marinescotland

T:+44 (0)1224 295579 F: +44 (0)1224 295524
E: MS.MarineLicensing@scotland.gsi.gov.uk

The Scottish Government

# Meygen, Phase 1, Tidal Turbine Array, Inner Sound, Pentland Firth

## Scoping Opinion

## Contents

**THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2000.**

**SCOPING OPINION FOR THE PROPOSED SECTION 36 APPLICATION FOR MEYGEN, PHASE 1, TIDAL TURBINE ARRAY, INNER SOUND, PENTLAND FIRTH**

## 1. Introduction

I refer to your letter of 26th May 2011 requesting a scoping opinion under the Electricity Works (Environmental Impact Assessment) (Scotland) (EIA) Regulations 2000 enclosing a scoping report.

Any proposal to construct or operate an offshore power generation scheme with a capacity in **excess of 1 megawatt** requires Scottish Ministers' consent under section 36 of the Electricity Act 1989.

Schedule 9 of the Act places on the developer a duty to "have regard to the desirability of preserving the natural beauty of the countryside, of conserving flora, fauna and geological and physiological features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest". In addition, the developer is required to give consideration to the Scottish Planning Policy on Renewable Energy other relevant Policy and National Policy Planning Guidance, Planning Advice Notes, the relevant planning authority's Development Plans and any relevant supplementary guidance.

Under the Electricity Works (Environmental Impact Assessment)(Scotland)(EIA) Regulations 2000, Scottish Ministers are required to consider whether any proposal for an offshore device is likely to have a significant effect on the environment. Scottish Ministers have considered your request for an opinion on the proposed content of the Environmental Statement (ES) in accordance with regulations and in formulating this opinion Scottish Ministers have consulted with the relevant organisations.

Please note that the EIA process is vital in generating an understanding of the biological and physical processes that operate in the area and that may be impacted by the proposed project. We would however state that references made within the scoping document with regard to the significance of impacts should not prejudice the outcome of the EIA process.

It is important that any devices to exploit renewable energy sources should be accompanied by a robust assessment of its environmental impacts. The assessment should also consider how any negative environmental impacts could be avoided or minimised, through the use of mitigating technologies or regulatory safeguards, so that the quality and diversity of Scotland's wildlife and natural features are maintained or enhanced. Scottish Ministers welcome the commitment given in the report that the EIA process will identify mitigation measures in order to avoid, minimise or reduce any adverse impacts. Marine Scotland Licensing Operations Team (MS-LOT) would suggest that the range of options considered should be informed by the EIA process in order that these objectives can be achieved. Consultation with the relevant nature conservation agencies is essential and it is advised that this is undertaken as appropriate.

## 2. Aim of this Scoping Opinion

Scottish Ministers are obliged under the EIA regulations to respond to requests from developers for a scoping opinion on outline design proposals.

The purpose of this document is to provide advice and guidance to developers which have been collated from expert consultees whom the Scottish Government (SG) has consulted. It should provide clear advice from consultees and enable developers to address the issues they have identified and address these in the EIA process and the ES associated with the application for section 36 consent.

## 3. Description of development

The Project will consist of up to 398 1 MW tidal turbines located in the Inner Sound of the Pentland Firth off the northern coast of Scotland between Caithness on the Scottish mainland and the island of Stroma. The proposed project will be developed in phases. Phase 1 will comprise an initial Phase 1a deployment 20 turbines (20MW), followed by a subsequent Phase 1b which will deploy a further 65 turbines (65MW). Utilising a 'survey, deploy and monitor strategy', the initial array will provide information on the interactions between the array and the environment, increasing the knowledge for subsequent phases. Phase 2, will comprise the build out of the remainder of the project and will be subject to a separate consent application.

## 4. Land Use Planning

The Scottish Government's planning policies are set out in the National Planning Framework, Scottish Planning Policy, Designing Places and Circulars.

The National Planning Framework is the Scottish Government's Strategy for Scotland's long term spatial development.

Scottish Planning Policy (SPP) is a statement of Scottish Government policy on land use planning and contains:

- the Scottish Government's view of the purpose of planning,
- the core principles for the operation of the system and the objectives for key parts of the system,
- statutory guidance on sustainable development and planning under Section 3E of the Planning etc. (Scotland) Act 2006,
- concise subject planning policies, including the implications for development planning and development management, and
- the Scottish Government's expectations of the intended outcomes of the planning system.

Other land use planning documents which may be relevant to this proposal include:

- PAN 42: Archaeology–Planning Process and Scheduled Monument Procedures
- PAN 45: 2002 Renewable Energy Technologies
- PAN 50: Controlling the Environmental Effects of Surface Mineral Workings
- PAN 51: Planning, Environmental Protection and Regulation
- PAN 56: Planning and Noise
- PAN 58: Environmental Impact Assessment
- PAN 60: Planning for Natural Heritage

- PAN 62: Radio Telecommunications
- PAN 68: Design Statements
- PAN 69: Planning and Building Standards Advice on Flooding
- PAN 75: Planning for Transport
- PAN 79: Water and Drainage
- Marine Guidance Note 371 (M)
- The Highland Structure Plan
- West Highland and Islands Local Plan (WHILP).

## 5. Natural Heritage

Scottish Natural Heritage (SNH) has produced a service level statement (SLS) for renewable energy consultation. This statement provides information regarding the level of input that can be expected from SNH at various stages of the EIA process. Annex A of the SLS details a list of references, which should be fully considered as part of the EIA process. A copy of the SLS and other vital information can be found on the renewable energy section of their website – www.snh.org.uk

## 6. General Issues

Economic Benefit

The concept of economic benefit as a material consideration is explicitly confirmed in the consolidated SPP. This fits with the priority of the Scottish Government to grow the Scottish economy and, more particularly, with our published policy statement "Securing a Renewable Future: Scotland's Renewable Energy", and the subsequent reports from the Forum for Renewables Development Scotland (FREDS), all of which highlight the manufacturing potential of the renewables sector. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction operation and decommissioning of the development.

## 7. Contents of the Environmental Statement (ES)

Format

Developers should be aware that the ES should also be submitted in a user-friendly PDF format which can be placed on the Scottish Government website. A description of the methodology used in assessing all impacts should be included.

It is considered good practice to set out within the ES the qualifications and experience of all those involved in collating, assessing or presenting technical information.

Non Technical Summary.

This should be written in simple non-technical terms to describe the various options for the proposed development and the mitigation measures against the potential adverse impacts which could result. Within an ES it is important that all mitigating measures should be:

- clearly stated;
- fully described with accuracy;
- assessed for their environmental effects;
- assessed for their effectiveness;
- their implementation should be fully described;
- how commitments will be monitored; and

- if necessary, how they relate to any consents or conditions.

Given that the layout and design are still developing and evolving, the exact nature of the work that is needed to inform the EIA may vary depending on the design choices. The EIA must address this uncertainty so that there is a clear explanation of the potential impact of each of the different scenarios. It should be noted that any changes produced after the ES is submitted may result in the requirement of further environmental assessment and public consultation if deemed to be significant by the licensing authority.

## Baseline Assessment and Mitigation

Refer to Annex 1 for consultee comments on specific baseline assessment and mitigation.

### 8. Archaeology and Cultural Heritage

General Principles

The ES should address the predicted impacts on the historic environment and describe the mitigation proposed to avoid or reduce impacts to a level where they are not significant. Historic environment issues should be taken into consideration from the start of the site selection process and as part of the alternatives considered.

National policy for the historic environment is set out in:

- Scottish Planning Policy *Planning and the Historic Environment* at*:* http://www.scotland.gov.uk/topics/built-environment/planning/National-planning-policy/themes/historic
- The Scottish Historic Environment Policy (SHEP) sets out Scottish Ministers strategic policies for the historic environment and can be found at: http://www.historic-scotland.gov.uk/index/heritage/policy/shep.htm

Amongst other things, SPP paragraph 110–112, Historic Environment, stresses that scheduled monuments should be preserved *in situ* and within an appropriate setting and states that developments must be managed carefully to preserve listed buildings and their settings to retain and enhance any special architectural or historic features of interest. Consequently, both direct impacts on the resource itself and indirect impact on its setting must be addressed in any EIA undertaken for this proposed development. Further information on setting can be found in the following document: Managing Change in the Historic Environment http://www.historic-scotland.gov.uk/managing-change-consultation-setting.pdf.

Historic Scotland recommend that you engage a suitably qualified archaeological/historic environment consultants to advise on, and undertake, the detailed assessment of impacts on the historic environment and advise on appropriate mitigation strategies.

## Baseline Information

Information on the location of all archaeological/historic sites held in the National Monuments Record of Scotland, including the locations and, where appropriate, the extent of scheduled monuments, listed buildings and gardens and designed landscapes can be obtained from www.PASTMAP.org.uk

Data on scheduled monuments, listed buildings and properties in the care of Scottish Ministers can also be downloaded from Historic Scotland's Spatial Data Warehouse at

http://data.historic-scotland.gov.uk/. For any further information on those data sets and for spatial information on gardens and designed landscapes and World Heritage Sites which are not currently included in Historic Scotland's Spatial Data Warehouse please contact hsgimanager@scotland.gsi.gov.uk. Historic Scotland are also available to provide any further information on all such sites.

## 9. Navigation

The ES should include the following details on the possible impact on navigation for both commercial and recreational craft.

- Collision Risk
- Navigational Safety
- Risk Management and Emergency response
- Marking and lighting of Tidal Site and information to mariners
- Effect on small craft navigational and communication equipment
- Weather and risk to recreational craft which lose power and are drifting
- In adverse conditions
- Evaluation of likely squeeze of small craft into routes of larger
- Commercial vessels.
- Visual intrusion and noise

## 10. Ecology, Biodiversity and Nature Conservation

Refer to Annex 1 for comments from advisors on ecology, biodiversity and nature conservation.

### Species

The ES should show that the applicants have taken account of the relevant wildlife legislation and guidance, namely

- Marine (Scotland) Act 2010
- Council Directives on The Conservation of Natural Habitats and of Wild Flora and Fauna
- Conservation of Wild Birds (commonly known as the Habitats and Birds Directives)
- Wildlife & Countryside Act 1981
- Wildlife and Natural Environment (Scotland) Act 2011
- Nature Conservation (Scotland) Act 2004
- Protection of Badgers Act 1992
- 1994 Conservation Regulations
- Scottish Executive Interim Guidance on European Protected Species
- Development Sites and the Planning System and the Scottish Biodiversity Strategy and associated Implementation Plans

In terms of the SG Interim Guidance, applicants must give serious consideration to/recognition of meeting the three fundamental tests set out in this Guidance. **It may be worthwhile for applicants to give consideration to this immediately after the completion of the scoping exercise.**

It needs to be categorically established which species are present on and near the site, and where, before the application is considered for consent. The presence of protected species such as Schedule 1 Birds or European Protected Species must be included and considered

as part of the application process, not as an issue which can be considered at a later stage. Any consent given without due consideration to these species may breach European Directives with the possibility of consequential delays or the project being halted by the EC. Likewise the presence of species on Schedules 5 (animals) and 8 (plants) of the Wildlife & Countryside Act 1981 should be considered where there is a potential need for a licence under Section 16 of that Act.

## 11. Water Environment

Developers are strongly advised to consult with the Scottish Environment Protection Agency (SEPA), at an early stage. SEPA are the regulatory body responsible for the implementation of the Controlled Activities Regulations (CAR), to identify if a CAR licence is necessary and clarify the extent of the information required by SEPA to fully assess any licence application.

All applications (including those made prior to 1 April 2006) made to Scottish Ministers for consent under section 36 of the Electricity Act 1989 to construct and operate a electricity generating station are required to comply with new legislation. In this regard MS-LOT will be advised by SEPA and will have regard to this advice in considering any consent under section 36 of the Electricity Act 1989.

SEPA produces a series of Pollution Prevention Guidelines (PPG), several of which should be fully utilised in preparation of an ES and during project development. These include SEPA's guidance note PPG6: Working at Construction and Demolition Sites, PPG5: Works in, near or liable to affect Watercourses, PPG2 Above ground storage tanks, and others, all of which are available on SEPA's website at http://www.sepa.org.uk/about_us/publications/guidance/ppgs.aspx. SEPA would look to see specific principles contained within PPG notes to be incorporated within mitigation measures identified within the ES rather than general reference to adherence to the notes.

Prevention and clean-up measures should also be considered for each of the following stages of the development;

- Construction.
- Operation.
- Decommissioning.

Construction contractors may be unaware of the potential for impacts such as those listed below but, when proper consultation with the local fishery board is encouraged at an early stage, many of these issues can be averted or overcome.

- increases in silt and sediment loads resulting from construction works.
- point source pollution incidents during construction.
- obstruction to upstream and downstream migration both during and after construction.
- disturbance of spawning beds during construction - timing of works is critical.
- drainage issues.
- sea bed and land contamination

The ES should identify location of, and protective/mitigation measures in relation to, all private water supplies within the catchments impacted by the scheme, including modifications to site design and layout.

Developers should also be aware of available CIRIA guidance on the control of water pollution from construction sites and environmental good practice (www.ciria.org). Design

guidance is also available on river crossings and migratory fish (SE consultation paper, 2000) at http://www.scotland.gov.uk/consultations/transport/rcmf-00.asp.

## 12. Other Material Issues

### Traffic Management

The ES should provide information relating to the preferred route options for delivering equipment etc. via the trunk road network. The EIA should also address access issues, particularly those impacting upon the trunk road network; in particular, potential stress points at junctions, approach roads, borrow pits, bridges, site compound and batching areas etc.

Where potential environmental impacts have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by stating in the report:

- the work has been undertaken, e.g. transport assessment;
- what this has shown i.e. what impact if any has been identified, and
- why it is not significant.

## 13. General ES Issues

In the application for consent the applicant should confirm whether any proposals made within the ES, e.g. for construction methods, mitigation, or decommissioning, form part of the application for consent.

Consultation

Developers should be aware that the ES should also be submitted in a user-friendly PDF format which can be placed on the SG website. Developers are asked to issue ES directly to consultees. Consultee address lists can be obtained from MS LOT who will also advise on the number of hardcopies required for onward distribution.

Where the developer has provided Scottish Ministers with an ES, the developer must publish their proposals in accordance with part 4 of the Environmental Impact Assessment (Scotland) Regulations 2000. Information and guidance, including the specific details of the adverts to be placed in the press, can be obtained from MS LOT; ms.marinelicensing@scotland.gsi.gov.uk

Gaelic Language

Where s36 applications are located in areas where Gaelic is spoken, developers are encouraged to adopt best practice by publicising the project details in both English and Gaelic.

Ordinance Survey (OS) Mapping Records

Developers are requested at application stage to submit a detailed OS plan showing the site boundary and all turbines, access tracks and onshore supporting infrastructure in a format compatible with the SG's Spatial Data Management Environment (SDME), along with appropriate metadata. The SDME is based around Oracle RDBMS and ESRI ArcSDE and all incoming data should be supplied in ESRI shape file format. The SDME also contains a metadata recording system based on the ISO template within ESRI ArcCatalog (agreed standard used by the SG); all metadata should be provided in this format.

Difficulties in Compiling Additional Information

Developers are encouraged to outline their experiences or practical difficulties encountered when collating/recording additional information supporting the application. An explanation of any necessary information not included in the ES should be provided, complete with an indication of when an addendum will be submitted.

Application and ES

A developer checklist is enclosed with this opinion to assist developers in consideration and collation of the relevant ES information to support their application. In advance of publicising the application, developers should be aware this checklist will be used by the licensing authority in consideration of formal applications.

Consent Timescale and Application Quality

In December 2007, Scottish Ministers announced an aspirational target to process new section 36 applications within a 9 month period, provided a Public Local Inquiry (PLI) is not held. This scoping opinion is specifically designed to improve the quality of advice provided to developers and thus reduce the risk of additional information being requested and subject to further publicity and consultation cycles.

Developers are advised to consider all aspects of this scoping opinion when preparing a formal application to reduce the need to submit further information in support of your application. The consultee comments presented in this opinion are designed to offer an opportunity to consider all material issues relating to the development proposals.

In assessing the quality and suitability of applications, the licensing authority will use the enclosed checklist and scoping opinion in assessment of the application. Developers are encouraged to seek advice on the contents of ES prior to applications being submitted, although this process does not involve a full analysis of the proposals. In the event of an application being void of essential information, the licensing authority reserve the right not to accept the application. Developers are advised not to publicise applications in the local or national press, until their application has been accepted by the licensing authority.

Judicial review

All cases may be subject to judicial review. A judicial review statement should be made available to the public.

Signed

*Andrew Sutherland*

*29th September 2011*

Authorised by the Scottish Ministers to sign in that behalf

Enclosed - Developer Application Checklist

## Annex 1

### Consultee Comments Relating to Meygen, Phase 1, Tidal Turbine Array, Inner Sound, Pentland Firth

The following organisations provided a scoping opinion in relation to the Meygen, Phase 1, Tidal Turbine Array, Inner Sound, Pentland Firth.

**Statutory Consultees**

Local Authority – Highland Council
Local Authority – Orkney Islands Council
Scottish Environment Protection Agency (SEPA)
Scottish Natural Heritage (SNH)

**Non Statutory Consultees**

British Telecom (Radio Network Protection Team)
Chamber of Shipping
Civil Aviation Authority
Crown Estate
Defence Infrastructure Organisation
Health and Safety Executive
Historic Scotland
Marine Scotland
Maritime and Coastguard Agency
National Air Traffic Services
Northern Lighthouse Board
Royal Society for the Protection of Birds
Royal Yachting Association
Scottish Canoe Association
Scottish Fishermen's Federation
Scottish Fishermen's Organisation
Transport Scotland

## Local Authority – Highland Council

Policy Considerations

The Highland Coastal Development Strategy (HCDS) identified Gill's Bay, which lies within the area of coast from John O'Groats to east of Dunnet Head, as 'undeveloped' coast. This classification was assigned under NPPG 13 which stated the undeveloped coast should generally be considered for development only where:

- The proposal can be expected to yield social and economic benefits sufficient to outweigh any potentially detrimental impact on the coastal environment;
- There are no feasible alternative sites within existing settlements or on other previously developed land

However, the new SPP which superseded NPPG 13 does not have a broadly equivalent category. As the coast is not classified as 'isolated', there are no specific constraints in relation to the HCDS, given the potential social and economic benefits of the proposal.

Additional considerations

Biodiversity Duty: given this Duty, the Council would need detailed information on the likely potential impacts of the proposed development on marine species and sea bed impacts. Surveys using appropriate protocols, as advised MSS/SEPA/SNH should be undertaken during appropriate seasons.

Similarly, impacts on terrestrial species and habitats would have to be provided for the terrestrial aspects of the project. Once a specific site is identified, surveys using appropriate protocols, as advised by SNH, should be undertaken during appropriate seasons.

Cumulative impacts

Given the large ranging distance of cetaceans and other marine mammals, the cumulative impacts need to be considered regarding the potential effects with other proposed renewable developments in the area, based on the best available information at the time.

What anti bio-fouling measures are proposed? Could this also have a cumulative impact as further phases of the proposal are developed?

The developer is aware that The Highland Council has been engaged with partners and stakeholders (including the developer) in North Highland Onshore Visioning work, mainly focussed on the onshore development that will be necessary in North Highland to enable and support wave, tidal and offshore wind power. The Prince's Foundation for the Built Environment (PFBE) facilitated workshops held at the Castle of Mey in August 2010 and February 2011 and prepared a short Report which gives a record of the issues and key locations discussed at the workshops and gives recommendations. Following on from these recommendations, The Highland Council has published a 10-point Action Plan which it is developing with key partners, to help plan for the growth of the marine renewable energy industry in North Highland. More information on progress with undertaking the actions will be made available on the following webpage:

http://www.highland.gov.uk/yourenvironment/planning/energyplanning/renewbleenergy/

Further planning guidance and information is to be produced and, depending upon timing, may be available for the developer to refer to in preparing their proposals and undertaking related assessments. The developer is encouraged therefore to remain in contact with the Council regarding these matters.

With respect to the Landscape and Seascape section of the developer's Scoping Document, it is noted that there is no reference made to the Special Landscape Areas (SLAs) that have been identified by The Highland Council. The Scoping Document does not clearly indicate the extent of the study area for the purposes of the EIA; however, it is assumed that it extends to include the Dunnet Head SLA and the Duncansby Head SLA and these should be referenced and taken into account in the assessment. I attach a map (Annex 2) showing the location of these two SLAs. In undertaking assessment, reference should be made to the citations contained within the Assessment of Highland Special Landscape Areas which is available via the following webpage:

http://www.highland.gov.uk/yourenvironment/planning/developmentplans/developmentplanpolicyguidance/Special+Landscape+AreaCitations.htm

## Local Authority – Orkney Islands Council

The proposed area is clear of Orkney Harbour Authority waters but in relative closed proximity the southern approaches to Scapa Flow. It is very unlikely any vessel bound for Scapa Flow would be affected by the proposed development when considering passage planning other than encountering increased vessel traffic in outer sound area.

This possible displacement of marine traffic from inner sound into outer sound would have a possible impact saferouting on laden tankers inwards and outwards from Scapa Flow.

*5.2.14 Ports, Shipping and Navigation*

*The Pentland Firth is an exceptionally busy sea lane essential to international navigation. The main shipping channel, however, lies to the north of Stroma, between the island and Orkney. Larger cargo vessels and tankers transit the region using this route and so do not pass through the lease area. However, the recommended route for smaller vessels, when approaching the Firth during the south east-going stream, is through the Inner Sound.*

The underlined text above should be questioned as it is known that larger vessels have occasionally used the inner sound for passing through the Pentland Firth.

## Scottish Environmental Protection Agency

Thank you for consulting SEPA on the scoping opinion for the above development proposal by way of your email which we received on 17 June 2011. We would welcome meeting with the applicant at an early stage to discuss any of the issues raised in this letter. We are generally satisfied with the proposed scope of the Environmental Statement (ES). Doe to the use of the Rochdale Envelope and uncertainties in the final design of the project we have detailed all our information requirements below so that the applicant is fully informed on what would be required for different elements of the proposal.

Please note that all of the issues below should be addressed in the ES, but there may be opportunities for several of these to be scoped out of detailed consideration. The justification for this approach in relation to specific issues should be set out within the ES.

### 1. Scope of the ES for marine developments

1.1 From the information submitted we understand the development will include both onshore and offshore components. As such, the development will be subject to a range of different consenting regimes. We would encourage you to consider producing a single ES which covers all aspects of the proposed development. This will enable a full assessment of the potential effects of the development as a whole, rather than assessing certain details of the development individually.

### 2. Water Framework Directive and River Basin Management Planning

2.1 The ES should identify if the impacts of the proposal are likely to lead to deterioration of the water environment or present opportunities for improving the water environment. The planning authority should take this into account in considering the application, as, in order to meet the requirements of the Water Framework Directive (200/60/EC), planning authorities are designated “responsible authorities” by the Water Environment and Water Services (Designation of Responsible Authorities and Functions) Order 2006. Responsible authorities must carry out their statutory functions in a manner that secures compliance with the objectives of the Directive (i) preventing deterioration and (ii) promoting improvements in the water environment in order that all water bodies achieve “good” ecological status by 2015.

2.2 All coastal water out to three nautical miles seaward from the Scottish territorial baseline falls under the Directive which requires them to be considered in terms of their chemical, ecological and hydrological status.

2.3 In order to assist both applicants and planning authorities, we have made information available on our website. River Basin Management Plans have been prepared to support the successful implementation of the Directive and include measures set against individual water bodies which require to be implemented if “good” status is to be achieved. The GIS interactive map (complete with user guide) or the River Basin Management Plan data download function, both available on the River Basin Management Plan section of our website, should be used in assessing any development proposal. The map enables a search for individual water bodies by grid reference, place name or postcode. The data download tool allows water body information to be filtered by planning authority. Both the map and data download tool hold data sheets relating to each individual water body. The water body data sheets set out the water body’s ecological status, any pressures upon it, measures set up to resolve any issues and targets for any improvement needed. In particular Section 5.2.1 of the scoping report should include reference to our new classification regime under River Basin Management Planning and the latest ecological status

classification information for the 'Dunnet Head to Duncansby Head' water body.

2.4 As responsible authorities, planning authorities should promote measures already agreed in respect of relevant water bodies as well as considering other opportunities for the proposals in question to contribute to Directive objectives. SEPA's planning and river basin planning staff will be happy to discuss any suggestions put forward.

## 3. Site layout and nature of construction for marine developments

3.1 The ES should contain plans giving detailed information on the site layout, including details of all onshore and offshore components such as access tracks, buildings, cabling and marine devices. These plans should be supported by a statement detailing the development, as well as reasons for the choice of site and design of the development. Depending on the types and scale of construction some of the information below may be required.

## 4. Land reclamation and construction

4.1 A site plan and cross sections showing the location of all the engineering activities, including temporary works, in the marine environment will be required. Depending upon the scale and nature of the works, there may be a need to carry out hydrodynamic modelling to predict the impacts of construction activities on water quality, as well as coastal processes in the longer term. Any potential impacts from suspended sediment should be compared to natural background levels and water quality standards (eg Shellfish Waters Directive). Any proposed mitigation should also be detailed in the ES.

## 5. Capital dredging for coastal development and maintenance dredging for navigation (including aggregate extraction and novel techniques eg agitation dredging).

5.1 The ES should include information on the quantities of material to be dredged, a description of the substrate type/habitats and species, as well as the dredging method. Although by its nature dredging is a destructive activity, adverse effects can be minimised (e.g. timing, dredging technique). Any potential impacts from suspended sediment should be compared to natural background levels and water quality standards (e.g. Shellfish Waters Directive).

5.2 Information describing measures to minimise impacts (e.g. from suspended solids) should also be provided. Depending upon the scale of the works and neighbouring sensitivities, there may be a need to carry out hydrodynamic modelling to predict the impacts on water quality during construction and coastal processes in the longer term. Options for the subsequent disposal and beneficial reuse of the material should be submitted.

## 6. Coastal protection/flood defence

6.1 The ES should include site plans and cross sections showing the precise location, design, type (revetment, sea wall, gabion baskets) and size of material to be used in the project. Access routes and working areas for vehicles should be specified during construction. The application will also have to demonstrate that the works will not increase the risk of flooding in other locations. Depending upon the scale of the works and neighbouring sensitivities, there may be a need to carry out hydrodynamic modelling to predict the impacts on water quality during construction and coastal processes in the longer term.

6.2 The ES should include a section on the appraisal process and justification for the preferred defence option. The feasibility of soft engineering techniques should always be considered in the appraisal process. Any coastal defence scheme should be appropriate in scale and type for the area.

6.3 With all coastal defence initiatives there is an element of uncertainty with regard to how the shoreline will respond after implementation of the scheme. Depending upon the scale of the scheme and neighbouring sensitivities, there may be a need to carry out hydrodynamic modelling to investigate potential impacts upon the local hydrodynamics and sediment transport patterns both in the vicinity of the proposed structure and along the neighbouring stretches of coastline in the longer term. Any proposed mitigation should be detailed in the ES.

## 7. Marine renewables

7.1 Plans should be included in the ES showing the array of the devices, cabling routes and associated onshore infrastructure.

7.2 Background information that will help inform the ES process is available from European Marine Energy Centre (EMEC). The EMEC has produced guidelines to assist developers in considering the range and scale of impacts that may result from the testing of devices. These guidelines are available at www.emec.org.uk/index.asp. Generally, if this standard industry guidance is followed for scoping, preparing and undertaking EIA for marine renewables, then we are likely to be satisfied with the standard of assessment.

7.3 There may be a need to address the cumulative effects of devices/arrays on coastal processes depending upon array density and location with respect to existing renewable and coastal developments.

7.4 Impoundments and tidal barrages are considered to have the potential to have the biggest impact upon coastal processes and hydromorphology and the habitats and species that these support. As such, there may be a need to carry out hydrodynamic modelling to predict the impacts of the structure/s on water quality during construction and coastal processes in the longer term.

## 8. Onshore engineering activities in the water environment

8.1 In order to meet the objectives of the Water Framework Directive, the on shore components of the development should be designed wherever possible to avoid engineering activities in the water environment. The water environment includes burns, rivers, lochs, wetlands, groundwater and reservoirs. We prefer the water environment to be left in its natural state, with engineering activities such as culverts, bridges, watercourse diversions, bank modifications or dams avoided wherever possible. Where watercourse crossings are required, bridging solutions or bottomless or arched culverts which do not affect the bed and banks of the watercourse should be used. If the proposed engineering works are likely to exacerbate flood risk, then a flood risk assessment should be submitted in support of the planning application and we should be consulted.

8.2 Scottish Planning Policy states “Culverts are a frequent cause of local flooding, particularly if the design or maintenance is inadequate. Watercourses should not be culverted as part of a new development unless there is no practical alternative and existing culverts should be opened whenever possible. If culverts are unavoidable, they should be designed to maintain or improve existing flow conditions and aquatic

life. A culvert may be acceptable as part of a scheme to manage flood risk or where it is used to carry a watercourse under a road or railway" (Paragraph 211). Planning applications should be determined in line with this planning policy.

8.3 A site survey of existing water features and a map of the location of all proposed engineering activities in the water environment should be included in the ES or planning submission. A systematic table detailing the justification for the activity and how any adverse impact will be mitigated should also be included. The table should be accompanied by a photograph of each affected water body along with its dimensions. Justification for the location of any proposed activity is a key issue for us to assess at the planning stage. The detailed design of engineered structures in the water environment will be considered under regulations administered by us. Where flood risk may be an issue, this will need to be addressed at the planning stage.

8.4 Further guidance on the design and implementation of crossings can be found in our Construction of River Crossings Good Practice Guide. Best practice guidance is also available within the water engineering section of our website.

## 9. Onshore water abstraction

9.1 Where water abstraction is proposed we request that the ES, or planning submission, details if a public or private source will be used. If a private source is to be used the information below should be included. Whilst we regulate water abstractions under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 we require the following information to determine if the abstraction is feasible in this location:

- Source e.g. ground water or surface water;
- Location e.g. grid ref and description of site;
- Volume e.g. quantity of water to be extracted;
- Timing of abstraction e.g. will there be a continuous abstraction;
- Nature of abstraction e.g. sump or impoundment;
- Proposed operating regime e.g. details of abstraction limits and hands off flow;
- Survey of existing water environment including any existing water features; and
- Impacts of the proposed abstraction upon the surrounding water environment.

9.2 If other development projects are present or proposed within the same water catchment then we advise that the applicant considers whether the cumulative impact upon the water environment needs to be assessed. The ES or planning submission should also contain a justification for the approach taken.

## 10. Timing and duration of project

10.1 All submissions should include information on likely timing and duration of the project, possible long-term locational and/or operational impacts and short-term construction impacts.

## 11. Borrow pits

11.1 Detailed investigations in relation to the need for and impact of such facilities should be contained in the ES or planning submission. Where borrow pits are proposed, information should be provided regarding their location, size and nature including the depth of the borrow pit floor and the final reinstated profile. The impact of such

facilities (including dust, blasting and impact on water) should be appraised as part of the overall impact of the scheme. Information should cover, in relation to water, at least the information set out in PAN 50 Controlling the environmental effects of surface mineral workings (Paragraph 53) and, where relevant, in relation to groundwater (Paragraph 52).

11.2 Details of the proposed depth of the excavation compared to the actual topography, the proposed restoration profile, proposed drainage and settlement traps, turf and overburden removal and storage for reinstatement should be submitted. The reinstatement of borrow pits can raise significant waste management issues and it is essential that any proposals are discussed with our regulatory teams as part of the development of the scheme to ensure that such proposals are feasible in terms of cost and regulatory requirements.

## 12. Air quality

12.1 The local authority is the responsible authority for local air quality management under the Environment Act 1995, however we recommend that this development proposal is assessed alongside other developments that are also likely to contribute to an increase in road traffic. This increase will exacerbate local air pollution and noise issues, particularly at busy junctions and controlled crossing points. Consideration should therefore be given to the cumulative impact of all development in the local area in the ES or supporting information. Further guidance regarding these issues is provided in NSCA guidance (2006) entitled Development Control: Planning for Air Quality.

12.2 Excavation works, particularly through drilling and blasting, may cause nuisance to adjacent land users due to the generation of dust and noise. Comments from the local authority environmental health officers should be sought on the potential nuisance to adjacent land users during the construction and decommissioning phases of the project.

## 13. Construction Environmental Management Document (CEMD) and pollution prevention

13.1 One of our key interests in relation to major developments is pollution prevention measures during the periods of construction, operation, maintenance, demolition and restoration. The construction phase includes construction of access roads and any other site infrastructure.

13.2 We advise that the applicant, through the EIA process or planning submission, should systematically identify all aspects of site work that might impact upon the environment, potential pollution risks associated with the proposals and identify the principles of preventative measures and mitigation. This will establish a robust Project Environmental Management Process (PEMP) for large scale (e.g. Major and Environmental Impact Assessment Projects (EIA). A draft Schedule of Mitigation should be produced as part of this process. This should cover all the mitigation measures identified to avoid or minimise environmental effects. Details of the specific issues that we expect to be addressed are available on the Pollution Prevention and Environmental Management section of our website.

13.3 A key issue for us is the timing of works. Therefore, the Schedule of Mitigation should include a timetable of works that takes into account all environmental sensitivities, such as fish spawning, which have been raised by SEPA, SNH or other stakeholders. Timing should also be planned to avoid construction of roads, dewatering of pits and

other potentially polluting activities during periods of high rainfall. We can provide useful information such as rainfall and hydrological data through our Access to Information Team.

13.4 A Construction Environmental Management Document (CEMD) is a key management tool to implement the Schedule of Mitigation. We recommend that the principles of the CEMD are set out in the ES drawing together and outlining all the environmental constraints and commitments, proposed pollution prevention measures and mitigation as identified in the ES.

13.5 The CEMD should form the basis of more detailed site specific Construction Environmental Management Plans (CEMPs) which along with detailed method statements may be required by planning condition or, in certain cases, through environmental regulation. This approach provides a useful link between the principles of development which need to be outlined at the early stages of the project and the method statements which are usually produced following award of contract (just before development commences).

13.6 We recommend that the detailed CEMD is submitted for approval to the determining authority at least two months prior to the proposed commencement (or relevant phase) of development to order to provide consultees with sufficient time to assess the information. This document should incorporate detailed pollution prevention and mitigation measures for all construction elements potentially capable of giving rise to pollution during all phases of construction, reinstatement after construction and final site decommissioning. This document should also include any site specific CEMPs and Construction Method Statements provided by the contractor as required by the planning authority and statutory consultees. The CEMD and CEMP do not negate the need for various licences and consents, e.g. CAR and PPS, if required. The requirements from the obtained licences and consents should be included within the final CEMPs.

## 14. Flood Risk

14.1 The onshore components of the development should be assessed for flood risk from all sources in line with Scottish Planning Policy (Paragraphs 196-211). Further information and advice can be sought from your Local Authority technical or engineering services department, Scottish Water and from our website. Our Indicative River & Coastal Flood Map (Scotland) is also available to view online. If a flood risk is identified then a flood risk assessment (FRA) should be carried out following the guidance set out in the Annex to the SEPA Planning Authority flood risk protocol. Our Technical flood risk guidance for stakeholders outlines the information we require to be submitted as part of a FRA, and methodologies that may be appropriate for hydrological and hydraulic modelling. Further guidance on assessing flood risk and planning advice can be found at our website.

## 15. Marine ecological interests

15.1 A baseline assessment of existing intertidal and subtidal habitats and species should be submitted. This should include any UK Biodiversity Action Plan habitats and species (eg maerl, sea pens, eel grass, horse mussels). Additional information on the UK Biodiversity Action Plan is available at: http://jncc.defra.gov.uk/default.aspx?page=5155. Developers will then be able to ascertain if they are required to supplement or quantify the available data with in-field surveys.

15.2 We also recommend information be submitted detailing how the development will contribute to sustainable development. Opportunities to enhance marine habitats in line with Water Framework Directive and The Nature Conservation (Scotland) Act 2004 objectives and Scottish Planning Policy guidance should be explored. Examples may include coastal realignment, the incorporation of naturalistic features in the design of shoreline works, or planting with salt tolerant species. These could be used as examples of best practice and demonstration sites under SEPA's Habitat Enhancement Initiative (HEI).

15.3 During the construction phase, it is important that good working practice is adopted and that habitat damage is kept to a minimum and within defined acceptable parameters. These should be controlled through an environmental management plan.

15.4 Section 5.2.7 of the scoping report should make reference to marine non-native species (MNNS). The ES should consider how the risks of introducing MNNS will be minimised. We encourage the developer to draw up a protocol or method statement to remove the risk of introducing marine non-natives into this area either during the development of this project or during the construction, operational, maintenance or decommissioning phases of the project. Given that the accidental introduction of marine non-native has been highlighted as a risk for water body degradation SEPA recommends that controls should be included in development planning for marine non-native species in line with Water Framework and Marine Strategy Framework Directive objectives. [An example of guidance that may be drawn upon is the non-natives advice produced by the Oil & Gas industry: [www.ogp.org.uk/pubs/436.pdf].

15.5 It might be useful for the developer to refer to the joint SOAEFD, DoT/MSA and SNH collaborative project which sampled ballast water docking at Scottish Ports (Macdonald, E. and Davidson, R. 1997. Ballast water project - final report, spring 1997. Fisheries Research Services Report No. 3/97. Aberdeen: MLA). Further guidance can be found at www.thegreenblue.org.uk/youandyourboat/alienspecies.asp with regard to leisure craft and www.mcga.gov.uk/c4mca/bw_newsletter_september_2005_final.doc with regard to vessels arriving in Scottish ports in North West European waters.

15.6 Advice on designated sites and European Protected Species should be sought from SNH. For marine and transitional Special Areas of Conservation (SAC) and Special Protected Areas (SPA), these are WFD Protected Areas. Therefore, their objectives are also RBMP objectives. In this case, SNH may contact us for input on the consultation.

## 16. Coastal Processes

16.1 Coastal processes should be assessed as part of the ES. This should include a baseline assessment to identify the coastal and sedimentary processes operating in the area. The baseline assessment should identify the following features and processes in the environment:

- Sediments (e.g. composition, contaminants and particle size);
- Hydrodynamics (waves and tidal flows);
- Sedimentary environment (e.g. sediment re-suspension, sediment transport pathways, patterns and rates and sediment deposition);
- Sedimentary structures (e.g. protected banks);
- Typical suspended sediment concentrations

16.2 Developers will then be able to ascertain if they are required to supplement or quantify the available data with in-field surveys and what mitigation measures are required.

## 17. Regulatory advice

17.1 Details of regulatory requirements and good practice advice for the applicant can be found on our website at www.sepa.org.uk/planning.aspx. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the operations team in your local SEPA office at Strathbeg House, Clarence Street, Thurso KW14 7JS. Telephone 01847 894 422.

## Scottish Natural Heritage

Thank you for the recent consultation requesting our advice on the proposal for an 85MW tidal turbine array located in the Inner Sound, Caithness.

Natural heritage interests to be considered

In principle, we support the development of marine renewable energy devices where sensitively designed and sited – as set out in SNH Policy Statement 04/01. For this proposed tidal array, we highlight the key natural heritage interests which we consider should be scoped into the Environmental Impact Assessment (EIA). We provide our full advice on these interests in Appendix A, organised into those aspects which we consider apply to the development in general; those relevant to its offshore elements; and those relevant to the onshore works.

As part of our scoping advice we include the range of interests and potential impacts that may need to be considered in relation to the requirements of regulation 61 of the Conservation of Habitats and Species Regulations 2010 as amended and regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended – now commonly referred to as Habitats Regulations Appraisal (HRA) (please note we are currently seeking legal advice over the application of the 2010 Regulations to reserved matters in Scotland e.g. Section 36 of the Electricity Act 1989). We provide more detail on the legislative requirements for European sites in Appendix B. We also provide our advice on HRA tailored to the potential impacts of the proposed tidal array in Appendix D for Special Protection Areas (SPA) and Appendix E for Special Areas of Conservation (SAC).

General comments

The scoping report provides details on phase 1 (85MW) of proposed Inner Sound Tidal Energy Project by MeyGen Ltd. The proposed development will deploy 85 tidal turbines with an installed capacity of 1MW each. It is proposed to use both the Atlantis Resources Corporation (ARC) AK-1000™ and Tidal Generation Limited (TGL) 1MW tidal energy turbines.

The entire project (398MW) will have the following phased installation:

- Phase 1a: 20 devices – 10 devices from ARC and 10 from TGL (installed 2013/14),
- Phase 1b: 65 devices (installed 2015),
- Phase 2a: 150 devices (installed 2016-18), and
- Phase 2b: 163 devices (installed 2019-20).

Phase 2a & b will be covered by a separate application.

At this early stage in the process, and as described in the scoping report, it is not possible for the applicant to be definitive about the details of their project. As a result, the scoping advice we present in this response also has to be less tailored on some aspects of the project which have yet to be fully detailed.

We support MeyGen Ltd's commitment to the draft Survey, Deploy and Monitor Policy. We highlight that as this draft policy has yet to be finalised, the specific implications of it for the proposed development have yet to be determined. **However, considering the lease area is situated within a highly sensitive location in terms of natural heritage features (i.e. within the North Caithness Cliffs SPA, adjacent to known important seal haulouts and in an area of high sightings of cetaceans), it is likely that extensive pre-development**

**device testing and monitoring, and site characterisation surveys would be required.** Furthermore, commitment to the Survey, Deploy and Monitor Policy would not affect requirements with regard to HRA and the need to ensure the proposal will not adversely affect the integrity of a Natura site before it could be consented.

We recommend that further consideration is given to site characterisation of the entire lease area and not just this first phase of development. Such an appraisal would assist in helping define future phases as well as providing further contextual data as part of the assessment process for phases both individually and cumulatively. Data and analysis from the Pentland Firth Orkney Waters aerial survey work being carried out by APEM on behalf of the PFOW Developers Group, is likely to be of assistance in this work. We would be pleased to advise further on this aspect of work.

One major concern we have regarding this proposal is that seabird and marine mammal surveys do not adequately cover the new lease area and appropriate buffer. Given that most of the proposed lease area is within the North Caithness Cliffs SPA this is an important data gap. **We strongly recommend that a strategy for surveying this area is adopted and discussed with SNH as soon as possible.**

We have recently received the HRA screening report, terrestrial ecology report, and the update on the seabird and marine mammal survey work and data analysis, and will provide additional comments on these in due course. However, the applicant may wish to update these reports after receiving this scoping advice. Our comments on the HRA screening report, and other reports, may need to be taken into account as part of our tailored scoping advice.

We recommend that the applicant provides an initial Environmental Mitigation and Monitoring Plan (EMMP) as part of the Environmental Statement (ES), taking into consideration monitoring work from EMEC. The proposed EMMP should provide details on the various monitoring studies to be undertaken and, importantly, schedule sufficient time between each phase in order to accurately monitor any potential impacts (both positive and negative).

The scoping report provides little information on the onshore element of the proposal, including cabling, directional drilling, powerhouse(s), transformers, substation, access tracks, maintenance base/facility, and grid connection. The onshore works may have further implications with regard to HRA, and we recommend details of the onshore elements are provided as soon as possible, to ensure our advice in relation to HRA can be provided in respect of the overall project. We welcome the on-going discussions with the applicant and consultants.

At this early stage in the process, and with detail lacking on both the onshore and off-shore elements, we consider potential impacts that are scoped in or out of the EIA, may need to be reassessed once further detailed project information is provided. We recommend that as further project details are developed these are forwarded to all stakeholders and MS LOT to provide an opportunity for the scoping opinion to be updated.

It is our understanding that ‘deemed planning permission’ under Section 36 of the Electricity Act 1989 no longer applies to marine renewable developments. Therefore, the on-shore element of this proposal is likely to require separate permission under Section 28 of the Town and Country Planning (Scotland) Act 1997. Our scoping advice covers all aspects of the project and we are happy for this letter to be copied to the local planning authority. We can also provide further advice on any onshore elements where there may be natural heritage implications directly to the local planning authority.

Further information and advice

Answers to the scoping questions outlined in section 6.3 of the scoping report can be found in Appendices A, D and E.

We can provide further advice on natural heritage interests, at appropriate stages, as work is undertaken by the applicant in support of their formal submission. We would be grateful if you could copy us into the formal scoping opinion in due course. In the meantime, if further information or advice is required in respect of this scoping advice then please contact me in the first instance: chris.eastham@snh.gov.uk or 01292 261392.

**APPENDIX A**

**ADVICE ON NATURAL HERITAGE INTERESTS TO BE SCOPED INTO ENVIRONMENTAL IMPACT ASSESSMENT**

Our scoping advice is organised into those aspects we consider apply to the development in general; those relevant to offshore elements; and those relevant to the onshore works.

**GENERAL ADVICE**

ai. Project Planning & Phases of Development
aii. Landscape & Visual
aiii. Fisheries
aiv. Designated Sites & Species Protection

ai. Project Planning & Phases of Development

Project Planning

We recommend that the applicant's Environmental Statement (ES) contains an outline of the main alternatives they studied with an explanation of the reasons for their final choice of site, taking into account environmental effects. Further advice is provided in PAN 58 – Environmental Impact Assessment, in SNH's Environmental Assessment Handbook, and in the draft Marine Renewable Licensing Manual.

Rochdale Envelope

We note that MeyGen Ltd propose to take a Rochdale Envelope approach during the EIA. With this approach the maximum extent of development proposal is assessed, so that the scheme is then designed within these maximum parameters i.e. an assessment of a potential worst-case scenario. If this approach is to be used then we highlight that it would need to apply to both offshore and onshore elements together i.e. what is the maximum extent of onshore / associated development that is required to support the maximum number of tidal turbines?

With regard to Habitats Regulations Appraisal (for further information please see appendices B, D and E), a proposal can only be consented if it can be ascertained beyond reasonable scientific doubt that it will not adversely affect the integrity of a Natura site. Therefore, even with a Rochdale Envelope approach the applicant would need to provide sufficient information for a robust appraisal to be carried out prior to consent.

Project details

Section 3 of the scoping report provides details on the project components including turbine technology and support structures, deployment methods, project phasing, array layout, off-shore cabling and onshore elements.

We note that improvements to port facilities and other associated terrestrial infrastructure are not considered in the scoping report. We strongly recommend, however, that these improvements are included within the ES as there may be potential impacts on natural heritage features, including cumulative/in-combination impacts if the ports/other infrastructure are located in close proximity to the proposed development area.

As options are currently being kept open with regard to project design, so our scoping advice has to be kept general. We would welcome ongoing dialogue with the applicant and the

consenting authority as this project progresses in order to discuss how they are addressing environmental interests, and to provide more focused advice with regard to the finalised project details.

Coastal geomorphology should be considered when identifying cable / directional drilling routes (please see bv. Hydrodynamic Processes & Coastal Geomorphology) and we welcome early discussions with the applicant regarding the scope of works.

Grid connection

The report identifies that the options for export cable route, substation and grid connection, are currently under consideration.

We welcome the on-going discussions with the applicant and consultants regarding potential route options.

Phases of Development

In their Environmental Impact Assessment for this proposal (to be reported in the ES), the applicant should address the following phases of tidal array development:

*Installation & construction*

The ES should include details on proposed installation and construction methods including information on project management – contractor arrangements, 'chain of command', roles and responsibilities of key staff – and timetabling – the phasing / sequencing of proposed works – especially if this has been identified as a mitigation measure for environmental, navigational or other effects. Information should also be included on the proposed installation equipment, vessels used (including vessels with ducted propellers) and intended delivery routes and port facilities. When assessing support structures and deployment methods, we recommend that environmental considerations are taken into account.

*Operation & maintenance (O&M)*

The ES should include details on operation and maintenance activities (as discussed in the scoping report, section 3.6 & 3.8) and an assessment of any impacts that could arise – considering any potential environmental, navigational and/or other effects.

*Repowering*

The applicant does not discuss repowering in their scoping report and does not indicate the anticipated design life of any of the elements to be placed offshore: devices and cabling. The applicant will need to consider all aspects of repowering and address this issue in their ES. It is important to be clear what repowering entails and whether there is to be any relocation of subsea infrastructure or alteration of the tidal array layout. Any alterations to the locations of offshore elements for repowering may require further baseline characterisation and assessment to that previously carried out at application submission stage.

*Decommissioning*

Decommissioning is discussed in section 3.7 of the scoping report. We recommend that any potential impacts are assessed in the ES.

Presentation of information and assessment

The assessment of potential impacts within the ES should be transparent and contain sufficient information to assist in the determination of the ecological changes that may arise. We do not recommend the use of matrices for the assessment of potential impacts as they often use unquantified assessment terms (insignificant, minor, significant, etc) without clear definitions, which invariably leads to delay as clarification is sought. We recommend using the approach outlined by the IEEM in Guidelines for Ecological Impact Assessment in Britain 6 and Ireland: Marine and Coastal (2010). In addition the matrix approach to assessing impacts is not recommended for use in a Habitats Regulations Appraisal (see appendices D & E).

aii. Landscape & Visual

We welcome the pre-application consultation with the landscape architects employed by MeyGen Ltd, with discussions focusing on the landscape and visual impact assessment. The following advice on the approach and methodology presented in the scoping report is in addition to advice previously given and the draft SNH guidance - 'Landscape and visual impact assessment of marine renewables – guidance for scoping an Environmental Statement' (2011).

In general, the seascape and visual impact assessment should consider:

- the potential impacts during installation, maintenance and decommissioning operations, and
- the potential impacts of all lighting and buoys that accompany installation, operation and decommissioning.
- the potential impacts during periods if / when structures break the surface

Proposed on-shore works – cable-landing, cable vault, substation, construction compounds and work in the inter-tidal zone are considerable (see figure 6 of the scoping report). These will require a full landscape and visual impact assessment. We will be able to provide more advice in this regard when the proposals are further progressed and the applicant is able to provide further detail.

Baseline environment

Fieldwork is a fundamental part of EIA. The Seascape and Landscape Character Assessment needs to examine both the regional and local coastal landscapes and seascape. While SNH's Scottish seascape (Scott et al. 2005) report is a helpful reference we emphasise that it is a strategic assessment, a 'nationwide' look at the coast, with general descriptions of seascape character types. These were tested against a specific, set theoretical windfarm scenario to explore issues of sensitivity and visibility. Furthermore, in this study fieldwork was not a major part of the assessment process, which was limited to a strategic desk-based approach. Thus, the seascape units are of only limited use in appraising actual development proposals and need refinement in order to examine the impacts of a specific proposal.

Field work is required to do this, and we recommend that the applicant uses the coastal character methodology developed for aquaculture capacity studies. This approach identifies areas of consistent seascape character with strong integrity, like a specific bay or stretch of coast. We recommend that these local coastal character areas are defined at a scale comparable to the existing LCAs and will be informed by them and field work.

The Highland Coastal Development Strategy (May 2010) will assist in identifying stretches of isolated and undeveloped coast. Another source that may help initially with coastal characterisation is a critical appraisal of the relevant sections of The Beaches of Scotland series (SNH Commissioned Reports Series 1969-1981) – available from SNH publications. This series of regional reports offers a quantified description of many aspects of Scotland's coastline, including associated dunes, links and machair areas that can be useful in informing and defining local coastal character areas.

EIA Methodology

We recommend that Chartered Landscape Architects, preferably a team of at least two, should carry out the landscape and visual impact assessment.

The described approach uses the accepted good practice outlined in '*Guidelines for Landscape and Visual Impact Assessment*' (LI-IEMA, 2002). The assessment process for coastline, landscape and seascape is essentially the same, although each area has its own specific characteristics, as well as other shared characteristics. It is important to consider the key elements that are specific to each environment, whether land-based or marine. It is these that differ, not the method of character assessment.

Although the techniques and methods developed to evaluate seascapes are helpful, (such as SNH's seascapes work) it needs to be critically assessed. This is because of Scotland's specific coastal conditions and qualities, but also because the report findings relate to offshore windfarm development. While our knowledge of the likely impacts of the new tidal technology is limited, some of the principles developed in relation to the siting and design of aquaculture may be relevant. With this in mind we refer the applicants to SNH guidance on *Marine Aquaculture and the Landscape*.

Essentially, a coastal landscape assessment clearly related both 'seawards' and 'landwards' is required. Once the baseline is established, judgements on sensitivity and impacts can then be made. Establishing the relationship of landscape character to seascape character (and *vice versa*) is fundamental to the assessment. Important elements to consider include the contrast of form, pattern, texture and colours between the landscape and sea; and the effects of the development's form, pattern, texture and colours within this.

Visibility and Zones of theoretical visibility

In assessing visibility, reference should be made to SNH's guidance on the *Visual Representation of Windfarms* (December 2007). Although the VRW guidance relates to onshore windfarms, this gives practical guidelines on the preparation, presentation and application of visibility maps, viewpoints and visualisations.

Viewpoint Selection and Assessment

Viewpoints should be selected in negotiation with MS LOT and statutory consultees, principally the Local Planning Authority and SNH. Viewpoints selected by the planning authority may include additional residences and public buildings, as local authorities have other interests in addition to those of SNH. Initially lengthy, the viewpoint list is likely to be shortened as viewpoints that best illustrate the most significant likely impacts, or help the most with design iteration, become obvious.

Public consultation on viewpoint selection is recommended. The selection of viewpoints and the direction of views selected should be based on the identification of potentially sensitive receptors (people, places and activities) and potentially significant views, locations or landscapes, taking into account the likely impacts of the tidal array.

The choice of **all** viewpoints should be informed by the cumulative ZTV as well as the individual ZTV. Although it is possible to add supplementary viewpoints as part of a cumulative VIA, it is preferable to use all or some of the same viewpoints for both the individual and cumulative VIA.

View type

Viewpoints should be selected in order to show:

a) Areas of high landscape or scenic value; both designated and non designated. For example NSA's, AGLV's, GDL's, search areas for wild land, tourist routes and local amenity spaces;
b) A full representation of views from a range of distances, aspects, landscape character types and visual receptors; to include coastal views looking out to the coast and back, as well as across water to opposing shores
c) All aspects of the proposed development, i.e. illustrate it "in the round" to help in the design development and assessment processes. This will also enable assessment of a range of light conditions e.g. side-lit, back-lit and front-lit;
d) Visual composition. For example focussed or panoramic views, simple or complex;
e) The variety of images that the tidal array will present from coastal areas as well as important coastal hilltops and landmarks;
f) A range of distances;
g) A range of elevations;
h) Sequential along specific routes;
i) The full range of different types of views, e.g. popular hilltops, footpaths and other recreational routes, key transport routes (on and offshore where relevant), minor roads where the array will be the focus of the view, settlements, cultural and recreational foci, and so on;

Viewer Type

j) The full range of receptor groups, e.g. residential, work, road users and other travellers, walkers, other recreational users, etc.;
k) Various modes of movement. For example those moving through the landscape, across ferry and popular recreational sailing routes, or stationary

In addition to representative viewpoints, it is important to consider viewpoints that are already important vantage points within the landscape, for example local visitor attractions, scenic routes, or places with cultural landscape associations.

The developer should be aware that further or alternative viewpoints may need to be considered throughout the VIA process.

The local planning authority may have additional considerations regarding viewpoint selection. Elevated viewpoints, for example those on coastal walks and hilltops are particularly useful in exploring the layout and design. Precise adjustment of the viewpoint location should be made to avoid underestimation of the visual effect by, for example, the judicious positioning of screening objects.

The precise location of the viewpoint (including 12 figure OS grid reference and a brief description), viewpoint height (mAOD), nature of view (width of view in degrees and bearing of key foci within view) and conditions of assessment should be given. This should give details of the orientation to and distance from the proposed development, date, time of day and weather conditions and visual range, when the photographs were taken and the

assessment made. It is helpful if a small insert map (based on a 1:50000 OS base map) showing the viewpoint's detailed location and direction is given alongside each visualisation.

All viewpoint information should be presented in a table and cross-referred to a ZTV map on which all of the numbered viewpoints are plotted. The characteristics visible from each viewpoint that are sensitive development on the sea-surface should be described and assessed, particularly in relation to changes the development would cause. Factors such as season, weather, air clarity, movement, orientation to prevailing winds, in relation to the viewer, and any screening elements may be relevant. The design and layout of lighting and buoys associated with the tidal array, as it would appear from each viewpoint, should also be described and assessed.

Details of the types of receptors, and an assessment of their sensitivity, should be included.

Cumulative Impacts

A cumulative SLVIA is likely to be required in relation to future phases, but also in respect of other PFOW lease sites such as Ness of Duncansby. There may be other development types that may also need to be considered. Any cumulative SLVIA should be carried out with reference to the current SNH guidance on cumulative effects (2005), though please be aware that this guidance is currently being updated. Whether it follows the draft guidance or not, the reasoning behind judgements should be made clear. This is because there is more than one type of cumulative impact and their assessment quickly becomes complicated.

aiii. Fisheries

Fishing industry liaison / consultation

In addition to the Scottish Fishermen's Federation, major fishing associations, the Association of Salmon Fishery Boards and the relevant government departments, we recommend consultation with the relevant Inshore Fisheries Group (IFG). IFGs are currently being established around Scotland and, while they do not function as fishermens' associations in representing fishing interests per se, they endeavour to comprise representation from all vessels fishing in the inshore area, including those that are not part of a major association (small independent fishers) and those that are not based locally (i.e. east coast vessels that also operate on the west coast, and vice versa). As such, they can act as a useful contact point for consultations and we welcome their inclusion on the stakeholder group list.

We note that geo-referenced data on inshore fishing activity and catch is very limited because (a) shellfish fisheries are largely unregulated and require very little catch reporting, and (b) many of the vessels in the inshore area are <15m long so are not required to have satellite vessel monitoring systems (VMS). Therefore, consultation with the IFGs is likely to be helpful in establishing the importance of the fishery resources within an area and the likely extent of displacement of fishing activity.

Data sources & survey design for fish and shellfish

Marine Scotland Science is the primary source for information on commercial fish and shellfish in Scottish waters. For spawning information, the applicant should also be aware of Ellis *et al*. (2010).

Spawning and nursery grounds are not spatially or temporally fixed, potentially moving according to the conditions of the substrate, seabed habitats, climate and hydrodynamic regimes. Marine Scotland Science and CEFAS should be able to advise on the most

appropriate data sources relating to spawning and nursery grounds, and whether any additional surveys are required. They should also be contacted to discuss mitigation measures if there is any overlap between the development site and the location of spawning events/nursery grounds.

Habitat associations for fish/shellfish species

Many fish and shellfish have strong associations with particular habitats or substrate types, sometimes varying for different life-history stages of a species. Consequently, particular sectors of the Scottish fishing industry are also closely associated with particular substrate types. The information below does not cover all species or fisheries but may help (a) focus liaison with the fishing industry, and (b) indicate some of the key species which may be impacted by particular developments.

Muddy sediments in Scottish inshore waters are the favoured habitat of Scottish langoustine (*Nephrops norvegicus*), also known as prawns or Norway lobster, inhabiting burrows in the mud. The Nephrops fishery is the most valuable inshore fishery in Scotland being exploited using trawlers (all coasts) and static gear (mostly west coast).

Sand and gravel substrates are often fished for scallops (*Pecten maximus* and *Aquepecten opercularis*). Other commercial bivalves such as cockles, razors (Ensis spp.) and surf clams also favour sandy substrates, but are mostly exploited very close to shore. Skates and rays (elasmobranchs) and sandeels are also often associated with sandier substrates and are of conservation concern. In particular, the applicant should consider the potential impacts of electromagnetic fields (EMF) on these species. While effects are more likely for elasmobranchs, it is possible for EMF to affect other fish and shellfish species – a high variability has been recorded in the response of species and individuals to EMF.

Fish and shellfish to consider

In the section above we provided advice on the association between certain habitats and species, which may be used as a guide to help identify some of the key species that may be present within the proposed site. In determining species to consider within the EIA, we recommend that in addition to the UK Biodiversity Action Plan (BAP) the applicant includes the OSPAR Threatened and Declining and the Scottish Priority Marine Features (PMF) list as part of the criteria. These include some commercial species of fish, and for some the juvenile life stages.

Potential impacts

In addition to the potential impacts discussed in the scoping report we offer the following advice.

The impacts of underwater noise on the spawning behaviour of fish is a potential concern, and should be considered with regard to installation, operation, maintenance and decommissioning of the array. It should be noted that different species of fish have differing sensitivities to underwater noise, and this should be considered in the EIA.

Other potential impacts which should be considered include disturbance due to EMF (as mentioned above) and the barrier effect. Benthic and demersal species are more likely to be vulnerable to the potential barrier effects of EMF than pelagic species and should be considered accordingly. The ES should consider the vulnerability of different species (e.g. benthic / demersal / pelagic / migratory), their likely levels of sensitivity, and to what extent cable protection / armouring can limit exposure to EMF. Collision risk will also need to be considered.

It is identified in the scoping report that shellfish will be considered under 'benthic ecology' as they will be vulnerable to a similar range of impacts. We are content with this approach providing the ES also considers the potential for shellfish to be impacted by noise/vibration and EMF.

Impacts on migratory species (e.g. barrier effects and disturbance) are correctly identified as a matter to be considered in the ES. However, this currently appears to only give consideration to diadromous species. Many fully marine fish and shellfish also exhibit migratory behaviour, usually associated with the breeding/spawning cycle (e.g. between shallow and deeper water). The ES should consider the potential for impacts on these species also.

The applicant should assess the environmental effects of displacing (and potentially concentrating) fishing effort to other areas. The potential of the development area to provide a refuge for particular species, potentially increasing biomass, with potential benefits to adjacent fishing grounds should also be considered.

aiv). Designated Sites & Species Protection

Marine Protected Areas

The Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009 include new powers and duties to designate Marine Protected Areas (MPAs) as part of a range of measures to manage and protect our seas for current and future generations.

The guidance document by Scottish Government includes a draft list of Priority Marine Features for which MPAs may be an appropriate mechanism. SNH and JNCC are currently reviewing the lists of marine biodiversity and geodiversity features in order to help identify habitats and species for which MPAs could make a contribution to their conservation.

The MPA process is likely to be running on a parallel timescale to the applicant's project development and its formal consenting. The applicant should liaise with Marine Scotland over this aspect and we will seek to keep them informed as to our own input to the progress of MPAs, where this is relevant.

Natura sites

**Appendix B** provides advice on the legislative requirements for these sites; please see **Appendix D** and **Appendix E** respectively for advice with regard to the proposal's potential impacts on Special Areas of Conservation and Special Protection Areas.

Sites of Special Scientific Interest (SSSIs)

We are currently in discussion with applicant and consultants regarding the location of the onshore infrastructure and, once details are confirmed, will be able to provide further information in relation to SSSIs. We note that further information on SSSIs is available from our website with information on particular sites being available on our Sitelink.

European protected species

Appendix C provides further advice on the legislative requirements for European protected species (EPS). Within the proposed development area EPS may be present both in the marine and terrestrial environment, and consideration of these species must be included as part of the application process.

Wildlife and Natural Environment (Scotland) Act 2011

Under this Act the administration of licences for the protection of species under domestic law has been brought into line with the protection of similar species under European law. All species licensing has been transferred to SNH and MS as of the 1st July 2011. There may be species present within the proposed development area that, for certain activities, would require the applicant to apply for a licence under this Act. For example, potential disturbance to basking sharks.

**ADVICE IN RESPECT OF OFFSHORE ELEMENTS**

We provide our advice below relating to the potential impacts from the offshore elements of the tidal array infrastructure on various natural heritage interests:

bi. Benthic Ecology
bii. Ornithology
biii. Marine Mammals & Basking Shark
biv. Fish
bv. Hydrodynamic processes & Coastal geomorphology

bi. Benthic Ecology

Studies, Methods and Assessment

We recommend that benthic ecology survey methodologies are submitted to MS and SNH for comment, and should include the proposed development area including the support systems, cable routes and landfall point. The applicant should check for Annex 1 habitats, and/or Priority Marine Features during survey work as well as any BAP habitats and species. They may find it helpful to undertake early analysis of their survey data in case this indicates that survey methods need to be revised and / or that further detailed surveys are required.

Consideration should also be given to future seabed monitoring during the phasing of the proposed development. The ES should identify and where possible seek to mitigate any significant negative impacts on any protected habitats and species identified.

Please note that the scoping report makes reference to biogenic reefs only. However, bedrock, boulder and cobble reefs would also fit under Annex I 'reefs', and a major element of the benthic survey should be establishing the flora and fauna associated with these areas. The benthic survey could also provide supplementary information on fish and shellfish (even if the survey does not specifically target them).

We recommend that the ES presents clear information on, and identification of, the main biotopes found on-site. The biotope/habitat map should be used by the applicant to inform their finalised array layout, taking account of likely impacts from cables on benthic ecology. We note that MS survey details were not available for inclusion in the scoping report. Key results and interpretation of data from this survey should be included within the ES.

bii. Ornithology

In Appendix B we provide overall advice on the Habitats & Birds Directives and the process of Habitats Regulations Appraisal (HRA) that will consider potential impacts to the qualifying bird species of Special Protection Areas (SPA). In Appendix D we provide initial tailored advice that addresses the potential impacts of the proposed tidal array on SPA bird species which may be affected by this development.

In Appendix D, we are only able to provide advice on HRA in respect of existing SPAs. We note that there is work underway across the UK to designate marine SPAs. This is to ensure a comprehensive network of SPAs across Europe, which will provide protection for all bird species across their life cycle stages. Further information on this programme of work is provided on the Scottish Government and JNCC website.

Further work is ongoing to investigate the possibility of marine SPAs for:

- Inshore aggregations of non-breeding waterbirds (Scapa Flow is the closest Area of Search to the lease site),
- Offshore aggregations of seabirds (area to the east of the lease site is the closest) , and
- Marine areas used by red-throated divers (area to the east of Hoy) and terns (area in Pentland Firth) during the breeding season.

This work is in addition to the extensions to existing seabird SPAs, such as the North Caithness Cliffs SPA, in 2009.

Detailed ornithological comments

Since the seabird and marine mammal surveys began in 2009 the lease area has changed. It is apparent that the surveys no longer cover the whole of the lease area. Given that most of the proposed lease area is within the North Caithness Cliffs SPA this is an important data gap. We strongly recommend that a strategy for surveying this area is adopted and discussed with SNH as soon as possible.

Most of the figures in the scoping report show the old lease area. We strongly recommend that the current lease area is used on any maps/figures. It would be helpful if a map showing the area covered by surveys and the current lease area was shown.

We strongly recommend that the applicant works with the adjacent developers to agree methodologies (and analysis) and to share and combine data where appropriate. This should also include how the Pentland Firth Orkney Waters aerial survey information is used.

Monitoring data gathered from testing at EMEC for the Atlantis and TGL device should be used to inform the assessment of potential impacts for the proposed tidal array.

biii. Marine Mammals & Basking Shark

Please see Appendix B for the detail of the legislative requirements that apply to SAC interests, and Appendix C for those relating to cetaceans – whales, dolphins and porpoises – which are European protected species (EPS). Appendix E provides our advice on HRA, tailored to the tidal array, for marine mammals which are an SAC qualifying interest.

Marine mammal species to consider

With regard to seals we would draw attention to the SCOS 2010 report, the SNH report on harbour seal surveys in Orkney, and the recently published SNH report on the utilisation of space by seals in the Pentland Firth and Orkney waters. We highlight the sharp fall there has been in the UK population of harbour (common) seals and note that the applicant will need to consider this in their EIA. The harbour seal Potential Biological Removal (PBR) for the Orkney and North Coast management area has recently been revised and is now just 9 (taking into consider the number of licences recently issued to shoot harbour seals to protect fisheries and salmon farms). PBR refers to the number of individuals that may safely be taken from a population without adversely effecting overall numbers in addition to normal mortality. This will need to be carefully considered in any assessment on potential impacts.

Survey methods and data analysis

We welcome the early engagement with regard to marine mammal survey methodology for this lease area. It should be noted, however, that the only methodology agreed was for the previous development proposal and that since then (and after approximately 1 year of data

had already been collected) the lease area and development design has changed. We strongly recommend the survey covers the current lease area and an appropriate buffer. We also strongly recommend that the applicant works with the adjacent developers to agree methodologies (and analysis) and to share and combine data where appropriate.

Potential impacts to marine mammals

The survey results should be used to inform the likelihood of disturbance to cetaceans during the various phases of the proposal. The ES should provide information on the acoustic properties of any 'significant underwater noise' generating activities (such as piling, drilling, vessel deployment, device operation, etc) and the frequency and duration at which these will occur. The ES should also provide appropriate mitigation measures to avoid any potential impacts. Information regarding potential mitigation measures is available in the *Guidelines for Minimising Acoustic Disturbance to Marine Mammals from Acoustic Surveys, JNCC (2004)*. We would be happy to advise further on potential mitigation.

Noise in the marine environment is an important cause of behavioural disturbance in cetaceans which use acoustics to navigate, locate prey and maintain social contact. Marine noise produced during installation, operation, maintenance and decommissioning could potentially interfere with these signals through masking of communication calls, or disruption of foraging clues. We recommend that the potential impacts on marine mammals from noise are carefully assessed in the ES. The noise monitoring data gathered at EMEC should be used to inform the ES for the proposed deployment.

Collision risk will also need to be assessed, and the monitoring work at EMEC for both the Atlantis and TGL device should be used to inform the ES.

Please note that certain haulout sites have been identified for protection under Section 117 of the Marine (Scotland) Act 2010 as detailed in the Scottish Government consultation. Under the Marine (Scotland) Act 2010 it is an offence to harass seals at designated haulout sites, and we recommend that any works that may cause potential disturbance to seal haulouts is considered in the ES. The island of Stroma is important for harbour and grey seals – particularly for grey seal pupping – and is included in the proposed list for designated haul outs.

Harbour seals are currently vulnerable to any impacts which could lead to their further population decline or prevent their recovery. We highlight, therefore, the report by SMRU on the preliminary findings of investigations in to the causes of the recent number of "corkscrew" injuries to seals. The injuries are consistent with the seals being drawn through a ducted propeller such as a Kort nozzle or some types of Azimuth thrusters. Such systems are common to a wide range of ships including tugs, self propelled barges and rigs, various types of offshore support vessels and research boats. Such systems may be used on the installation and maintenance vessels.

Basking sharks may use the area for passage and/or feeding. Basking sharks have full protection from intentional or reckless disturbance in Scottish waters (up to 12 miles offshore) under the section 6 of the Nature Conservation Act (Scotland) 2004. Basking sharks are known to be sensitive to sound (e.g. boat engine noise) and the risks of disturbance are similar to those of marine mammals, i.e. physical and marine noise related disturbance. Establishing the distribution and usage by basking sharks will be critical in determining the likelihood and significance of the array leading to any substantial loss of foraging habitat (potentially due to noise) and potential collision risk. The applicant should contact MS as licensing authority if disturbance to basking sharks is considered likely.

As raised generally, and in respect of other interests, we will be able to consider the potential effects of the proposed development on marine mammals and basking shark in more detail once the proposal is further progressed.

biv. Fish

Please see Appendix B for details of the legislative requirements that apply to SAC interests. Appendix E provides our advice on HRA, tailored to the tidal array, for fish which are an SAC qualifying interest.

Fish species to consider

Section 5.2.8 of the scoping report refers to 'Fish and Shellfish' present off the north east coast of Scotland. Atlantic salmon is the only migratory freshwater fish species mentioned in this section, although Table 5 does refer briefly to 'trout'. We would advise that European eel and sea trout should be considered together with Atlantic salmon. Although they are not part of a designated natural heritage site, they are of conservation importance, and there are records for them in the vicinity of the development site.

We provide advice on the following species:

Adult **Atlantic salmon** – Marine Scotland Science has published a report reviewing the migratory routes and behaviour of Atlantic salmon. We recommend that the applicant considers potential impacts on Atlantic salmon populations. Atlantic salmon is a host species for freshwater pearl mussels, and so this species would also need to be considered in the ES.

Post smolt **Atlantic salmon** which migrate in the upper layers of the water column, making use of dominant marine currents. Whilst many smolts use the near-shore areas during the commencement of their marine migratory phase, little is known about the migratory routes of fish from individual rivers.

**European eel** which is a conservation priority due to a 95% drop in its population over the last 20 years; it is considered by ICES to merit emergency action and is listed as 'critically endangered' on the IUCN Red list. Very little is known about their migration pathways – either as juveniles or adults. The report from Marine Scotland Science reviews the data available in relation to European eel migration routes and behaviour.

**Sea trout** which support a number of fisheries in Scotland. Many of these fisheries have undergone significant declines in the last 25 years and this was a primary reason for the addition of the species to the UKBAP priority list. The report from Marine Scotland Science reviews the data available in relation to sea trout migration routes and behaviour.

**Sea lamprey** have undergone significant declines and are on the UKBAP priority list.

What potential impacts need to be considered?

Installation impacts

Noise will be produced during the installation. Information on levels of noise production can should be provided and, using published literature, decide what impact, if any, this will have on fish movements through the area. In this regard the recent review commissioned by SNH may be helpful: it considers the current state of knowledge with regard to the potential impacts of noise, associated with marine renewable energy, on Atlantic salmon, sea trout and European eel.

Operational noise

Once the devices are installed and operational, there is the potential for the development to generate noise over the longer term. It is unclear what levels of noise will be generated and what impact this may have on fish. Noise monitoring work undertaken at EMEC may help to address this.

On-shore impacts

Once we have further information regarding the on-shore proposals we will be able to provide advice on any further potential impacts.

Electromagnetic effects (EMF)

The response of fish to EMF is poorly understood and the applicant should consider this as discussed in section aiii above. The SNH review may be helpful in considering EMF with regard to Atlantic salmon, sea trout and European eel.

The above impacts should also be considered in terms of cumulative and in-combination impacts. They should also be considered for the different life stages of the species concerned.

bv. Hydrodynamic Processes & Coastal Geomorphology

Please note that figure 8 of the scoping report is missing an appropriate legend, so the information cannot be properly interpreted. Designated geological sites in the area include: John o'Groats SSSI and Duncansby to Skirza Head Geological Conservation Review (GCR) site. It is unlikely that the proposals would have any impact on these sites.

Our own key concerns relate to the associated development – the directional drilling, cabling and land-based infrastructure. While there are no details yet in this regard, we highlight that the location and design of these elements need careful thought and planning, and we strongly recommend that expert advice is sought from an experienced coastal geomorphologist.

**ADVICE IN RESPECT OF ONSHORE ELEMENTS**

We provide our advice below relating to the potential impacts from the onshore elements of the tidal array infrastructure on various natural heritage interests:

ci. Habitats
cii. Ornithology
ciii. Mammals
civ. Reptiles & Amphibians
cv. Fish of Conservation Concern
cvi. Hydrology & Hydrogeology

As discussed in the covering letter, we highlight that project details are not yet finalised and therefore there is a lack of information regarding the onshore elements of this proposal. Once the proposal is further progressed and these details are available, then we will be able to refine and focus our general advice below.

ci. Habitats

Habitat survey work will be required in respect of cable and grid connection routes, as well as for construction of any onshore substation and other infrastructure. This should also cover intertidal habitats if potential impacts are likely.

Further information on designated sites is available from SNH's sitelink. Appendix B provides an overview of the legislative requirements relating to SPAs and SACs, while further information on SSSIs can be obtained from our website.

cii. Ornithology

The location of all elements of onshore infrastructure will need to be considered in respect of potential impacts to bird species, including species which are a qualifying interest of SPAs.

ciii. Mammals

The location of all elements of onshore infrastructure will need to be considered in respect of potential impacts to mammals. Survey work will be required for any mammal species likely to occur in locations where onshore works are proposed. Appendix C provides advice on the legislation that relates to otters and bats, both of which are European protected species (EPS). In Appendix B we provide overall advice on the Habitats and Birds Directives and the process of Habitats Regulations Appraisal (HRA) that will consider potential impacts to otter as a qualifying interest of Special Areas of Conservation (SAC). In Appendix E we provide initial tailored advice that addresses the impacts of the onshore elements of the proposal tidal array where otter is a qualifying interest of SACs.

Otter survey work should also cover suitable habitats in the marine and freshwater environment. Information on survey methodologies and mitigation for otters is available in the SNH publication "*Otters and Development*".

Please note that the North East Scotland Biodiversity Group (see section 5.3.5 of the scoping report) covers the area of Aberdeenshire and Moray, not Caithness. We recommend consulting the Highland Biodiversity Group to obtain suitable information.

civ. Reptiles & Amphibians

The location of all elements of onshore infrastructure will need to be considered in respect of reptiles and amphibians.

cv. Fish

The applicant may need to consider the fish species which are qualifying interests of SACs e.g. Atlantic salmon and other non SAC qualifying interest fish e.g. European eel in their EIA and HRA, dependent upon the proposed locations for onshore works and whether there is any connectivity, or possible effect, on these watercourses. The applicant will also need to consider potential impacts on freshwater pearl mussels which rely on salmonids for part of their life cycle.

cvi. Hydrology & Hydrogeology

The applicant should contact SEPA in the first instance for advice on hydrological and hydrogeological aspects. If any freshwater SACs require consideration – which depends upon the proposed location of onshore infrastructure – then we can provide further advice.

## APPENDIX B

## HABITATS & BIRDS DIRECTIVES, & HABITATS REGULATIONS

The two most influential pieces of European legislation relating to nature conservation are the Habitats and Birds Directives. The 'Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora' was adopted in 1992 and is commonly known as the Habitats Directive. It complements and amends (for classified SPAs) Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended), commonly known as the Birds Directive.

The Birds Directive protects all wild birds, their nests, eggs and habitats within the European Community. It gives EU member states the power and responsibility to classify Special Protection Areas (SPAs) to protect birds which are rare or vulnerable in Europe as well as all migratory birds which are regular visitors.

The Habitats Directive builds on the Birds Directive by protecting natural habitats and other species of wild plants and animals. Together with the Birds Directive, it underpins a European network of protected areas known as Natura 2000 comprising SPAs classified under the Birds Directive and Special Areas of Conservation (SACs) designated under the Habitats Directive.

The Habitats Directive is transposed into domestic law in Scotland by the 'Conservation (Natural Habitats, &c.) Regulations 1994' which came into force on 30 October 1994 – usually called simply the **Habitats Regulations**. For all onshore elements that may be consented through the Town and Country Planning system the amended 1994 Scottish Habitats Regulations will apply. Certain provisions of The Conservation of Habitats and Species Regulations 2010, as amended (the "2010 Habitats Regulations") apply to Natura sites in Scotland where they may be affected by activities consented under section 36 or section 37 of the Electricity Act 1989. Please note that SNH is currently seeking advice on the full scope of interaction between the 1994 Regulations as amended and the 2010 Regulations as amended, and their application in Scotland. However, as the provisions for Natura sites under both sets of legislation are fundamentally the same, this will not alter the underlying principals or main actions required in a Habitats Regulations Appraisal, as described below.

<u>Habitats Regulations Appraisal</u>

Where a plan or project could affect a Natura site, both the 1994 and 2010 Regulations require the competent authority – the authority with the power to undertake or grant consent, permission or other authorisation for the plan or project in question – to:

- determine whether the proposal is directly connected with or necessary to site management for conservation; and, if not,
- determine whether the proposal is likely to have a significant effect on the site either individually or in combination with other plans or projects; and, if so, then
- make an appropriate assessment of the implications (of the proposal) for the site in view of that site's conservation objectives.

This process is now commonly referred to as Habitats Regulations Appraisal (HRA). HRA applies to any plan or project which has the potential to affect the qualifying interests of a Natura site, even when those interests may be at some distance from that site.

The competent authority, with advice from SNH, decides whether an appropriate assessment is necessary and carries it out if so. It is the applicant who is usually required to provide the information to inform the assessment. Appropriate assessment focuses exclusively on the qualifying interests of the Natura site affected and their conservation objectives. A plan or project can only be consented if it can be ascertained that it will not adversely affect the integrity of a Natura site (subject to no alternatives and imperative reasons of overriding public interest).

Further Information and Advice on HRA

In this scoping response we provide tailored advice for HRA in respect of birds that are qualifying interests of SPAs, and for the various qualifying interests of terrestrial and marine SACs in the area.

- Appendix D – SNH Advice on Habitats Regulations Appraisal for SPAs
- Appendix E – SNH Advice on Habitats Regulations Appraisal for SACs

In respect of this, further information on the ***qualifying interests*** and the ***conservation objectives*** for each relevant Natura site is available from SNH's Sitelink database.

For further general advice on the HRA process please see SNH's website, including the leaflet on "*Natura sites and the Habitats Regulations*" which provides a helpful summary. Some of the key concepts are explained in the European Commission's guidance on Article 6 of the Habitats Directive. Revised guidance updating the Scottish Office Circular 6/1995 on the implementation of the Habitats and Birds Directive in Scotland was produced in June 2000. This sets out current Government policy relating to Natura sites.

**APPENDIX C**

**EUROPEAN PROTECTED SPECIES**

Certain species are listed on Annex IV of the Habitats Directive as species of European Community interest and in need of strict protection. The protective measures required are outlined in Articles 12 to 16 of the Directive. The species listed on Annex IV whose natural range includes any area in the UK are known as 'European protected species'.

**SNH** is the statutory nature conservation body who provides advice on EPS in respect of the Habitats Regulations in Scotland, including Scottish Territorial Waters. A summary of the legal requirements for EPS is as follows:

The Conservation (Natural Habitats, &c.) Regulations 1994 as amended. (Known as the 'Habitats Regulations'.)
Protection of certain wild animals
39. (1) It is an offence –

(a) deliberately or recklessly to capture, injure or kill a wild animal of a European protected species;

(b) deliberately or recklessly –

i. to harass a wild animal or group of wild animals of a European protected species;

ii. to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;

iii. to disturb such an animal while it is rearing or otherwise caring for its young;

iv. to obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;

v. to disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs;

vi. disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; or

vii. to disturb such an animal while it is migrating or hibernating;

(c) deliberately or recklessly to take or destroy the eggs of such an animal; or

(d) to damage or destroy a breeding site or resting place of such an animal.

(2) Subject to the provisions of this Part, it is an offence to deliberately or recklessly disturb any dolphin, porpoise or whale (cetacean).

Scottish Government has also provided guidance on the 2007 amendments addressing EPS – *Explanatory guidance for species related activities*.

EPS Licences

Licences may be given authorising activities that could affect EPS which would otherwise be illegal under the Habitats Regulations. For Scottish territorial waters these licences will be issued either by Marine Scotland or by SNH depending on the reason for the licence request. Please note that Marine Scotland are now responsible for issuing licences for cetaceans, and SNH will be responsible for issuing licences for otters. Licences are only issued under very strict conditions as set out in regulations 44 and 45 of the Habitats Regulations.

As highlighted in Scottish Government Interim Guidance, three tests must be satisfied before the licensing authority can issue a licence under Regulation 44(2) of the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) to permit otherwise prohibited acts. An application for a licence will fail unless all of the three tests are satisfied. The three tests involve the following considerations:

Test 1 - The licence application must demonstrably relate to one of the purposes specified in Regulation 44(2) (as amended). For development proposals, the relevant purpose is likely to be Regulation 44(2)(e) for which MS/SNH are currently the licensing authority, depending if it is onshore or offshore activity. This regulation states that licences may be granted only for the purpose of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment."

Test 2 - Regulation 44(3)(a) states that a licence may not be granted unless the licensing authority is satisfied "that there is no satisfactory alternative".

Test 3 - Regulation 44(3)(b) states that a licence cannot be issued unless the licensing authority is satisfied that the action proposed "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" (The licensing authority will, however, seek the expert advice of SNH on this matter).

Consideration of European protected species must be included as part of the application process, not as an issue to be dealt with at a later stage. Any consent given without due consideration to these species is likely to breach European Directives with the possibility of consequential delays or the project being halted by the EC.

**APPENDIX D**

**INNER SOUND TIDAL ARRAY: HABITATS REGULATIONS APPRAISAL – SPECIAL PROTECTION AREAS**

Introduction

In the following advice for HRA we set out the three steps that need to be considered in order to determine whether or not the proposed tidal array is likely to have a significant effect on qualifying interests of SPAs, and any possible adverse impact on site integrity – Appendix B provides more detail on the legislative framework. It is the competent authority (most likely Marine Scotland for Section 36 consent for the off-shore proposal and the planning authority for planning consent) who will carry out the HRA, based on our advice and using information and data collated by the developer.

Under HRA, the potential impacts of the tidal array will need to be considered alone and in combination with other plans and projects. It may also need to be considered in combination with other aspects of the tidal array, such as other phases, grid connection and on-shore infrastructure, with other wave and tidal renewable energy developments within the Pentland Firth and Orkney Waters leasing round, and with other types of industry and activity in the region both on and off-shore.

Special Protection Areas for inclusion in HRA

We note that the lease site is almost entirely within the North Caithness Cliffs SPA. At this early stage of the process we do not have full details on the development being proposed or finalised locations of all elements of infrastructure. We have provided comments on the boat based survey methodology, and we welcome the opportunity to review and provide further comment on this work. We note that the seabird surveys may not cover the entire lease area. Once this information has been provided, we will be able to provide further information on which SPAs should be included in the HRA.

Prior to this, we recommend using the meta-data on seabird foraging ranges available from the Birdlife International database (http://seabird.wikispaces.com/) to determine which qualifying species from which sites are included. For some seabird species, the meta-data is such that it allows the use of cumulative frequency plots to determine the foraging range at which 95% of the population will be included. If these data are not available, or of poor quality, then we recommend using the mean of the species maximum foraging range. Although this will initially produce a long list of SPAs, this will be refined through an iterative process as the results of survey work are presented by developers, and as species sensitivity to potential impacts from the proposal are defined.

We have recently received the HRA screening report and will provide additional comments on this in due course. These comments may need to be taken into account as part of our tailored scoping advice.

Further information on SPAs, including their conservation objectives, is available from http://www.snh.org.uk/snhi/

HRA should address all elements of the tidal array proposal – onshore works as well as offshore elements. However, at this early stage in the process we do not have full details on the development being proposed or finalised locations of all elements of infrastructure. In particular there is limited information on the onshore works, and we cannot provide focused advice for HRA in respect of this until further details are submitted.

Advice for HRA in respect of SPA qualifying interests

We provide advice on the legislative requirement for HRA in Appendix B. The steps of the process are as follows and our advice is tailored to consideration of the tidal array:

**Step 1: Is the proposal directly connected with or necessary for the conservation management of the SPAs?**

The tidal array is not directly connected with or necessary for the conservation management of the SPAs.

**Step 2: Is the proposal likely to have a significant effect on the qualifying interests of the SPAs either alone or in combination with other plans or projects?**

This step acts as a screening stage: it removes from the HRA those proposals (plans or projects) which clearly have no connectivity to SPA qualifying interests or where it is very obvious that the proposal will not undermine the conservation objectives for these interests, despite a connection. When this screening step is undertaken at an early stage in the development process, it usually means that it takes the form of a desk-based appraisal. We advise that this is kept broad so that potentially significant impacts are not missed out, or discounted too early, in any HRA (or EIA).

The SPA bird interests being considered in respect of tidal energy developments are wide-ranging – many seabirds make long foraging trips, especially during the breeding season. This means that tidal energy proposals may be 'connected to' SPAs even at great distances. Although connectivity is thus established the fact that the proposal is located further away from the designated sites means that direct impacts are less likely on qualifying species while they are within the SPA.

Expert agreement over species sensitivity should help to identify those SPA qualifying interests for which the conservation objectives are unlikely to be undermined by tidal energy developments, despite any possible connection (e.g. SPA qualifiers which are recorded within a proposed tidal site but where their flight behaviour and / or foraging ecology means that the tidal energy development will not have a likely significant effect).

Determination of 'likely significant effect' is not just a record of presence or absence of bird species at a tidal development site, but also involves a judgement as to whether any of the SPA conservation objectives might be undermined. Such judgement is based on a simple consideration of the importance of the area in question for the relevant species. Complex data analysis should not be required at this stage. For example; how many birds have been recorded? What are they using the area for? Is this the only area that they can use for this particular activity? Understanding the behavioural ecology of the species, and the characteristics and context of the proposed tidal development site, will help in determining whether there are likely significant effects.

There are three possible conclusions for this step of HRA:

- The likely impacts are such that there is clear potential for the conservation objectives to be undermined – conclude likely significant effect.
- The likely impacts are so minimal (either because the affected area is not of sufficient value for the birds concerned or because the risk to them is so small) that the conservation objectives will not be undermined – conclude no likely significant effect.
- There is doubt about the scale of the likely impacts in terms of the conservation objectives – conclude likely significant effect.

**Step 3: Can it be ascertained that the proposal will not adversely affect the integrity of the SPA, either alone or in combination with other plans or projects?**

This stage of HRA is termed appropriate assessment, and it is undertaken by the competent authority based on information supplied by the developer, with advice provided by SNH. Appropriate assessment considers the implications of the proposed development for the conservation objectives of the qualifying interests for which a likely significant effect has been determined. These conservation objectives follow a standard format requiring protection of the qualifying bird interests and protection of the habitat in the SPA which supports them.

Conservation objectives for SPA bird species

> To ensure that site integrity is maintained by:
>
> (i) Avoiding deterioration of the habitats of the qualifying species.
> (ii) Avoiding significant disturbance to the qualifying species.
>
> To ensure for the qualifying species that the following are maintained in the long term:
>
> (iii) Population of the bird species as a viable component of the SPA.
> (iv) Distribution of the bird species within the SPA.
> (v) Distribution and extent of habitats supporting the species.
> (vi) Structure, function and supporting processes of habitats supporting the species.
>
> **repeat of (ii**) No significant disturbance of the species.

It is important to recognise that the conservation objectives primarily offer site-based protection and that some of them will not directly apply to species when they are outwith the boundaries of the SPA. This is particularly true of objectives (i), (v) and (vi) which relate to the supporting habitats within the SPA.

Objective (iii) however – maintenance of the population of the bird species as a viable component of the SPA – will be relevant in most cases because:

- It encompasses direct impacts to the species, such as significant disturbance to qualifying bird interests when they are outwith the SPA.
- It addresses indirect impacts such as the degradation or loss of supporting habitats which are outwith the SPA but which help to maintain the population of the bird species of the SPA in the long-term.

Finally, in rare circumstances, it is possible that factors / events outside site boundaries may have the capacity to affect the long term distribution of bird species within the SPA – see objective (iv).

Issues to consider under appropriate assessment

The key question in any appropriate assessment for the tidal array is whether it can be ascertained that this proposal, alone or in combination, will not adversely affect the population of any qualifying bird species as a viable component of the SPAs under consideration.

Ongoing Liaison

We will continue to review our advice on HRA as the proposal progresses, as survey work and analyses are undertaken, and when construction methods, location of infrastructure, and other aspects of the proposal have been finalised. We will be able to provide further advice once we have reviewed the HRA screening report.

**APPENDIX E**

**INNER SOUND TIDAL ARRAY: HRA ADVICE– SPECIAL AREAS OF CONSERVATION**

Introduction

In the following advice for Habitats Regulations Appraisal (HRA) we set out the three steps that need to be considered in order to determine whether or not the tidal array is likely to have a significant effect on the qualifying interests of Special Areas of Conservation, and any possible adverse impact on the site integrity of SACs – Appendix B provides more detail on the legislative framework. It is the competent authority (most likely Marine Scotland for Section 36 consent for the off-shore proposal and the planning authority for planning consent) who will carry out the HRA, based on our advice and using information and data collated by the developer.

Under HRA, the potential impacts of the tidal array will need to be considered alone and in combination with other plans and projects. It may also need to be considered in combination with other aspects of the tidal array, such as other phases, grid connection and on-shore infrastructure, with other wave and tidal renewable energy developments within the Pentland Firth and Orkney Waters leasing round, and with other types of industry and activity in the region both on and off-shore.

Special Areas of Conservation for Inclusion in HRA

We recommend that the following SACs are addressed in relation to HRA:

- **Sanday SAC** designated for its population of harbour seals.
- **Faray and Holm of Faray SAC** designated for its population of grey seals.
- **North Rona SAC** designated for its population of grey seals.
- **Dornoch Firth and Morrich More SAC** designated for its population of harbour seals.
- **Moray Firth SAC** designated for its population of bottlenose dolphin.
- **Isle of May** designated for its population of grey seals.
- **Berwickshire and North Northumberland Coast SAC** designated for its population of grey seals.
- **River Thurso SAC** designated for its Atlantic salmon.
- **Berriedale and Langwell Waters SAC** designated for its Atlantic salmon.
- **River Borgie SAC** designated for its Atlantic salmon and freshwater pearl mussel.
- **River Naver SAC** designated for its Atlantic salmon and freshwater pearl mussel.
- **River Evelix SAC** designated for its freshwater pearl mussel.
- **River Oykel SAC** designated for its Atlantic salmon and freshwater pearl mussel.
- **River Moriston SAC** designated for its Atlantic salmon and freshwater pearl mussel.
- **River Spey SAC** designated for its Atlantic salmon, sea lamprey and freshwater pearl mussel.
- **Little Gruinard River SAC** designated for its Atlantic salmon.
- **Abhainn Clais an Eas and Allt a' Mhuilinn SAC** designated for its freshwater pearl mussel.
- **Caithness and Sutherland Peatlands SAC** designated for its population of otters.

We have considered other qualifying features from the SACs above and other SACs in close proximity to the lease site, and included only those that we consider relevant i.e. where there may be connectivity between the tidal array proposal and the SAC. We confirm that we have considered the qualifying habitats of Caithness and Sutherland Peatlands SAC and, on the

basis of the current onshore works location, advise that it is unlikely that the proposals would have a significant effect on the qualifying habitats of this SAC.

Once we have been provided with further information on the location of the on-shore works, we will be able to provide further information on whether the proposal will have a likely[29] significant effect (step 2 below) on the qualifying habitats of the Caithness and Sutherland Peatlands SAC.

HRA should address all elements of the tidal array proposal – onshore works as well as offshore elements. However, at this early stage in the process we do not have full details on the development being proposed or finalised locations of all elements of infrastructure. In particular there is limited information on the onshore works, and we cannot provide focused advice for HRA in respect of this until further details are submitted.

Further information on SACs is available from http://www.snh.org.uk/snhi/.

SNH advice for HRA in respect of Special Areas of Conservation

We provide advice on the legislative requirement for HRA in Appendix B. The steps of the process are as follows; our advice is tailored to consideration of the tidal array:

**Step 1: Is the proposal directly connected with or necessary for the conservation management of the SACs?**

The proposed tidal array is not directly connected with or necessary for the conservation management of any of the SACs listed above.

**Step 2: Is the proposal likely to have a significant effect on the qualifying interests of the SACs either alone or in combination with other plans or projects?**

This step acts as a screening stage: it removes from the HRA those proposals which clearly have no connectivity to SAC qualifying interests or where it is very obvious that the proposal will not undermine the conservation objectives for these interests, despite a connection When this screening step is undertaken at an early stage in the development process, it usually means that it takes the form of a desk-based appraisal.

While a desk-based review is helpful for this screening step, this part of the HRA will only be fully completed when the tidal array proposal has been further progressed – when survey work and analyses have been completed, and when the location of / construction and installation methods for tidal array infrastructure, including onshore elements, has been finalised.

There are three possible conclusions to this step of HRA:

a) The likely impacts are such that there is clear potential for the conservation objectives to be undermined – conclude likely significant effect.
b) The likely impacts are so minimal that the conservation objectives will not be undermined – conclude no likely significant effect.
c) There is doubt about the scale of the likely impacts in terms of the conservation objectives – conclude likely significant effect.

However, we are not yet in a position to present a definite conclusion for this step, so we provide a **summary of our current advice** in respect of SAC interests:

**Grey seals** of North Rona SAC, Faray and Holm of Faray SAC, Isle of May SAC and Berwickshire and North Northumberland Coast SAC.

As indicated from seal telemetry work in the Pentland Firth and Orkney Waters, the tidal array is within the potential foraging range of grey seals from these SACs. Installation, boat movements, piling and other construction activity may give rise to disturbance. There may also be collision risk and impacts to the prey species of seals – either from the placement of infrastructure or due to noise. We advise that there is potential for the proposal to have likely significant effects on grey seals and we discuss below (under step 3) the issues that we think need to be considered.

**Summary of our current advice:** likely significant effect, so impacts (including cumulative) will need to be considered in appropriate assessment (see step 3).

**Harbour seals** of Sanday SAC and Dornoch Firth and Morrich More SAC. As indicated from seal telemetry work in the Pentland Firth and Orkney Waters, the tidal array is within the potential foraging range of harbour seals from these SACs. Installation, boat movements, piling and other construction activity may give rise to disturbance. As for grey seals there may also be collision risk and impacts to the prey species of seals – either from the placement of infrastructure or due to noise. We advise that there is potential for the proposal to have likely significant effects on harbour seals and we discuss below (under step 3) the issues that we think need to be considered.

**Summary of our current advice**: likely significant effect, so impacts (including cumulative) will need to be considered in appropriate assessment (see step 3).

**Bottlenose dolphins** of Moray Firth SAC. It is well-established that bottlenose dolphins are wide-ranging, particularly down the east coast of Scotland. It is less clear whether dolphins travel north, with limited observations of bottlenose dolphins in the Pentland Firth and Orkney waters.

**Summary of our current advice**: potential for likely significant effect. We recommend that further work (desk based) is undertaken to ascertain the frequency and potential for individuals from the Moray Firth SAC population to be impacted by this development. Once this work has been undertaken, we can advise on whether or not bottlenose dolphins as a qualifying feature of the Moray Firth SAC require any further consideration as part of an HRA.

**Atlantic salmon** of River Thurso SAC, Berriedale and Langwell Waters SAC, River Borgie SAC, River Naver SAC, River Oykel SAC, River Moriston SAC, River Spey SAC, and Little Gruinard River SAC. The proposed tidal array may be located within the migratory pathways of Atlantic salmon from these designated sites. Construction and operational noise/vibration may give rise to disturbance of Atlantic salmon. There is also the potential for collision risk and disturbance from EMF. We advise that there is potential for the proposal to have likely significant effects on Atlantic salmon and we discuss below (under step 3) the issues that we think need to be considered.

**Summary of our current advice**: likely significant effect due to the potential disturbance to igrating Atlantic salmon, so impacts (including cumulative) will need to be considered in appropriate assessment (see step 3).

**Freshwater pearl mussels** of River Borgie SAC, River Naver SAC, River Evelix SAC, River Oykel SAC, River Moriston SAC, River Spey SAC, and Abhainn Clais an Eas and Allt a' Mhuilinn SAC. Atlantic salmon (and other salmonids) are integral to the life cycle of freshwater pearl mussel (FWPM), therefore any impacts to Atlantic salmon that prevent them

from returning to their natal rivers may have a resulting effect on FWPM populations. While we consider this matter needs discussion in any appropriate assessment we do not identify any survey or research requirements. The impacts are indirect, dependent on the impacts the proposal may have on Atlantic salmon.

**Summary of our current advice**: likely significant effect due to changes to the distribution and viability of the freshwater pearl mussel host species, so direct and indirect impacts (including cumulative) will need to be considered in appropriate assessment as part of the assessment of any direct impacts on host species (see step 3).

**Sea lamprey** of the River Spey SAC. The proposed tidal array may be located within the migratory pathways of sea lamprey from this designated site. Construction and operational noise/vibration may give rise to disturbance of sea lamprey. There is also the potential for collision risk and disturbance from EMF. We advise that there is potential for the proposal to have likely significant effects on sea lamprey and we discuss below (under step 3) the issues that we think need to be considered.

**Summary of our current advice**: likely significant effect due to the potential disturbance to migrating sea lamprey, so impacts (including cumulative) will need to be considered in appropriate assessment (see step 3).

**Otters** of Caithness and Sutherland Peatlands SAC. The potential options for cabling and onshore works are within the home range (10-20km) of otters from this designated site. Boat movements, cable-laying, directional drilling and other construction activity may also give rise to the disturbance of otters. And there may be impacts to their prey species – either from the placement of infrastructure or due to noise. We advise that there is potential for the proposal to have likely significant effects on otters and we discuss below (under step 3) the issues that we think need to be considered.

**Summary of our current advice**: likely significant effect, so impacts (including cumulative) will need to be considered in appropriate assessment (see step 3).

**Step 3: Can it be ascertained that the proposal will not adversely affect the integrity of the SAC, either alone or in combination with other plans or projects?**

This stage of HRA is termed **appropriate assessment**, and it is undertaken by the competent authority based on information supplied by the developer, with advice provided by SNH. Appropriate assessment considers the implications of the proposed development for the **conservation objectives** of the qualifying interests for which a likely significant effect has been determined. We discuss this below for each of the qualifying interests listed above.

**North Rona SAC, Faray and Holm of Faray SAC, Isle of May SAC and Berwickshire and North Northumberland Coast SAC: advice on grey seals.**

> The conservation objectives for grey seals are:
>
> (i) to avoid deterioration of the habitats of this species or
> (ii) significant disturbance to the seals, thus ensuring that the integrity of each SAC is maintained and that it makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features.
>
> And to ensure for grey seals that the following are maintained in the long term:
>
> (iii) Population of grey seals as a viable component of each site.
> (iv) Distribution of grey seals within each site.
> (v) Distribution and extent of habitats supporting grey seals.
> (vi) Structure, function and supporting processes of habitats supporting grey seals.
>
> **repeat of (ii)** No significant disturbance of grey seals.

For grey seals, it is probably conservation objectives (ii) and (iii) that have most relevance – significant disturbance and population of the species as a viable component of each SAC. The proposal is far enough away from these SACs for there not to be direct impacts, or disturbance, to the seals while they are within the SACs. However, there may be occasions when the seals forage far enough from the SAC to come into contact with the proposed tidal array.

We advise that noise impact assessment is likely to be an important part of assessing any disturbance to grey seals while they are outwith the SACs, including their potential displacement from feeding grounds and other supporting habitats. We highlight that collision risk will need to be considered, as will potential impacts on the prey species of seals.

While we consider that the installation phase may give rise to the greatest risk of disturbance, potential impacts during the operational (including maintenance) phase of the proposal will also need to be considered, as well as any repowering and decommissioning work.

**Sanday SAC and Dornoch Firth and Morrich More SAC: advice on harbour seals**.

The conservation objectives for the harbour seal populations of these SACs are the same as those we have listed above for grey seals. Those requiring consideration – objectives (iii) and (ii) – are discussed in the previous section.

**Moray Firth SAC: advice on bottlenose dolphins**.

The conservation objectives for bottlenose dolphins at the Moray Firth SAC incorporate an important restorative element to ensure that the population of bottlenose dolphin as a viable component of the SAC is established then maintained in the long term. This objective again applies to direct and indirect impacts to bottlenose dolphin while they are outwith the Moray Firth, and it encompasses consideration of significant disturbance in the context of population viability.

We advise that further consideration of the potential for bottlenose dolphins to be impacted by this development needs to be given. This should include frequency of observations within the Pentland Firth, numbers of surveys considering northern movements of bottlenose dolphins etc. Key impacts from tidal devices are likely to include noise impacts and collision risk, as well as potential impacts on the prey species of dolphins.

We can provide further advice on what to consider in HRA if it is concluded there is a likely significant effect on bottlenose dolphins from this development.

**River Thurso SAC, Berriedale and Langwell Waters SAC, River Borgie SAC, River Naver SAC, River Oykel SAC, River Moriston SAC, River Spey SAC, and Little Gruinard River SAC: advice on Atlantic salmon.**

> The SAC conservation objectives for Atlantic salmon are:
>
> (i) to avoid deterioration of the habitats of the qualifying species or (ii) significant disturbance to them, thus ensuring that the integrity of the SAC is maintained and that they make an appropriate contribution to achieving favourable conservation status for the qualifying species.
>
> And to ensure for the qualifying species that the following are maintained in the long term:
>
> (iii) Population of the species, including range of genetic types for salmon, as a viable component of the SACs.
> (iv) Distribution of the species within sites.
> (v) Distribution and extent of habitats supporting each species.
> (vi) Structure, function and supporting processes of habitats supporting each species.
>
> **repeat of (ii)** No significant disturbance of the species.

The key question in any appropriate assessment for the tidal array is whether it can be ascertained that this proposal, alone or in-combination, will not adversely affect the population of the qualifying species as a viable component of these SACs.

Information to support the application should consider all aspects of the proposal with the potential to affect the conservation objectives of these sites and, through this, ascertain whether the proposal will not adversely affect the integrity of a Natura site.

We advise that a noise/vibration/EMF impact assessment is likely to be an important part of assessing any disturbance to Atlantic salmon while they are outwith these SACs. Further information on the installation, operation, maintenance and decommissioning of the array is required to assess whether there will be any direct disturbance to Atlantic salmon. We highlight that collision risk will need to be considered.

**River Borgie SAC, River Naver SAC, River Evelix SAC, River Oykel SAC, River Moriston SAC, River Spey SAC, and Abhainn Clais an Eas and Allt a' Mhuilinn SAC: advice on freshwater pearl mussels.**

> The SAC conservation objectives for Atlantic salmon and freshwater pearl mussel (where appropriate) are:
>
> (i) to avoid deterioration of the habitats of the qualifying species or (ii) significant disturbance to them, thus ensuring that the integrity of the SAC is maintained and that they make an appropriate contribution to achieving favourable conservation status for each species.
>
> And to ensure for each species that the following are maintained in the long term:
>
> (iii) Population of the species, including range of genetic types for salmon (where relevant), as a viable component of the SACs.
> (iv) Distribution of the species within sites.
> (v) Distribution and extent of habitats supporting each species.
> (vi) Structure, function and supporting processes of habitats supporting each species.[34]
>
> **repeat of (ii)** No significant disturbance of the species.
>
> And in addition for freshwater pearl mussel in particular, to ensure that the following are maintained in the long term:
>
> (vii) Distribution and viability of freshwater pearl mussel host species
> (viii) Structure, function and supporting processes of habitats supporting freshwater pearl mussel host species

The key requirement will be to demonstrate that the distribution and viability of the freshwater pearl mussel host species are maintained in the long term - conservation objective (vii). This is discussed above in the section for Atlantic salmon.

**River Spey SAC: advice on sea lampreys.**

The conservation objectives for the sea lamprey populations of this SAC are the same as those we have listed above for Atlantic salmon. Those requiring consideration – objectives (ii) and (iii) – are discussed in the section above for Atlantic salmon.

**Caithness and Sutherland Peatlands SAC: advice on otters.**

The conservation objectives for the otter population in this SAC are the same as those we have listed above for grey and harbour seals.

Based on these conservation objectives the following questions need to be addressed in an appropriate assessment of potential impacts of the proposal on the otter population of the Caithness and Sutherland Peatlands SAC:

- Will the proposal cause significant disturbance to otters while they are outwith the SAC such that the viability of this SAC population will be affected?

- Will the proposal affect the viability of the SAC population of otters in any way?

Further information on cabling and on-shore infrastructure is required to assess whether there will be any direct disturbance to otters, including their potential displacement from foraging grounds and other supporting habitats.

Ongoing Liaison

We will continue to review our advice on HRA as the proposal progresses, as survey work and analyses are undertaken, and when construction methods, location of infrastructure, and other aspects of the proposal have been finalised. We will be able to provide further advice once we have reviewed the HRA screening report.

## British Telecom (Radio Network Protection Team)

We have studied this tidal energy project proposal with respect to EMC and related problems to BT point-to-point microwave radio links.

The conclusion is that, the Tidal Energy Project indicated should not cause interference to BT's current and presently planned radio networks as all turbines are fully submerged. Location and size of on shore buildings will have to be checked once the details have been decided.

## Chamber of Shipping

The Chamber of Shipping welcomes the opportunity to comment on the EIA Scoping Document for the proposed Inner Sound Tidal Energy Project. The proposed project is in an area of significant importance for shipping and navigation and we are satisfied that this has been taken into consideration in the document and that the EIA will include a full Navigational Safety Risk Assessment (NSRA).

We are pleased to note that the results of the Preliminary Hazard Analysis (PHA) have been included in Annex B as this has helped our own analysis of the potential risks the project could present to shipping and navigation. The data and analysis presented in section 5.2.14 "Ports, Shipping and Navigation" and Annex B indicate that, as well as key ferry routes linking Orkney and the mainland, the Inner Sound is also used by vessels taking the recommended route to avoid the busier lanes of the Outer Sound. The area is clearly of vital importance to both local and international commercial traffic and therefore projects should be located in such a way that they do not pose unacceptable safety risks to vessels or cause significant rerouting.

As identified in the PHA, there are clearly issues to be addressed regarding under keel clearance (UKC). MeyGen's target of ensuring device rotor sweep arcs are at least 8m below chart datum is likely to be insufficient if estimates of maximum vessel drafts of 6-8m are accurate. The Chamber ordinarily recommends a minimum clearance of 20m between the highest point of the device and chart datum at lowest astronomical tide (LAT) in order to ensure sufficient UKC. With this is mind, we are somewhat concerned that that proposed location of the tidal array will not allow satisfactory clearance to be achieved and would therefore pose an unacceptable safety risk to local traffic.

The shorter 2m draft of the Pentland Ferry "Pentalina" means that UKC may not necessarily be as much of an issue as with other vessels operating in the area. However, sufficient UKC must be maintained to ensure that the ferry routes are not disrupted. We are pleased to note that MeyGen has already been working with Pentland Ferries to address these issues.

Overall we are satisfied with the conclusions made in Section 9 of Annex B. These clearly identify a number of key issues to be addressed by the NSRA, including possible displacement of traffic, cumulative effects of other offshore renewable energy developments in the region, and the need to implement measures to avoid and control device failures such as detachment of components from the main device structure. As noted above, the UKC issue is of particular concern to the Chamber and we wish to see further analysis undertaken in this area in order to assess whether the risks to shipping and navigation will be acceptable.

## Civil Aviation Authority

The CAA has no comment on tidal projects.

## Crown Estate

Thank you for consulting us on the report. We do not have any comments to make on the content of the report.

## Defence Infrastructure Organisation

Thank you for consulting the MOD on the proposal. I can confirm we have no objections.

## Health and Safety Executive

Environmental Impact Assessments are concerned with projects which are likely to have significant effects on the environment. HSE's principal concerns are the health and safety of people affected by work activities. HSE cannot usefully comment on what information should be included in the environmental statement of the proposed development. However, the environmental statements should not include measures which would conflict with the requirements of the Health and Safety at Work etc. Act 1974 and its relevant statutory provisions.

## Historic Scotland

Thank you for your letter of 17 June 2011 seeking our comments on the above proposed development. We have treated it as a request for information on the potential scope of any Environmental Impact Assessment (EIA) which might be required for the proposals.

We are an agency within the Scottish Government directly responsible to Scottish Ministers for the protection and promotion of the historic environment. Our comments here concentrate on our statutory remit for scheduled monuments and their setting, category A listed buildings and their setting, gardens and designed landscapes appearing in the *Inventory* and designated wreck sites (Protection of Wrecks Act 1973).

Highland Council's conservation and archaeological service will also be able to advise the developer on the likely impacts from the development on the historic environment, particularly in relation to onshore unrecorded and unscheduled archaeology, but they also may wish to comment on offshore marine archaeology. The planning authority will be able to comment on potential impacts from the scheme on B and C(S) listed buildings and conservation areas.

<u>Our view on the principle of the proposal</u>

I understand that the development comprises a 398MW tidal stream power array of up to 398 turbines to be deployed in the Inner Sound of the Pentland Firth. I note that these will be fully submerged and attached to the seabed with no surface structures. Phases 1a and 1b of the project will deploy 20 and 65 turbines respectively, with phase 1 providing information for phase 2 and which will be subject to a separate consent application. I also understand that the cables will not be buried and that the final cable landfall has not been finalised, but that the most likely option would be to route phase 1 to the Gills Bay area via horizontally drilled bores. In addition, I understand from the scoping report that the locations for a single substation and the grid connection have been identified, but note that they do not appear to have been included in the report.

Without prejudice and on the basis of the information supplied, we can indicate at this stage that we consider that it may be possible to locate such a development in this location without it raising significant issues for our historic environment interests.

We would however expect certain aspects of the proposal to be assessed and we provide further details about this below. Notwithstanding this, please note that our comments here are provisional and we would need to see any Environmental Statement (ES) to give our final view on the proposals.

Potential impacts to be considered

We generally advise for such developments that the following issues are taken into account in the assessment of potential impacts:

- on-shore effects
- off-shore effects (including potential effects outside the development site)

On-shore effects

I note that although the proposed landfall is likely to be the Gills Bay area, the locations for a single substation and the grid connection are not provided in the scoping report. I welcome that the report considers the potential for the proposal to impact on a number of onshore cultural heritage features, such as scheduled monuments, category A listed buildings and Inventory designed landscapes. The report mentions a number of these features, including Castle Mestag, fortified sea-stack, Stroma (Index No. 9763) on the Isle of Stoma, and the St John's Point, fort & site of St John's Chapel (Index No. 2689) and the Castle of Mey (HB Num 1797) and its *Inventory* designed landscape on the mainland. In addition to these, Canisbay parish church (HB Num 1795) is located to the east of Gills Bay. It will be important for the ES to assess both direct impacts (i.e. the direct loss of and/or damage to an historic environment feature) and indirect impacts (e.g. effects on the setting of an historic environment feature/developments affecting the existing character of the historic environment) on these features.

In assessing the likely impact from the development proposal on the setting of these features, we recommend the developer refers to the advice contained in our *Managing Change in the Historic Environment* guidance note on setting: http://www.historic-scotland.gov.uk/managingchange The guidance notes explain how to apply the policies contained in the *Scottish Planning Policy* (2010) and the *Scottish Historic Environment Policy* (2009), the Scottish Ministers overarching policy framework for the historic environment. They have been designed to be accessible and to offer clear and consistent advice to applicants, developers, the public and professionals.

Off-shore effects

The assessment should consider the significance of:

1. potential direct impacts that might be caused by elements of the development on any archaeological features, such as direct impacts to marine historic features within the proposed development site which could result from the construction, operation and decommissioning of the tidal array and associated operations, such as the laying of power and control cables etc.

2. indirect impacts to historic features on the seabed or at the coast edge within the proposed development area, and possibly beyond, which may be caused by alteration to tidal currents and sedimentary regimes, and by changes to the chemical balance of the water and seabed sediments

I welcome the awareness of marine archaeology in the developer's scoping report. For instance, I note the references to a marine archaeological desk based impact assessment

including the review of geophysical survey data and potential impacts on submerged landscapes. As the report indicates, a number of unscheduled marine archaeological features are located within and in the vicinity of the development site boundary. In light of this, I recommend impacts on these be assessed within the ES, with the appropriate involvement of archaeological expertise and in consultation with Highland Council's conservation and archaeological service. I also recommend that the potential for the discovery of unknown sites and artefacts be assessed in the ES. I have provided further advice and guidance on these issues below.

Cumulative impacts

In addition, any ES should consider the cumulative impacts of this development proposal in combination with other proposed and consented schemes.

Marine historic environment guidance

Specific advice on the treatment of cultural heritage in the marine environment can be found in The Joint Nautical Archaeology Policy Committee (JNAPC) *Code of Practice for Seabed Development*. This can be found at:

http://www.thecrownestate.co.uk/jnapc_code_of_practice_2

The developer may also find the following sector-specific guidance useful, particularly in respect of approaches to mitigation where the ES identifies effects to a marine historic features within the development area:
*Historic Guidance for the Offshore Renewable Energy Sector*:

http://www.offshorewindfarms.co.uk/Assets/archaeo_guidance.pdf

In addition, the Royal Commission of Ancient and Historical Monument's (RCAHMS) Canmore database provides an extra source of data to PASTMAP for the marine historic environment in addition to the SEA study for the area undertaken by Wessex Archaeology. Just look at the map provided on this page and click on the relevant SEA area:

http://www.offshore-sea.org.uk/site/scripts/sea_archive.php

The developer may also wish to refer to the relevant industry guidance on cumulative impacts on cultural heritage features matter in the *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy:*

http://www.offshorewindfarms.co.uk/Pages/Publications/Archive/Cultural_Heritage/Guidance_for_Assessmen642afc68/

Finally, I wish to draw the developer's attention to some new guidance produced by COWRIE entitled *Offshore Geotechnical investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (January 2011). This is mainly for offshore wind farms in respect of geotechnical surveys and archaeology, but is of interest for EIA work and something we are encouraging developers to consider. It is particularly relevant in relation to prehistoric submerged landscapes:

http://www.offshorewind.co.uk/Pages/Publications/Latest_Reports/Cultural_Heritage/Offshore_Geotechnical_b6715e61/

## Maritime Coastguard Agency

Thank you for your email dated 20 June 2011. We have now had an opportunity to review the Scoping Document provided by MeyGen for the proposed Pentland Firth Inner Sound tidal array and would comment as follows:

It is understood that the development will be under taken in a phased approach, with phase one progressing towards 85MW over 3 years, final details for phase two subject to technical developments from the first phase. Despite phase two not commencing until 2016 the NRA will be required to adopt the cumulative approach based on the full area development.

The Environmental Statement should supply detail on the possible impact on navigational issues for both Commercial and Recreational craft, viz.

- Collision Risk
- Navigational Safety
- Visual intrusion and noise
- Risk Management and Emergency response
- Marking and lighting of site and information to mariners
- Effect on small craft navigational and communication equipment
- The risk to drifting craft in adverse weather or tidal conditions
- The likely squeeze of small craft into the routes of larger commercial vessels.

A Navigational Risk Assessment will need to be submitted in accordance with MGN 371 (and 372) and the DTI/DfT/MCA Methodology for Assessing Wind farms. The standard methodology for assessing wind farms will be applied to tidal energy developments.

Particular attention should be paid to cabling routes and burial depth for which a Burial Protection Index study should be completed and, subject to the traffic volumes, an anchor penetration study may be necessary

The potential cumulative and in combination effects require careful consideration.

Casualty information from the MAIB and RNLI would also be good data sources, in establishing the risk profile for the area.

Given that the layout of the individual wave generators within the farm have not been decided the principles of the Rochdale envelope should be used in the EIA.

The shipping and navigation study should include radar and manual observations in addition to AIS data to ensure vessels of less than 300gt are captured. As the Inner Sound is a narrow channel fully visible from the mainland, a case could be made for visual observations if sufficient and quantifiable visual data can be provided. However a clear argument for the non use of radar data would need to be articulated, which will take into account any vessels that are displaced into the outer channel by the development.

The offshore human environment should also include recreational and other sport activities. Any application for safety zones will need to be carefully assessed and additionally supported by experience from the development and construction stages.

Particular consideration will need to be given to the implications of the site size and location on SAR resources and Emergency Response & Co-operation Plans (ERCOP) and Guard Vessel provisions.

Particular consideration will need to be given to third party approval of the devices and associated mooring arrangements.

## Marine Scotland

General Comments

Page 4 of the scoping report cites the incorrect legislation under which the request for the scoping opinion was made. The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) should be cited here.

Section 4.3.2 of the scoping report states that "*it is assumed that the "deemed planning permission" route will be followed*". Since the production of this scoping report, Marine Scotland has been advised that deemed planning permission is not currently available for offshore renewable energy developments and our current advice is that any onshore works will require a separate consent under the Town and Country Planning (Scotland) Act 1997.

Section 4.3.5 *Environmental Impact Assessment Regulations* states that a Marine Licence will be applied for under section 26 of the Marine (Scotland) Act 2010. The section identified is incorrect. An application for a licence will be made under Part Four of the same act.

Section 6.4, Table 4 details consultees whom MeyGen have distributed the scoping document too. It should be noted that the Scottish Fisheries Protection Agency has been integrated into Marine Scotland and is now referred to as Marine Scotland Compliance.

Coastal Processes

Figure 8, page 26, of the scoping report is fairly illegible. A key, scale and axis units should be added to this figure to aid interpretation of the information it presents. Figures 9 and 10 illustrate the information contained within them effectively and Figure 8 should be presented in a similar manner.

The scoping report includes a lot of basic tidal statistics for the Pentland Firth such as maximum tidal flow but little specifics on the inner sound where the proposed development will be. The scoping report does later refer to ADCP surveys that have been undertaken which will, presumably, provide suitable information for the site. Additional information sources should be consulted to provide further information on the site.

Page 27 of the scoping report states "*The Orkney Islands and the Pentland Firth, including the western and south-eastern approaches, were divided in the model by a mesh of varying spatial resolution, with reduced cell dimensions across the Inner Sound.*" It is unclear what is implied by this statement and Marine Scotland would welcome further clarification.

Wave heights in the range 1.75 – 2m are quoted but it is unclear if this on the northern coast of Scotland or specifically within the Pentland Firth. Clarification of this point would be welcomed. The scoping report states "*At point A to the west the data was compared with wave conditions at the European Marine Energy Centre's (EMEC) wave test site at Billia Croo.*" The results of this comparison are not presented and nmo reason is given as to why this comparison has been made.

The hydrography and bathymetry information detailed under Section 7.4 includes the main potential effects although there does not appear to be any clear indication as to how

important the different aspects are which means that the EIA could, potentially, lack focus. There is also no mention of coastal processes and the possible scope of their change within the table.

Physical Environment

A third report is available from the Marine Scotland Interactive website which includes additional video footage from the Inner Sound area. Marine Scotland notes, from the Table of Impacts, a Preliminary Hazard Analysis was included as part of Appendix B which recognises the pressure of the development on vessel navigation during all phases of the proposed development. The document identifies that some vessels using the Inner Sound have draughts between 6-8 m which could result in collision with the proposed array devices. This is an area of the proposed works that may require considerable effort to resolve.

Ornithology

From the scoping report it is not clear what will be done with the bird survey data that has been collected since October 2009. Marine Scotland queries how the developer will utilise the image library from the aerial bird surveys currently being undertaken in the area by the Scottish Government and The Crown Estate? What analysis will be undertaken either of the data gathered by the applicant or the data collected by the Scottish Government and The Crown Estate? Are there any plans for design based analysis or will a more advanced form of analysis such as density surface modelling be used?

Information on how the survey results will be presented and how uncertainty will be estimated in the estimates of populations and distributions would be welcome as well as any information the developer may have with regards collecting the data required for the Appropriate Assessment.

Marine Mammals

Many of the same comments apply to marine mammals. As with birds, surveys are being undertaken in the area by the Scottish Government and The Crown Estate. Will the applicant utilise this information and how will it, or their own data, be analysed? Again, information on how the survey results will be presented would be welcomed as well as any idea of the expected uncertainty in the estimates of populations or distributions.

Commercial Fisheries

The scoping document has identified the main commercial and non – commercial species known to or likely to occur in the area of search. Although the area of search is unlikely to be a key nursery ground for gadoids due to its size, bearing in mind the lack of survey data for this area, fish surveys carried out during the summer months would give an indication as to the scale of any nursery grounds in or around the area of search for the key species of gadoid.

Marine Scotland agrees that the area is unlikely to be a key spawning ground for the fish species mentioned on page 30 of the scoping report. However, the possibility of cumulative effects from the displacement of predatory fish and fishing activity would need to be investigated, along with the potential cumulative effects from surrounding sites, to rule out any adverse effects on nearby spawning grounds to the east and west of Stroma.

Marine Scotland also agrees with the elasmobranch species listed in the scoping report, Common skate, Spiny dogfish, Thornback Ray, White Skate, Basking Shark and Cuckoo Ray. The Marine Conservation Society has also sighted Basking Sharks in the area.

Landing figures for the area suggest a high concentration of Spiny dogfish (*Squalua acanthias*) within the ICES statistical rectangle 46E6. The presence and abundance of this critically endangered, IUCN Red listed species within the area of search, along with the species mentioned above, should be investigated using a suitable fish survey.

Consideration should be given to the impact of EMF on elasmobranchs in the area through aggregation, displacement, avoidance or disruption to feeding behaviours.

With regards to migratory fish, advice should be sought from Marine Scotland Science Freshwater Laboratory regarding possible migratory fish impacts. Tagged salmon from rivers along the northern coast of Scotland have been recaptured both east and west of the rivers of release indicting that the species may migrate through the proposed site as there can be a preference for post-smolt migratory routes to be relatively close to shore (2.5-5 km). Marine Scotland Science Freshwater Laboratory will be best placed to advise on possible issues and measures that may need to be taken into account.

Fishing activities within the area of search will mainly be from small under 15m fishing vessels targeting shellfish such as brown crab, lobster and velvet crab. Details of numbers of vessels involved and economic importance of this fishery can be obtained from discussions with the local fishermen and Marine Scotland Compliance (which should replace the references to the Scottish Fisheries Protection Agency made in the scoping report). There may also be some data available through the new SCOTMAP project which is currently piloting within the Pentland Firth and Orkney waters.

Consideration should be given to the cumulative effects of displaced fishermen and fishing activity of any proposed exclusion zone in or around the site; available ground along this coast for additional fishers would be limited due to the current level of activity and suitable ground in the neighbouring areas.

Most of the landings of the other species recorded from this ICES statistical rectangle (46E6) will have come from outside the area of search. Caution is advised when carrying out desk based studies using landings figures and / or declarations as there may be instances of misreported landings of certain species in the statistical rectangle that the site lies within which may give false indications of species abundance or importance. Advice should be sought from Marine Scotland Science and Marine Scotland Compliance when analysing this data.

The following websites may be useful to the applicant:

**Useful websites**

Fisheries reports www.scotland.gov.uk/Topics/marine/science/Publications/publicationslatest

Scotland's Marine Atlas www.scotland.gov.uk/Topics/marine/science/assessment/atlas

Marine Scotland Interactive www.scotland.gov.uk/Topics/marine/science/MSInteractive

## National Air Traffic Services

The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Limited has no safeguarding objections to this proposal.

Please be aware that this response applies specifically to the above consultation based on the information supplied at the time of this application. If any changes are proposed to the information supplied to NERL in regard to this application (including the installation of wind turbines) which become the basis of a full, revised, amended or further application for approval, then as a statutory consultee NERL requires that it be further consulted on any such changes prior to any planning permission or any consent being granted.

### Northern Lighthouse Board

Thank you for your correspondence regarding the Scoping Document Consultation for the proposed MeyGen Phase 1 Turbine Array and the intention of **MeyGen Limited** to initially deploy 20 devices as phase 1a and a further 65 devices as phase 1b in the Inner Sound, Caithness, Scotland.

With regard to the consultation and the scope of the assessment, we would only comment on any part relating to Shipping and Navigational Safety contained within several sections of the consultation document. We require that Notice(s) to Mariners, Radio Navigation Warning and publication in appropriate bulletins will be required stating the nature and timescale of any works carried out in the marine environment relating to this project.

We would advise that should any marking and lighting recommendations be required, these will be made within a formal response through the Marine (Scotland) Act 2010, Part 4 application process. Any navigational marking and lighting of the site or its associated marine infrastructure will require the Statutory Sanction of the Northern Lighthouse Board prior to deployment.

We would require a formal Navigational Risk Assessment be made in accordance with MGN 371, and that shipping, fishing and leisure data information be used to formalise any risk and mitigation measures. We note that visual observation and radar data would assist in giving a more accurate reflection of the marine traffic transiting the area.

Such an assessment must take into account the available depth of water over the installed turbines and the effect of heavy seas and vessel movement in relation to underkeel clearance of marine traffic. The cumulative effect of developments must be considered and information shared with other developers.

Any marking and lighting of the cable landing site will be recommended on completion of the survey work and provision of information following the OFTO application process.

### Royal Society for the Protection of Birds

Thank you for consulting RSPB Scotland on this application for a Scoping Opinion and we are grateful for the extended deadline.

Although the project as proposed is for a 398MW tidal energy project, we note that the Applicant seeks Scottish Ministers' scoping opinion only for Phase 1 of the Project, which covers the installation and deployment of 85 turbines (85MW). RSPB Scotland would wish to be consulted on the further scoping assessment which will be required if Phase 2, which is to be the subject of a separate application, is to be progressed.

A “Survey, deploy and monitor strategy” is to be employed to permit the roll-out of a project whose environmental impacts, although not fully understood at the time of initial consenting, can be expected to be elucidated after deployment of an initial phase. This may then permit a larger-scale deployment. A judgement must be made, before consent is granted for the first phase, that the risk of environmental harm is small and is outweighed by the benefits of the development. However, this particular proposal is for a development to be located on a marine extension to a Special Protection Area (SPA) and the tests to be employed – as set out in The Conservation (Natural Habitats &c) Regulations 1994 (as amended) – are strict. As the proposal (either alone or in combination with other plans or projects) is likely to have a significant effect on the site, in the sense that the possibility of a significant effect cannot be reasonably excluded, then an appropriate assessment under the terms of the Habitats Directive Article 6(3) will be required. Only if, as a result of that assessment, it can be concluded beyond reasonable scientific doubt that the proposal will not adversely affect SPA site integrity can consent ordinarily be granted. There is the possibility of consent even if it cannot be concluded that there will be no adverse effect on SPA site integrity if, in the absence of alternatives, there exist imperative reasons of overriding public interest. However, there are other sites and means of renewable energy generation. The possibility, however remote, that monitoring of a consented first phase of the development may reveal a significant negative environmental impact which cannot be mitigated and that remedial action may be required should be considered: this would go beyond preventing further development and might even entail premature decommissioning of installed structures.

Although the Crown Estate’s Appropriate Assessment for the Pentland Firth and Orkney Waters leasing round will help inform decision-making on this Application, it is broad-brush in nature and will not give the site detail required for assessment of this project.

We note the proposal to use two types of device within this development. Although conceptually similar, they differ particularly in their method of attachment to the sea floor and are unlikely to have identical environmental impacts. Proposals for deployment will have to consider how monitoring of environmental impacts will discriminate between the two types.

RSPB Scotland is pleased to note that “A cable landfall selection study has been undertaken” (Page 1, Sect 1.2) and that “The geographical scope of the EIA will include the entire development from the offshore generating array through to substation connecting into the national electricity grid” (Page 2, Sect 1.3). We would wish to be consulted on substation and onshore cable route as these could impact on terrestrial birds.

Whilst adverse effects on birds arising through collision or other mechanisms identified on p.55 seem unlikely to be significant, there is great uncertainty about this as we lack the detailed knowledge to be gained from experience of the installation of such devices elsewhere, particularly in a high-energy, bird-rich site. It is known that guillemots and other diving seabirds do reach such depths and so could be affected. Consideration should also be given to the likelihood of pollution, from the devices themselves or from associated vessels as this could directly impact on birds or give rise to secondary effects through their foodstuffs.

In addition to the North Caithness Cliffs SPA, other Natura sites which may be affected by the proposed development should also be considered in the EIA. The qualifying interest of the nearby Pentland Firth Islands – breeding Arctic terns – might be thought unlikely to be affected as these birds are shallow divers. A small area of sandbank has been identified within the lease area however, which may support sandeels, their principle food, so a systematic appraisal of the possibility of impact must be completed. We note, too, that spawning and nursery grounds for sprats occur within the study area: this is another important food for seabirds and the possibility of secondary impacts must be considered. The continuing run of poor seabird breeding seasons and consequent population declines

give further reason for adopting a precautionary approach as any adverse impacts, however small, arising from new development would be additional.

Whilst we understand the need to schedule marine works during the time of year when weather conditions are favourable (Page 12, Sect 3.5), the need to avoid adverse impact on the qualifying bird interests of nearby SPAs may dictate a further restriction on timing of operations which should be considered from the outset.

**Comments on Scope of works for Ornithological and Marine Surveys (dated 24 September 2009)**

We note that coverage of the second phase site from these land-based VPs is either non-existent or almost entirely within the 1.5 to 2.0 km range at which many birds will be invisible or unidentifiable on the surface. This will have to be addressed at a later stage but we are content that this is not an issue for Phase 1 as only a tiny area is not visible within 2.0kms from any of the VPs.

Section 2, third paragraph refers to disturbance to birds caused by the presence of the survey boat. We suggest that the use of simultaneous observations from land and the boat may help but recognise that, particularly for land-based observers, if seabirds dive rather than take flight as a boat approaches this will be more difficult to detect any distance, particularly on a less than calm sea.

Section 3, first paragraph, states that surveys will be “undertaken throughout the tidal cycle of both spring and neap tide”. It is clear from Section 3.2 that this will be met by boat-based surveys but it appears from Section 3.1 that 3-hour VP surveys will be centred on high and low tides with no mid-tide observations. We doubt that this is an important omission however.

## Royal Yachting Association

The Royal Yachting Association Scotland (RYA Scotland) is established to promote the sport of sailing and power boating in Scotland and is recognised by Sport Scotland as the governing body for all forms of recreational and competitive boating in Scotland. RYA Scotland represents dinghy and yacht racing, motor and sail cruising, RIBs and sports boats, windsurfing, inland cruising and personal watercraft and is recognised by the Scottish Government, the Crown Estate, Local Authorities and other non-governmental organisations in Scotland as being the primary consultative body for the activities it represents. RYA Scotland was a founding member of the Scottish Boating Alliance.

RYA Scotland acts as the Royal Yachting Association (RYA) Council for Scotland and the two organisations work closely together on all aspects of their activities. The RYA is the UK and internationally recognised governing body for all forms of recreational and competitive boating in the UK. The RYA currently has more than 100,000 personal and family members across the UK, the majority of whom go afloat for purely recreational non-competitive pleasure on coastal and inland waters. There are an estimated further 500,000 boat owners nationally who are members of over 1,500 RYA affiliated clubs and class associations. The RYA sets and maintains a recognised standard for recreational boat training through a network of over 2,200 RYA Recognised Training Centres in 20 countries. On average, approximately 160,000 people a year complete RYA training courses.

Over 150 RYA affiliated clubs, 120 RYA Recognised Training Centres, 1,900 RYA qualified instructors and over 5,500 RYA individual and family members are based in Scotland.

The RYA and the British Marine Federation have also developed The Green Blue programme to minimise the environmental impact of recreational boating; a programme that is directly supported in Scotland.

There are a number of documents the RYA has developed which may be of interest to you. The first **'RYA Position Statement on Offshore Renewable Energy Developments'** and I have enclosed a copy of this for your information. The RYAs concerns regarding recreational boating and offshore energy devices are included in this statement and we would expect these to be addressed in the future planning of this development.

As you will know, the RYA has also produced the UK Coastal Atlas of Recreational Boating. The Atlas contains maps of recreational cruising routes, racing and sailing areas as well as locations of RYA affiliated clubs, training centres and also marinas (independent) around the UK. The Atlas is freely available electronically as a PDF file and is also available in GIS format for the annual £600 licence free from the RYA. The atlas is kept under continual revision. A version appears on page 153 of Scotland's Marine Atlas.

RYA Scotland can provide information for the Environmental Statement. RYAS also works closely with the British Marine Federation in Scotland as we share a number of objectives.

In summary the RYA's concerns with offshore energy developments and recreational boating relate to:

1. Navigational safety
    - Collision risk, particularly in adverse weather conditions
    - Risk management and emergency response, for example in response to units breaking free in a storm
    - Marking and lighting
    - Weather

2. Location
    - Loss of cruising routes
    - Squeeze into commercial routes
    - Effect on sailing and racing areas
    - Cumulative effects
    - Visual intrusion and noise

3. End of life
    - Dereliction
    - Decommissioning

4. Consultation

These are detailed in our position statement, referenced above.

Our response builds on the RYA Scotland response of 26 July 2010 to the **Pentland Firth & Orkney Waters Marine Spatial Plan Framework** Consultation (attached) and the response of 17 November 2010 to the **Additional Scottish Leasing Round** consultation (also attached). We welcome the opportunity to contribute to the Scoping Report. We also welcome the survey, deployment and monitor strategy to be adopted in Phase 1. this together with testing at EMEC will provide valuable information about the actual impact of the turbines.

1. Although most recreational vessels avoid the Inner Sound between Stroma and the Scottish mainland, some use the harbours at Brough, John O'Groats and Stroma itself and thus the Inner Sounds. However, tidal generation and recreational boating including marine tourism can co-exist as demonstrated elsewhere. The statement that cruising routes are mostly of light recreational use (page 36) should not be construed as meaning that no vessels use this area or indeed that there will be no increase in usage in the future, e.g. in response to the development of facilities.

2. Of key importance is the minimum depth over the rotor blades. RYA is opposed to unnecessary exclusion zones and notes that these can only be effective when their existence is fully promulgated and there is enforcement. Although the document states that the rotors are not surface piercing, we would wish to be reassured that the rotors are below keel depth at all times even in wave troughs when there is a combination of low water springs, high pressure and strong winds. If the rotors are even within keel depth then the marking of the site is important. If they are always below keel depth then, as will be the case with the Sound of Islay scheme, there will be no need for vessels to avoid this area.

3. We consider that **IALA Recommendation 0-139 Marking of Man Made Offshore Structures** requires revision to take account of tidal devices that are not on monopiles. We note that the document states that 'Consultation between the stakeholders such as Developers, National Administrations, Aids to Navigation Authorities, Competent Authorities and wave and tidal contractors should take place at an early stage'. We would welcome the opportunity to work with other stakeholders and the Northern Lighthouse Board to discuss marking. We will work with RYA (Hamble) in this matter as it raises important matters of principle that may have implications elsewhere in the UK.

4. Annex 1 of MGN 371 provides guidelines about the conduct of traffic surveys and in particular the need to account of seasonal variations in traffic patterns and to consult recreational organisations about such seasonality. RYA Scotland would be happy to provide such information as is required. However, we feel that it is not so much the level of traffic that is the issue as any risk to vessels following the route. As rather few vessels currently use the Inner Sound we see no need to carry out a survey.

5. If the rotors are not below keel depth then the Navigational Safety and Risk Assessment should consider how to rescue a vessel that has broken down and is being swept into the zone by the action of wind or tide.

6. EIAs often focus on detrimental effects on other stakeholders. We feel that consideration should also be given to whether there could also be benefits, e.g. through improvement to local infrastructure.

7. In section 1.2 the maximum current in the Inner Sound is given as 3.5 - 4.0 $ms^{-1}$, i.e. 6.8 to 7.8 knots which is higher than we would have estimated. On page 35 the tidal range is given as 7.2m. This is a misprint for 3.2m.

Thus, our response is a binary one. If the rotors are always below keel depth then there should be no negative impact on recreational sailing. It that is not the case then mitigation will be required.

RYA Scotland would be pleased to be involved in any future consultations or discussions, particularly in relation to the Navigational Risk Assessment.

## Scottish Canoe Association

Sea kayakers make regular use of the water in the Pentland Firth. Given the strong tides in the area and the lack of visibility when there is fog, paddling in this area is an activity that requires good navigational skills and the ability to control your craft in difficult water conditions. The greatest risk from new man-made structures is anything that breaks the surface of the water. Devices that breaks the surface of the water in this area will be regarded as a major safety issue by anyone navigating in these waters, be they in a small craft, or indeed in a medium or large craft. If there are plans to install anything that will break the surface of the water then we wish to be consulted as a matter of urgency because such a structure would be of great potential danger.

If underwater structures are to be put in place by the use of tethered barges then we would have concerns for the safety of boat users in the area during this construction phase and again would wish to be consulted.

Finally, we would have concerns over the introduction of any landfall infrastructure that might impact on access points to the sea, as well as in creating artificial headlands that might lead to increased dangers from altered tidal flows.

Our concerns listed above are based on the SCAs Renewable Energy Policy, which can be found at:

http://www.canoescotland.org/LinkClick.aspx?fileticket=cfESDJ4FK1g%3d&tabid=619

Four of our member clubs are based around the Pentland Firth and would be interested in any consultation exercises:

- Caithness Kayak Club. Contact: William Bruce. bill.ros1@btopenworld.com
- Kirkwall Kayak Club. Contact: John Mowat. johnrossmowat@yahoo.co.uk
- Orkney Sea Kayaking Association. Contact: Angus Rickman. secretary@oska.org.uk
- Pentland Canoe Club. Contact: Ken Nicol. secretary@pentlandcanoeclub.org.uk

In terms of guidebooks containing information for sea kayakers, the following books contain routes around the Caithness & North Sutherland coast:

- Scottish Sea Kayaking Fifty Great Sea Kayak Voyages (Cooper and Reid,2005)
- The Northern Isles: Orkney & Shetland Sea Kayaking (Smith & Jex, 2007)

## Scottish Fishermen's Federation

Although the Inner Sound is not a traditional fishing ground for the pelagic fleet, it is a frequented route on passage from east to west and vice versa.

The Pentland Firth is a dangerous stretch of water even on a fine day; the sea can be very confused and therefore difficult to keep the ship on a steady heading. One could only imagine that securing 20 quite large turbines on the seabed in the Inner Sound would have an effect on how the water flows through the Pentland Firth, adding to the unpredictable sea state.

Whilst this is only the thin end of the wedge in terms of how many turbines are planned for this stretch of water but we need assurances that safe navigation will take priority over energy generation.

## Scottish Fishermen's Organisation

The SFO submitted a 'nil return' response.

## Transport Scotland (Via JMP Consultants Limited)

With reference to your recent correspondence dated 17 June 2011 on the above development, we write to inform you of our involvement as term Consultants to Transport Scotland – Trunk Road Network Management Directorate (TS-TRNMD) in relation to the provision of advice on issues affecting the trunk road network.

We have been passed a copy of the Scoping Report prepared by MeyGen Limited in support of the above development and we understand from the information provided that the proposed development involves the construction of up to 398 1 MW tidal turbines to be located in the Inner Sound of the Pentland Firth off the northern coast of Scotland between Caithness on the Scottish mainland and the island of Stroma. We understand the project will be undertaken in Phases. Phase 1 will comprise an initial Phase 1a deployment of 20 turbines (20 MW) followed by a subsequent Phase 1b which will deploy a further 65 turbines (65 MW). Phase 2, will comprise the build-out of the remainder of the project and will be subject to a separate application for consent. We will require further information with regards to traffic flows, trip distribution and an access strategy to provide detailed comments but having reviewed the information provided, we would provide the following comments.

We note that given the location of the development site, and the proximity of the A9(T) and A99(T) trunk roads to the site, it is likely that a significant proportion of construction traffic and the delivery of turbine components could be via the trunk roads before finally accessing the site and as such Transport Scotland will require the development impact to be considered.

There are a number of issues which should be taken into consideration when assessing the merits of the development. The Environmental Statement should provide information with regard to the construction stage including the preferred route options for the movement of heavy / abnormal loads including, the suitability of the access route and any anticipated construction staff movements via the trunk road network during the construction period. In addition, information must be supplied identifying any potential environmental impacts on the trunk road once the development is operational.

Potential trunk road related environmental impacts such as noise, air quality, safety etc should be considered and assessed where appropriate. In the case of the Environmental Statement, the methods adopted to assess the likely traffic and transportation impacts on traffic flows and transportation infrastructure, should comprise:

- Determination of the baseline traffic and transportation conditions, and the sensitivity of the site and existence of any receptors likely to be affected in proximity of the trunk road network;
- Review of the development proposals to determine the predicted construction and operational requirements; and
- Assessment of the significance of predicted impacts from these transport requirements, taking into account impact magnitude (before and after mitigation) and baseline environmental sensitivity.

<u>Noise and Vibration</u>

Impacts to sensitive receptors associated with noise and vibration arising from the proposed development during the construction and operational phases should be considered. Operational traffic noise and construction traffic noise should be assessed by considering the increase in traffic flows and following the principles of CRTN. Design Manual for Roads and Bridges (DMRB) Vol. 11 states:

*"In the period following a change in traffic flow, people may find benefits or disbenefits when the noise changes are as small as 1dB(A) – equivalent to an increase in traffic flow of 25% or a decrease in traffic flow of 20%. These effects last for a number of years."*

PAN56 advises that a change of 3dB(A) is the minimum perceptible under normal conditions, and a change of 10dB(A) corresponds roughly to halving or doubling the loudness of a sound.

Therefore, the Environmental Statement should consider potential impacts to identified ttrunk road receptors, in terms of:

- Predicted noise levels from construction traffic; and
- Any increases to road traffic attributed to the Proposed Development.

Air Quality

Where a significant change in road traffic characteristics has been identified as a result of the proposed development, changes in air quality at a worst case scenario sensitive receptor adjacent to the trunk road will require further assessment. The criteria considered to identify significant traffic changes with the potential to affect air quality are reproduced below.

The first criteria for identifying roads with a significant traffic change is defined in the Environmental Protection UK "Development Control: Planning for Air Quality" publication:

A change in annual daily traffic (AADT) flows of more than 5% or 10% (depending on local circumstances) on a road with more than 10,000 Annual Average Daily Traffic (AADT).

The second set of criteria is taken from the Design Manual for Roads and Bridges Air Quality Screening Criteria:

- Road Alignment will change by 5m or more; or
- Daily traffic flows will change by 1,000 ADADT or more; or
- Heavy Duty Veichle (HDV) flows will change by 200 AADT or more;
- Daily average speed will change by 10 kilometres per hour (km/hr) or more; or
- Peak hour speed will change by 20km/hr or more.

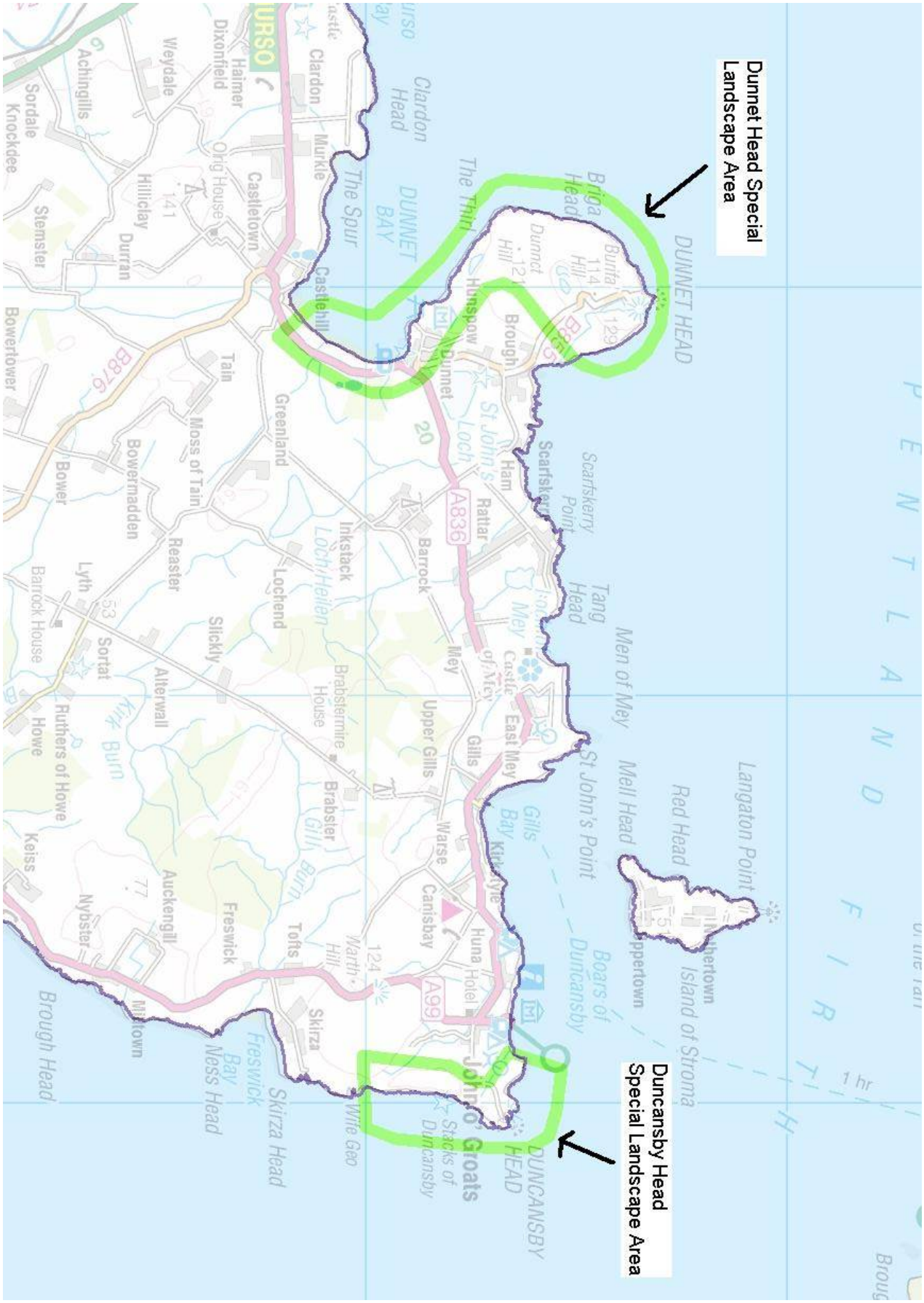
In the assessment, a conservative approach should be utilised and traffic changes screened against both sets of criteria; if a road link triggers any of the criteria it should be assessed further. Where significant changes in traffic are not noted for any link, no further assessment needs to be undertaken.

Where environmental impacts have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by stating in the report:

- The work that has been undertaken e.g. Transportation / Noise / Air Quality Assessments etc;
- What has this shown i.e. what impact if any has been identified; and
- Why it is not significant.

It is not necessary to include all the information gathered during the assessment of these impacts, although this information should be available, if requested.

**Annex 2. Special Landscape Areas Identified By Highland Council**



**Annex 3. RYA Positional Statement**

# THE RYA'S POSITION ON OFFSHORE ENERGY DEVELOPMENTS

DECEMBER 2009

---

The RYA has taken an active role in policy making that affects boat users and has been the voice of recreational boating for over a century. We represent our 100, 000 personal members and over 1500 affiliated clubs representing approximately 400, 000 boating enthusiasts and administer training standards at over 2000 recognised teaching establishments. Research conducted by the RYA, BMF, MCA, RNLI and Sunsail in 2006 showed there were approximately 3.5 million participants in boating-related watersports in the UK. The BMF estimates the total turnover of the UK leisure and small commercial marine industry in 2005/6 was £2.8 billion. Of this, the 'value added contribution' which is the principal measure of national economic benefit was £1.04 billion (37.6% turnover). The industry employs 35,000 people across 4300 different businesses.

RYA represents users of inland and coastal:

- Cruising and racing sailing and motor boats
- Sailing dinghies and day boats
- Windsurfers
- Personal watercraft

The RYA supports the UK Government's and evolved administrations' efforts to promote renewable energy[1]. We note that it is Government policy that wind farms should not be consented where they would pose unacceptable risks to navigational safety after mitigation measures have been adopted[2]. Our primary purpose in engaging in the consultation regarding the development of offshore energy developments is to secure navigational safety and to ensure that recreational boating interests are not adversely affected. The RYA has made objections to some of the proposed developments on grounds explained in this document. As more issues have come to light, we have reviewed our position on offshore energy development. We recognise that some marine renewable schemes may provide opportunities to benefit recreational sailors, e.g. active breakwater types of power generation can provide areas of sheltered water.

This position paper sets out our concerns from a general perspective and should enable developers to more accurately take account of recreational boating concerns in their environmental impact assessments.

[1] The UK Renewable Energy Strategy 2009. HM Government

[2] Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) DECC. November 2009. Note that this NPS will be a relevant planning consideration even though marine planning is a devolved issue in Scotland and Northern Ireland and in some cases Wales.

In summary the concerns of recreational boating and offshore energy developments relate to:

1. Navigational safety
    a. Collision risk
    b. Risk management and emergency response
    c. Marking and lighting
    d. Effect on small craft navigational and communication equipment
    e. Weather
2. Location
    a. Loss of cruising routes
    b. Squeeze into commercial routes
    c. Effect on sailing and racing areas
    d. Cumulative effects
    e. Visual intrusion and noise
3. End of life
    a. Dereliction
    b. Decommissioning
4. Consultation

The MCA has developed guidance for assessing the navigational impact of offshore renewable energy installations, this should be utilised in addition to the information contained here[3].

## 1. Navigational Safety

Prior to leaving the shore, mariners make a passage plan and make assessments based on weather, tides and the environmental conditions. Offshore developments become an additional navigational hazard to the mariner. However, if sited sensitively, well designed and managed effectively these developments can satisfy the safety issues of concern to recreational boating.

Construction of the first offshore wind farm, North Hoyle, was completed in 2004. Since that time, Scroby Sands was completed in 2004, Kentish Flats in 2005, Barrow in 2006, Burbo Bank in 2007, Lynn in 2008 and Inner Dowsing in 2008. A further seven are currently under construction and seven more are consented and awaiting a start date. There have been no reported incidents involving recreational craft and offshore wind farms in these five years of operation around the UK coast.

### Collision risk

The RYA believes that poorly designed wind farm developments could pose a risk of rotor blade collision with recreational craft. Wave and tidal developments and the sub-surface structures and scour protection associated with wind turbines could similarly pose a threat of underwater collision. The danger that moving rotor blades or other parts of the mechanisms pose is the reason for concern. Navigating around static hazards is part of sailing and only in

[3](MGN 371 ***"Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response Issues.",*** MGN 372 ***"Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs".***

rare situations, such as in narrow channels with strong tidal flows, do static installations pose a threat.

The RYA believes that the threat to recreational yachts can be minimised by specifying

1. a minimum rotor height clearance above mean high water springs of 22 metres
2. a minimum underwater clearance of 3.5 m below mean low water springs

The RYA has developed its position on clearance height and depth on the available data. Firstly an estimation of the air draught of the national fleet of yachts around the UK was established in the knowledge that these types of yachts may be found in all UK waters, these data are taken from the Royal Ocean Racing Club (RORC) Rating Office's database. For more detail see the final section on *Developing RYA policy on minimum clearance height and depth*.

**Risk management and emergency response**

Risk management provisions should be formulated from the results of a site specific risk assessment that accounts for recreational craft. Recreational craft can be generalised as 'small craft' which are defined by the MCA as those craft under 24m in length. This distinction is important when it comes to equipment and other requirements for small and large craft. Guidance was developed in 2005 to outline the requirements for assessing the navigation impacts of offshore wind farms[4] .

For recreational craft, such an assessment should take into account the following parameters:

- The number, size and type of local vessels
- The number, size and type of national vessels
- Annual events that are not covered in a short term monitoring
- Wave height and sea state conditions
- Monitoring should be carried out during the high season
- A range of possible incidences

Any risk assessment should recognise that it is a theoretical process and that utilising historical data on the number of incidents reported to HM Coastguard from the area with no hazards in place may not adequately represent the situation with 30-300 installations in situ. It should also be recognised that not all incidents are reported to the Coastguard; generally only those that represent life threatening situations are reported. However, since commercial offshore wind farms have now been deployed in UK waters for five years, this experience should be fed into any risk assessment to provide an accurate and realistic predicted level of risk and enable a proportionate and practical set of measures to be put in place to address any unacceptable risk.

In order to effectively manage the risk of a vessel in distress drifting towards an installation, there needs to be an effective *Emergency Response System* in place. This will require the ability to shut down the moving parts, such as the turbines, when an emergency call is reported. In some cases, where traffic is high, a stand-by safety vessel may be required.

[4] Guidance on the Assessment of the Impact of Offshore Wind Farms: Methodology for Assessing the Marine Navigational Safety Risks of Offshore Wind Farms. 2005. DTI.

**Safety Zones**

The RYA's opinion remains that the creation of safety zones around wind turbines or other installations that exclude small craft on a wholesale basis are likely to be unnecessary, impracticable and disproportionate. In our view, such a restriction on the small craft's right of navigation is not justifiable in terms of safety and there is little possibility of enforcing such zones. In some locations, it may actually increase risk of collision as small craft may be pushed into the lanes of larger vessels or may have to make extended voyages.

European standards are now being established where small craft, under 24m, are exempt from any operational safety zones. The German Government was the first to recognise the negative implications of imposing safety zones on small craft and has exempted small craft from such zones. In principle the RYA has no objection to the creation of *advisory or precautionary zones* but such zones must be designed and implemented on a case-by-case basis and with due respect to the right of navigation. The RYA believes that the purpose of any *advisory or precautionary zones* should be to warn vessels to navigate with particular caution but they should not permanently restrict navigation or exclude recreational vessels. Wave and tidal technology is varied and is now the unknown factor when considering navigational safety impact. Nevertheless when these do not have moving parts within keel depth, their status as a hazard is in principle no different from that of a reef or other natural obstruction.

The RYA does, however, foresee occasions when it may be prudent to impose short-term temporary restrictions, for example during engineering, maintenance or construction works. Such temporary restrictions should be promulgated through Notices to Mariners. Many vessels visit the UK from continental Europe and this should be taken account of in any communication.

**Cables and anchoring**

A further issue relating to risk management is that of cables and anchoring. In most cases, small craft will not anchor within an offshore energy 'farm'. However, in emergency situations this may be the only way of securing a drifting vessel to ensure no damage is done. To secure the safety of navigation, cables should be buried to a sufficient depth to avoid being uncovered. This should take into account shifting sediments on the seabed.

**Marking and lighting**

As offshore renewable energy installations become more common in UK waters, the requirements for marking and lighting the sites should be consistent. This has been achieved for offshore wind and should be replicated for wave and tidal devices. Much work has been done in this field and guidance supported by RYA is available from Trinity House or the Northern Lighthouse Board as appropriate. For wind farms, as a minimum each turbine should be clearly marked in high visibility yellow paint to a height of 12 m, low level lighting should allow the turbine number to be read from a 'safe' distance, corners of the wind farms should be marked and any other points or routes through the wind farm marked accordingly. Wave and tidal developments vary dramatically in their design and the marking and lighting of these installations will need to be developed carefully. Wave power units that lie low in the water and that may move within an area of water, such as Pelamis, will be particularly hazardous to small boats and effective marking and lighting will be essential.

The RYA supports the guidance issued by the relevant light house boards on these issues and works with them to identify site specific issues that may occur.

**Effect on small craft navigational and communication equipment**

All craft larger than a dinghy will have some form of navigational equipment on board. The most common will be a magnetic compass. Large quantities of steel, cabling and the transmission of electrical power may produce interference with the magnetic compass. Studies have shown that the effect on systems such as GPS, VHF and mobile phones from wind farms is negligible. However, there is a demonstrated effect on radar systems which reduces the visibility of small craft to search and rescue vessels as well as to each other and larger commercial vessels. This causes concern when large wind farm developments are sited close to commercial shipping lanes and obstruct small craft routes avoiding these commercial routes or at the confluence of routes.

Problems may be found with small craft navigational equipment, which is not as powerful as commercial varieties, when we start consider installations further offshore. Antennae are likely to be lower and less powerful than many larger commercial vessels.

Any proposed development should account for the effect on small craft navigation and communication equipment in detail

**Weather**

Local weather conditions should also be examined in the risk assessment and measures taken to reduce the effects of poor weather conditions, low visibility and fog should be included in the risk management plan. Installations may need to have fog horns attached for low visibility conditions.

## 2. Location

The location of offshore energy installations is going to be crucial to navigational safety as well as potential loss of amenity for recreational craft. It should also be noted that commercial routes and shipping lanes do not represent those routes taken by small recreational craft. Whilst these routes will vary, the RYA, has collated these routes into the *UK Coastal Atlas of Recreational Boating* which is available from the RYA and which details cruising routes, sailing areas and racing areas as well as the location of marinas, RYA affiliated clubs and recognised training centres. This document should be consulted when considering the location of offshore energy developments and when writing an environmental statement.

Recreational routes, general sailing and racing areas must be accounted for when examining the impacts of wind farm developments.

**Loss of cruising routes**

When examining the routes and location of turbines it is important to recognise that sailing boats behave differently to power driven craft in that their actual line of travel may zigzag across the ultimate direction of travel as they are dependant on the wind direction. The coastal atlas should be consulted as well as any other available information to inform the siting of the developments and individual installations and the potential provision of navigation routes through the larger sites.

Along many stretches of coast, recreational craft may need to seek shelter in poor weather. Sheltered harbours and anchorages and routes to these harbours of refuge should be protected. These are identified as essential routes in the Coastal Atlas.

The loss of routes will also lead to an increased distance of travel. This has environmental implications for powered craft and safety implications for all craft. Some routes, typically narrow channels or strong tidal flows, may already be hazardous at times to navigate through and adding hazards in these areas may seriously compromise navigational safety. There are also safety issues with the creation of turbulence and wind shadowing in confined areas where craft may be moving slowly and gusty turbulent conditions may create problems.

**Squeeze into commercial routes**

Recreational routes differ from commercial routes as recreational craft essentially aim to keep out of the major commercial navigation routes by travelling in the shallower adjacent waters or taking other routes entirely. As a result, examining commercial routes alone will not enable the safe positioning of OREIs, recreational boating must also be accounted for. This may require routes through large developments to be identified or inshore routes for smaller craft to be safeguarded. The cumulative impact of all marine developments is becoming increasingly important when assessing these issues of squeeze.

**Effect on sailing and racing areas**

Most of the general day sailing and racing areas are close to the shore and in the more sheltered waters. The Strategic Environmental Assessment for Round 3 offshore wind development[5] recognises the busy inshore areas and states that the majority of offshore wind development should be beyond 12nm. European standards are again being set by Netherlands and Germany who have excluded any development within 12nm from the shore in order to retain 'open space' for its amenity and recreational value. Recreational activity is important to the health and wellbeing of the community as well as economic support for the local coastal economies. Retaining the undisturbed remoteness of some waters will be important in terms of its wilderness and amenity value.

In certain confined areas and areas heavily used for sail racing, the effects of wind turbines in terms of turbulence and shadowing on craft should be taken into account.

Any interference in wind speed and/ or turbulence created by a wind farm in a racing area would create a significant negative impact on the event site and diminish its value.

**Cumulative effects**

Of increasing concern with the planned number of developments is the need to assess each development in its wider surroundings. The *cumulative effects* of offshore energy installations on navigation routes will be increasingly significant. Existing navigation routes affected by other proposed development sites will need to be accounted for, rather than only current routes.

[5] Offshore Energy Strategic Environmental Assessment: Post consultation report. June 2009. DECC.

## 3. End of Life

### Dereliction

Whilst we would hope that these installations remain economically viable for the lifetime of the structures, the RYA would support measures taken by Government to secure the financial implications of removing the structures, prior to consents been given. This will ensure that after the installation ceases electricity production for whatever reason, derelict structures that are not marked or lit and remain a hazard to navigation and anchoring are not found in UK waters.

### Decommissioning

Equally, any decommissioning plan needs to ensure that the structures are completely removed. Any parts of the structure remaining after the commercial operation of the installation may pose a hazard to navigation and should be avoided. However, we recognise that secondary uses may be identified for these structures once energy generation ceases. If structures are to remain in the water, navigational safety must be taken into account and structures should be appropriately marked and lit.

## 4. Consultation

Consultation with the RYA should be through the Headquarters in Hamble and the Scottish, Welsh and Northern Irish offices who can coordinate wider consultation with their regional environmental coordinators, the clubs and individual membership and if needed, help to coordinate stakeholder meetings.

**RYA Head Office**
Caroline Price
Planning and Environmental Advisor
RYA House,
Ensign Way,
Hamble,
Southampton, SO31 4YA.
Tel: 02380 604222
Email: Caroline.Price@rya.org.uk

**RYA Northern Ireland**
Hon Secretary
RYA Northern Ireland Council
House of Sport
Upper Malone Road
Belfast, BT9 5LA

**RYA Scotland**
Hon. Secretary
RYA Scotland, Caledonia House
South Gyle
Edinburgh, EH12 9DQ

**Welsh Yachting Association**
Hon. Secretary
WYA Office
8 Llys Y Mor,
Plas Menai
Caernarfon,
Gwynedd, LL55 1UE

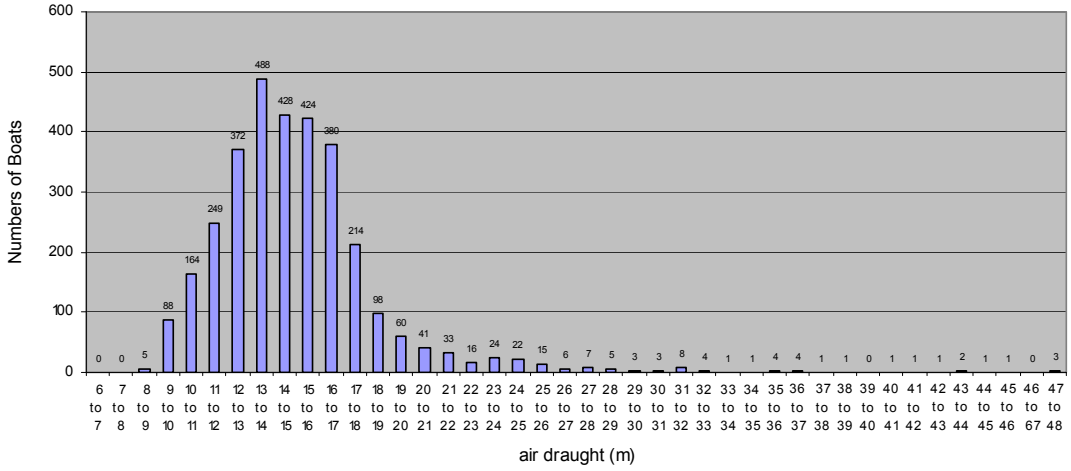
**Original document December 2005, revised December 2009**

**Development of the RYA policy on minimum clearance height and depth**

The RYA has developed its position on clearance height and depth on the available data. Firstly an estimation of the air draught of the national fleet of yachts around the UK was established with the knowledge that these types of yachts may be found in all UK waters, this data is taken from the Royal Ocean Racing Club (RORC) Rating Office's database. Although there are other rating systems in use, the RORC system is widely accepted and applied worldwide. Rating is a technical handicapping process that enables adjustments to be made to yacht racing results so as to allow a wide range of different boats to be raced on equal terms. The boats contained in the database are mainly cruisers and yachts. Many yachts taking place in club races are registered with the RORC Rating Office. The RYA believes this data, containing 3179 records, is a good representation of the type of yacht to be found sailing around the shores of the UK. Although the total number of yachts around the UK has not been quantified, this database represents 6% of the total number of boats owned in the UK, estimated at 564,000 (BMF, 2003).

'Air draught' as presented here is the distance from the waterline to the top of the mast structure. This is based on the 'p' measurement, boom to top of mast, in the rating system (RORC, 2003). Two metres have been added for the distance from the boom to the water surface, which is a conservative estimate for the larger vessels. It should be noted that masthead equipment and instrumentation has not been included in the calculation of air draught, although it will also add a further half to one metre to the air draught of a yacht. Loss of this equipment may produce failure in communication from the yacht although not structural failure to the yacht.

Figure 1: Graph showing the air draught in metres of the boats within the IRC fleet (sample size=3179)




Looking at the above data in the form of percentage of the UK boating fleet, we can see the percentage of recreational yachts at risk from different rotor clearance heights. Figure 2, shows that a clearance height of 14 metres above sea level will put 57% of the national fleet at risk from rotor height collision. Reducing this to 18 metres above sea level, substantially reduces this percentage, however it still leaves 12% of the national fleet at risk from rotor height collision. This is still an unacceptable level of risk to the yachts found in UK waters. A clearance of 22 metres has been shown to be possible in engineering terms, which would put 4 % of the national fleet at risk, a more acceptable level of risk in the view of the RYA. As a matter of common observation, larger yachts over 18 metres in length (see Figure 3), representative of this 4% group are more likely to be run by highly experienced crews and skippers. The datum of mean high water springs (MHWS) is taken as the clearance datum rather than mean sea level and then factoring in a site specific wave height parameter. However, wave height should be examined in the risk assessment at each site. It should be

noted that 22 m above MHWS has already been specified as a minimum clearance height in several of the wind farms consented in the first round of consents and is therefore a feasible, cost-effective option for developers.
It should also be noted that while this is currently an acceptable level of clearance, yachts are increasing in size and future developments may require a greater clearance height.

Figure 2: Graph showing the percentage of boats in the IRC fleet with different air draught shown in metres (sample size = 3179)

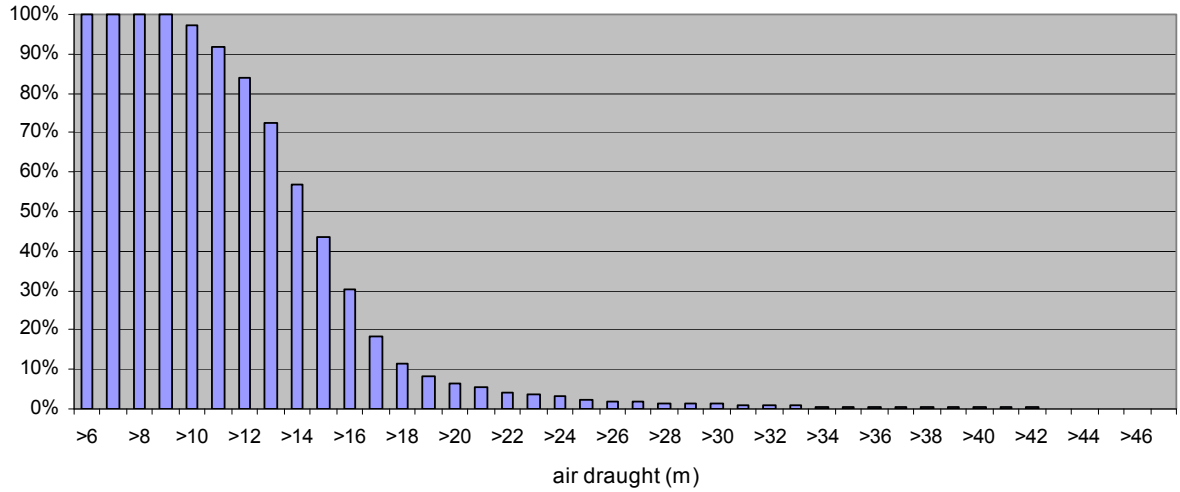
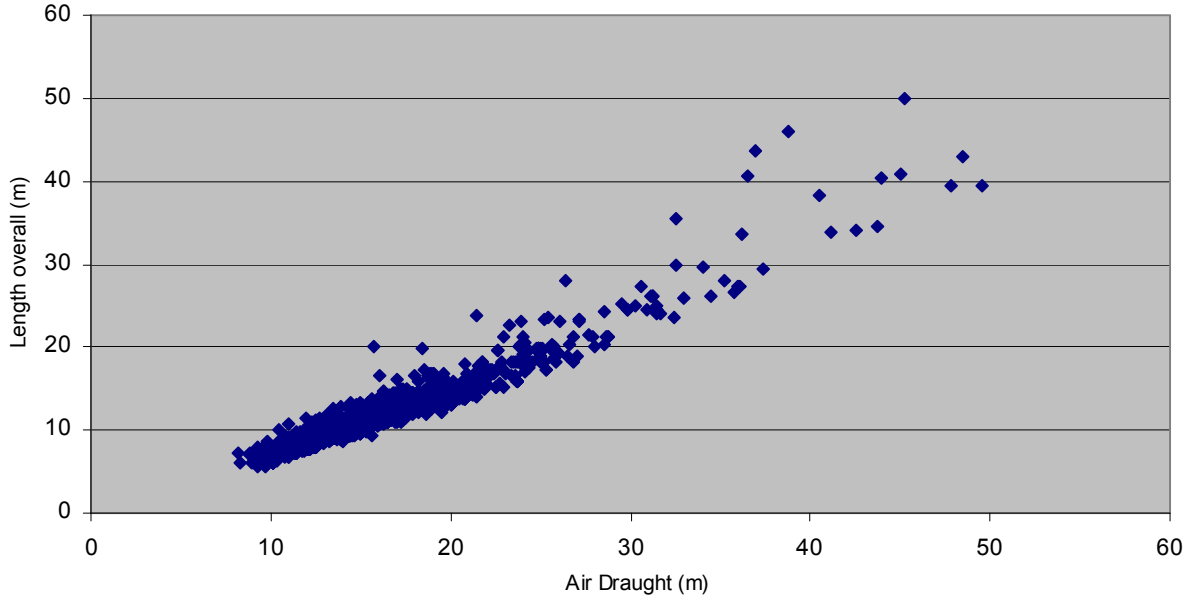
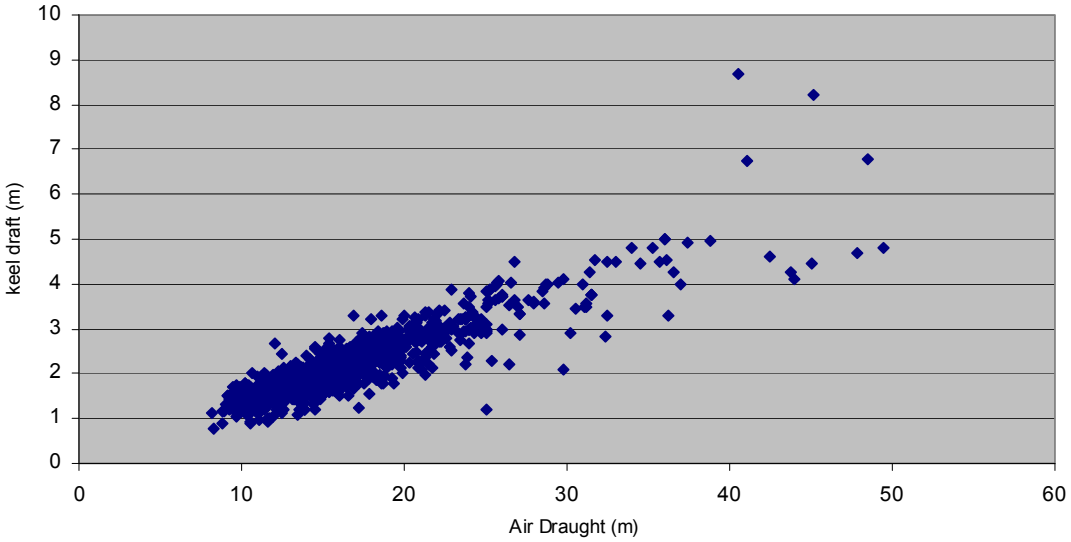



Figure 3: Graph showing the relationship of Length Over All (LOA) in metres and air draught in metres of the IRC fleet.




Additional data is provided showing the relationship between air draught and the depth of water required for clearance below the vessel's keel (Figure 4). Figure 4 shows that a depth of 3.5 metres corresponds to an air clearance of 22m above MHWS which is relevant for subsurface wave and tidal developments.

Figure 4: Graph showing the relationship of water draft in metres and air draught in metres of the IRC fleet.




## References

RORC (Royal Ocean Racing Club). 2003. IRC/IRM Yearbook. London

BMF (British Marine Federation). 2003. *Marine Leisure Industry European Overview*. Egham, Surrey.

## Annex 4. RYA Response To Additional Scottish Leasing Round – Wave & Tidal

RYA SCOTLAND

Royal Yachting Association Scotland

RYA Scotland

Caledonia House
1 Redheughs Rigg
South Gyle
Edinburgh
EH12 9DQ

Tel: +44 (0)131 317 7388
Fax: +44 (0)131 317 8566
Email: admin@ryascotland.org.uk
Web: www.ryascotland.org.uk

17 November 2010

Phil Alcock
Marine Renewables and Offshore Wind Team,
Marine Scotland, Area 1A-South,
Victoria Quay,
Edinburgh
EH6 6QQ

Dear Phil, thanks for drawing my attention to the additional Scottish Leasing Round. I would make the following comments on behalf of RYA Scotland and RYA:

1) We recognise the importance of wave and tidal devices for the Scottish economy and longer term sustainability and believe that these schemes can coexist with recreational sailing once appropriate mitigation measures are agreed.

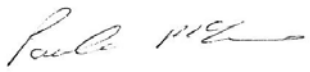
2) The RLG is comprehensive and well done and includes our mapped sailing routes. It is perhaps worthwhile emphasising that these routes are the typical routes used with the exact route depending on the state of wind and tide, particularly near headlands where the tidal streams are strong, and whether a vessel is under sail or not.

3) In the table in the technical summary it is unclear why there is no mention of the sailing routes off SW Islay under cultural and recreational constraints. Although the routes are lightly used, several converge, including ones that originate from Ireland. All nine areas include sailing routes.

4) It is the nature of the devices that is more important for us than their general location. Tidal devices below keel depth, even if supported on monopiles projecting above the surface are not a problem (e.g. as in the Sound of Islay). However, devices on the surface can pose a great risk to safe navigation, particularly in adverse conditions and particularly if they cover a large and mobile area as the Pelamis devices do. These can be surprisingly difficult to see particularly when there is a strong swell, which will inevitably be the case. RYA Scotland and RYA would be interested in working with Marine Scotland, the NLB and other stakeholders, and to build on the experience from EMEC to identify how best to mark these devices by day and night and to promulgate their position in these days when many recreational vessels, particularly visitors from mainland Europe, rely on electronic charts. This is likely to be a key aspect of mitigation.

As each location has its own particularities, RYA Scotland would be keen to work with the individual developers at an early stage (preferably pre-consultation) in order to prioritise areas of importance for recreational sailing and to agree appropriate mitigation strategies. We expect that in each area a clear navigational channel for all vessels will be identified, although of course vessels would not be restricted to it.

Best wishes,
Graham



pp Dr G. Russell

## Annex 5. RYA Response Pentland Firth & Orkney MSP

RYA SCOTLAND
Royal Yachting Association Scotland

RYA Scotland
Caledonia House
1 Redheughs Rigg
South Gyle
Edinburgh
EH12 9DQ

Tel: +44 (0)131 317 7388
Fax: +44 (0)131 317 8566
Email: admin@ryascotland.org.uk
Web: www.ryascotland.org.uk

Dr Pippa Goldschmidt
Marine Scotland
Victoria Quay
Edinburgh
EH6 6QQ

26 July 2010

**Pentland Firth & Orkney Waters Marine Spatial Plan Framework**

The documentation on the MSP framework and the Regional Locational Guidance has been considered by members of RYA Scotland's Cruising and General Purposes Committee and by the RYA Planning and Environment Committee. One of our Coastwatchers with local knowledge attended the meeting in the Pentland Hotel, Thurso. This response is being sent on behalf of RYA Scotland and RYA. It summarises and amplifies points made at the Thurso meeting. We welcome this opportunity to contribute to the development of the Marine Spatial Plan.

RYA Scotland has for some years now been working with the marine renewables sector through EMEC, the Northern Lighthouse Board LB and Scottish Coastal Forum. Potential problems have usually been amicably solved to the benefit of all parties. We have a slight concern that the existence of the Marine Spatial Plan may inhibit this beneficial interaction between the various parties. This is particularly likely to cause problems where new information arises.

We note that the impact of marine renewables depends crucially on the types of units employed as this affects the possibility of coexisting usage of the same waters. For example, tidal turbines below keel depth do not require an exclusion zone when in operation, whereas Pelamis type structures are potentially hazardous to recreational craft unless very well marked. RYA has published a position paper on marine renewables that describes these interactions and recommends best practice and which should have been available to the authors of the draft MSP. Not all impacts are adverse. Good planning can result in gains to local coastal infrastructure, such as slipways, harbours and marinas, to the benefit of all stakeholders.

The RYA Cruising Routes Atlas, which has been used in the production of the report, identifies key routes in this area. However, as emphasised in the accompanying notes, routes taken by recreational vessels, especially those under sail, depend very much on the wind and tides. In Orkney waters, where the tides are very strong, the routes shown and mentioned are only indicative. Actual routes taken may vary greatly and depend upon the tide. It is particularly important to protect routes required in conditions of adverse weather. The Cruising Routes atlas is regularly revised to take account of changing conditions, for example the expansion of marina provision in Orkney.

The following comments refer to particular parts of the MSP and RLG documents. RYA Scotland would be happy to amplify any of these comments. These comments are in the order found in the document and are not ordered in importance.

**PART 1: THE MARINE SPATIAL PLAN FRAMEWORK**

1. Section 3 *Climate and Climate change* mentions that there is likely to be an increase in storminess. This together with the growth of recreational boating puts a high need for places of refuge not only in recognised harbours and marinas but also in safe anchorages as marked in the various charts and the Clyde Cruising Club pilot for these waters. An increase in storminess is likely to have an impact on the use of particular cruising routes

2. Two fibre-optic cables have been omitted from Figure 3.8 *Other Seabed Users*. One, from the Faeroes to Scotland, comes down the east side of Orkney landing in South Ronaldsay near Watersound before carrying on to Scotland. The other is on the west side of Orkney between the Bay of Skail and Dunnet. There are also power cables between Rackwick on Hoy and mainland Scotland. These are shown in a later diagram.

3. In Fig. 3.12 and appendix A16a/b *Recreation and Tourism* the Bay of Ireland (various different spellings of this) and the approaches to Stromness need to be etched in blue as it is frequently used for sailing and Stromness Sailing Club hold their regatta there provided the weather is suitable. Local RYA Scotland members and EMEC have spent a lot of time establishing an inshore route along the west side of Orkney Mainland and this needs to be added to preserve safe access from Stromness to Kirkwall, both of which have important marinas. Timing is essential as vessels have to leave Stromness at the start of the ebb tide to be at Eynhallow before the flood is strong enough to create the overfalls between Eynhallow and Mainland. Unfortunately these overfalls have been omitted from the current Orkney Tidal Flow Chart although they are shown on the 1941 edition. Note that the sailing route at Eynhallow needs to be shown going to the south of Eynhallow and not to the north as the latter contains submerged dangers.

4. In Section 4 *Strategic Issues and Interactions*, Table 4.1 seems to specifically exclude small craft and sailing. They are neither mentioned under *Shipping and Navigation* nor under *Tourism and Recreational Development*. In Table 4.2, however, sailing has been lumped in with Shipping and Navigation and has a high interaction with both marine and offshore wind renewables and ports and harbours but not with aquaculture. It is clear that large vessels will have little interaction with fish farms. However, the places used for marine aquaculture are often also of importance for recreational sailing as anchorages and places of refuge in the event of adverse weather conditions. There is thus a very large potential interaction between marine aquaculture and recreational sailing. Experience elsewhere in Scotland has shown how conflicts between the two sectors can be resolved at the planning stage, e.g. the Loch Fyne ICZM. However, it is essential to recognize the potential for conflict, particularly where marine renewable developments require alternative routes to be developed. There is good guidance in sections 54 and 55 of the SEERAD Advice Note *Marine Fish Farming and the Environment* (2003).

5. In Section 5 *Data collection*, the use of only a single month for the analysis of AIS data is not good practice due to shipping patterns varying seasonally and with weather conditions. This point has already been emphasised in relation to the SEA for offshore wind. Compared with other cruising areas in the UK, the Pentland Firth and seas surrounding Orkney are currently rather lightly used and the strong tides mean that vessels will largely be going in the same direction. However, the amount of traffic could change in future, for example due to the opening of the Northwest Passage to the north of Canada. Of course AIS does not record the movement of small vessels such as recreational vessels.

**PART 2: REGIONAL LOCATIONAL GUIDANCE FOR MARINE ENERGY**

6. The extract below from RLG Wave Area 2 *Hoy/Mainland/Rousay* is a matter of surmise without a supporting evidence base. "*The potential impact on recreational sailing and other water based activities will be through potential displacement or exclusion from specific areas, predominantly in the nearshore environment. It is likely that alternative routes or areas will be available to these activities within the broad area of opportunity for wave energy developments in this area.*" We feel that positive action should be taken to protect recreational sailing routes and prevent unnecessary exclusion zones rather than hoping that something will turn up. Marine recreation makes a significant contribution to the economy of Orkney and Orkney Islands Council has invested heavily in marina provision. We suggest that the present west Mainland inshore route agreed with EMEC should be expanded to cover the whole of Orkney.

7. In Tidal Area 5 *South Hoy and South Walls*, in certain tidal and weather conditions the Scrabster to Stromness ferry is unable to transit through Hoy Sound and hence takes the route by Cantick Head.

8. In Tidal Area 6 *Graemsay (Hoy Sound and Burra Sound)*, modify the second sentence in the *shipping* section to read: "*A smaller local ferry service also operates from Stromness to the island of Graemsay and to Moness on the north of Hoy and back to Stromness*"

James Stuart
Chief Operating Officer

## Annex 6. Marine Scotland scoping comments in relation to information requirements on diadromous fish of freshwater fisheries interest

Offshore renewable developments have the potential to directly and indirectly impact diadromous fish of freshwater fisheries interest including Atlantic salmon, anadromous brown trout (sea trout) and European eel. These species use the coastal areas around Scotland for feeding and migration and are of high economic and / or conservation value. As such they should be considered during the EIA process. Developers should also note that offshore renewable projects have the potential to impact on fish populations at substantial distances from the development site.

In the case of Atlantic salmon information will be required to assess whether there is likely to be any significant effect of developments on rivers which are classified as Special Areas of Conservation (SAC's) for Atlantic salmon under the Habitats Directive. Where there is the potential for significant impact then sufficient information will be required to allow Marine Scotland to carry out an Appropriate Assessment.

In order that Marine Scotland is able to assess the potential impacts of marine renewable devices on diadromous fish and meet legislative requirements the developer should consider the site location (including proximity to sensitive areas), type of device, and the design of any array plus installation methodology. Specifically we request that developers provide information in the following areas:

**1.** Identify use of the proposed development area by diadromous fish (salmon, sea trout and eels)

*a.* Which species use the area? Is this for feeding or migration?
*b.* At what times of year are the areas used?
*c.* In the case of salmon and sea trout what is the origin / destination of fish using the area?

**2.** Identify the behaviour of fish in the area

*a.* What swimming depths do the fish utilise
*b.* Is there a tendency to swim on or offshore

**3.** Assess the potential impacts of deployed devices on diadromous fish during deployment, operation and decommissioning phases. Potential impacts could include:

*a.* Strike
*b.* Avoidance (including exclusion from particular rivers and subsequent impacts on local populations)
*c.* Disorientation that could potentially affect behaviour, susceptibility to predation or by-catch, or ability to locate normal feeding grounds or river of origin
*d.* Delayed migration

**4.** Consider the potential for cumulative impacts if there are multiple deployments in an area.

**5.** Assess 1-4 above to determine likely risk.

*a.* If there are insufficient data to determine use of the development area, these should be obtained
*b.* If there are insufficient data on the origin / destination of fish using the area then these should be obtained

*c.* Where it is not possible to obtain site specific data, the developer should make a convincing argument why this is the case and apply appropriate expert judgement based on published information.

**6.** If there is any remaining doubt as to the potential impacts of a particular development, then the developer should recommend a scientifically robust monitoring strategy to assess any impacts either on stocks as a whole, or on particular rivers as necessary.

Marine Scotland Science has completed a review of migratory routes for Atlantic salmon, sea trout and eels relevant to Scotland. The review is available from http://www.scotland.gov.uk/Resource/Doc/295194/0111162.pdf. This will assist the developers in identifying what pre-existing information is available and what supplementary site specific data will be required.

**Annex 7.**

DEVELOPER APPLICATION AND ENVIRONMENTAL STATEMENT CHECKLIST

| | Enclosed |
|---|---|
| 1. Developer cover letter and fee cheque | □ |
| 2. Copies of ES and associated OS maps | □ |
| 3. Copies of Non Technical Summary | □ |
| 4. Confidential Bird Annexes | □ |
| 5. Draft Adverts | □ |
| 6. E Data – CDs, PDFs and SHAPE files | □ |

---

| Environmental Statement | Enclosed | ES Reference (Section & Page No.) |
|---|---|---|
| 7. Development Description | □ | |
| 8. Planning Policies, Guidance and Agreements | □ | |
| 9. Economic Benefits | □ | |
| 10. Site Selection and Alternatives | □ | |
| 11. Baseline Assessment data – air emissions | □ | |
| 12. Design, Landscape and Visual Amenity | □ | |
| 13. Construction and Operations (outline methods) | □ | |
| 14. Archaeology | □ | |
| 15. Designated Sites | □ | |
| 16. Habitat Management | □ | |
| 17. Species, Plants and Animals | □ | |
| 18. Water Environment | □ | |
| 19. Sub-tidal benthic ecology | □ | |
| 20. Hydrology | □ | |
| 21. Waste | □ | |
| 22. Noise | □ | |
| 23. Traffic Management | □ | |
| 24. Navigation | □ | |
| 25. Cumulative Impacts | □ | |
| 26. Other Issues | □ | |

N.B. Developers are encouraged to use this checklist when progressing towards application stage and formulating their Environmental Statements. The checklist will also be used by officials when considering acceptance of formal applications. Developers should not publicise applications in the local or national press, until their application has been checked and accepted by officials.