings will be located within xm of the above coordinates</p>	
Buoys and markers to be displayed on site	<p>Mooring buoys will be deployed / recovered for the duration</p> <p>Colour – Yellow</p>	
	Light	Yes
	Flash Pattern	FLY 
Area to be avoided	As stated above	
Seabed post operations	xxx	
Instructions to vessels	<p>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.</p> <p>Mariners are requested to give the works a wide berth</p>	

Further information

Fig1 Area of operations site map

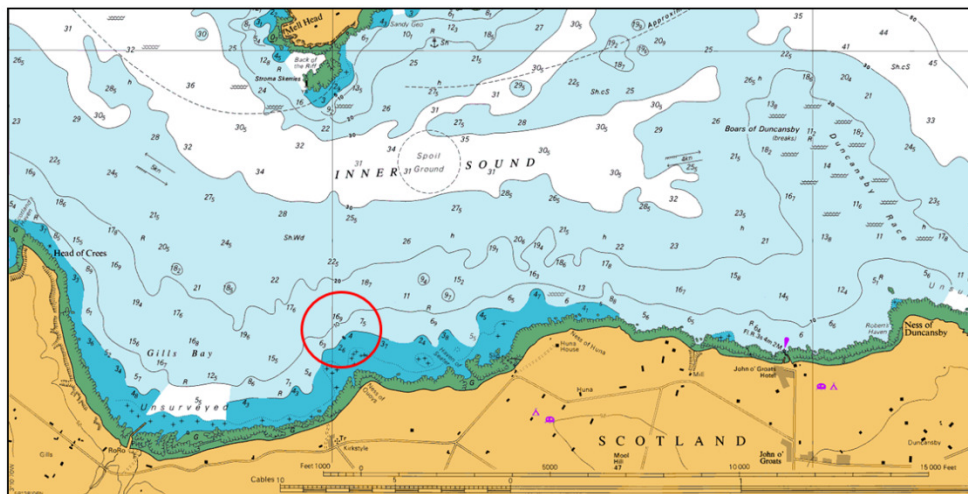


Fig2 C-Salvor for visual identification purposes.



Name	Red acted	Signature	Red	Date	19/12/2014

Promulgation List

Contact

Email

Redacted

UKHO

UKHO

UKHO

HM Coastguard Shetland Maritime Rescue
Co-ordination Centre

Marine Scotland Licensing Operations
Team

Northern Lighthouse Board

Pentland Ferries

Scrabster Harbour

Wick Harbour

Gills Bay Harbour

Orkney Island Council Marine Services

Northlink Ferries

Scottish Fishermen's Federation

Orkney Fishermen's Society

Orkney Fisheries Association

Scottish Pelagic Fishermen's Association

Redacted

Royal Yachting Association

Holy Loch Port

Pentland Canoe Club

Caithness Canoe Club

MeyGen Ltd.

MeyGen Ltd.

MeyGen Ltd.

MeyGen Ltd.