

## **EIMR2014-137**

### **Practical experience of sectoral planning for marine renewable energy development in Scotland**

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#### **ABSTRACT**

Sectoral marine planning (SMP) for marine renewables is providing a foundation for the development of these new offshore industries. The planning process combines technical analyses of opportunities and constraints, together with broad public consultation to ensure that resultant Plans are a robust basis for sustainable development. Practical experience has emphasised the importance of using the best available data relating to the available resource, environmental characteristics, and current uses. A number of examples are described for which data improvements are needed.

#### **INTRODUCTION**

The seas around Scotland have the potential to provide us with a sustainable, renewable energy source, based upon up to 25% of Europe's tidal power and 10% of its wave power. The Scottish Government is firmly committed to the development of a successful marine renewable energy industry in Scotland. Marine Scotland is responsible for managing Scotland's seas, and ensuring that the commercial-scale renewables sector develops in a planned and sustainable manner, supported by the best regulatory practice, coherent marine policy and planning and high quality science. Marine Scotland is the marine planning authority in Scottish waters. Planning for marine renewables is being addressed through a sectoral planning process (Fig. 1), with the Sectoral Marine Plans progressed within the broader context of the developing National Marine Plan for Scotland. Sectoral Plans are intended to complement both the National and future Regional Marine Plans through the provision of relevant information and assessment on strategic spatial locations considered suitable for the development of commercial scale offshore renewable energy. The primary purpose of Sectoral Plans is to ensure compliance with EU and domestic legislation, and in doing so provide a

spatial basis for licensing and for any future leasing rounds.

#### **THE SECTORAL MARINE PLANNING PROCESS**

The Sectoral Marine Planning process involves the following stages:

a) Scoping – using the Crown Estate Marine Resource System (MaRS), Marine Scotland Science undertake a technical and scientific exercise to identify areas of constraint and opportunity. The output of this stage is the identification of strategic search areas where development could take place.

b) Building upon the Scoping study, the next of the process is the development of Regional Locational Guidance. At this point, we give consideration to more detailed environmental, technical and socio-economic issues in relation to the strategic search areas identified in the scoping study. This information is published in the form of locational guidance and is used to refine the search areas in to options to be taken forward with a plan.

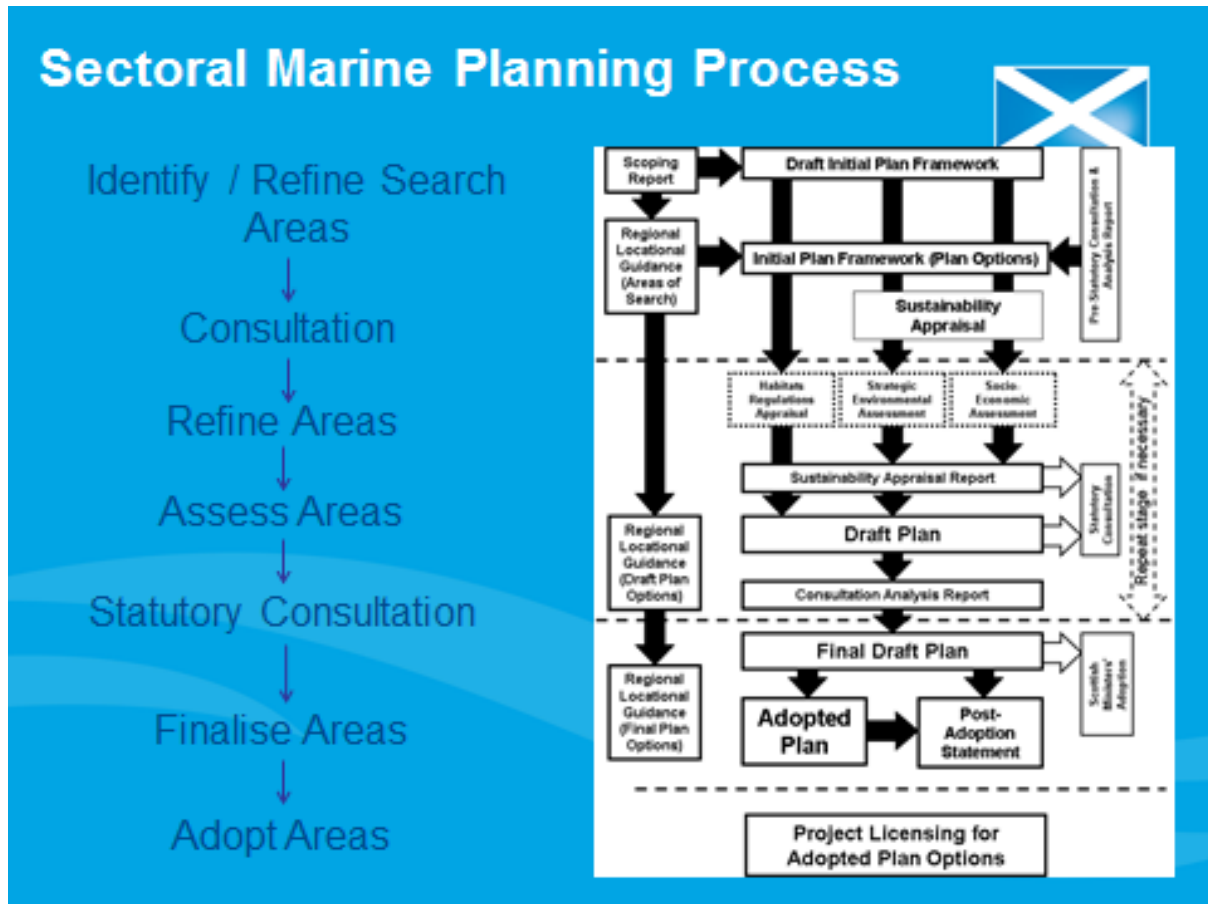
c) The Plan options are then contained within an Initial Plan Framework. This early stage document outlines the potential options and alternatives and the process for developing the plan involving sustainability appraisal. This comprises of strategic environmental assessment (SEA), habitats regulations appraisal (HRA), socio-economic assessment.

d) Once the Sustainability Appraisal has been undertaken, the outcomes inform the development of a draft Plan. The draft Plan and Sustainability Appraisal Report are the subject to consultation with both statutory consultees and the public. Following the consultation, a Consultation Analysis Report is produced which documents all consultation responses as well as providing an analysis of the key issues arising.

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# Sectoral Marine Planning Process



**Figure 1 Marine Scotland Sectoral Marine Planning process**

e) The issues and responses arising from the consultation on both the Plan and Sustainability Appraisal Report are then used to inform the Final Sectoral Marine Plan, which is then put before Scottish Ministers for adoption. If the Plan is adopted, a Post-Adoption Statement is then produced which provides an account of the Plan development process and audit of consultation exercise.

Marine Scotland is currently undertaking this process for both wave and tidal energy, building on the marine planning exercises undertaken in support of the development of projects competing for the Saltire Prize and the projects identified within the Pentland Firth and Orkney Waters strategic leasing area. The two resultant plans will complement the existing Sectoral Marine Plan for Offshore Wind Energy and provide the spatial strategy for wave and tidal energy over the entire Scottish Marine Area.

In autumn 2013, Marine Scotland consulted on the Draft Plans for Wave and Tidal Energy, along with the Plan for Offshore Wind Energy. There were 8 options for wave energy and 10 for tidal energy (Fig. 2). The Plan Options identified during the current process represent spatial zones as opposed to sites.

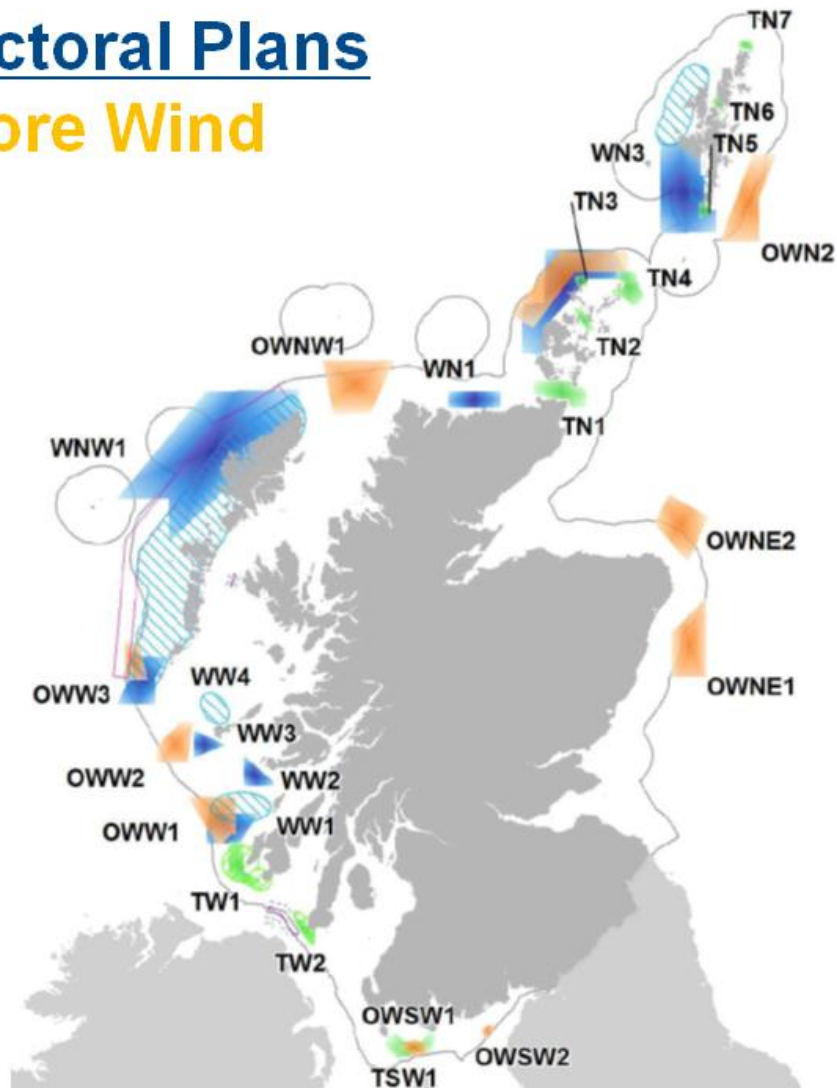
This approach was chosen to ensure flexibility in planning at the project level once more detailed information comes to light. A Consultation Analysis exercise is now underway to identify the key themes emerging from the consultation and ensure stakeholder views are fully considered in the process as it moves forward. It is the current intention of the Scottish Government to finalise the Plans during 2014.

## DATA REQUIREMENTS

The Sectoral Marine Planning process has made use of a wide range of spatial data at Scottish national scale. This has enabled the mapping of resources, opportunities and constraints in a uniform manner and the identification of Draft Plan Option areas with particular potential for commercial scale development. However, the practical experience of bringing these data layers together has emphasised the variability in quality of the data, and consequently its reliability for use in SMP. The SMP process, particularly the spatial modelling in the initial Scoping Study and the preparation of Regional Locational Guidance, has required information on the energy resources, the character of the environment, and on other uses of the sea. In all three cases, there are clear needs for improvements in the data.

# Draft Sectoral Plans

- Offshore Wind
- Wave
- Tidal



**Figure 2 Draft Sectoral Marine Plan Options – Consultation 2013**

**Energy resource characterisation:** The progressive improvements in observational data on wave characteristics and tidal current velocities is indicating that the quality of the energy resources can vary significantly over rather short distances. Waves interact with the coast and seabed topography in complex ways, and spatial and temporal variability of currents and associated turbulence also show repeatable structure over scales that are much smaller than are currently available in nation-scale data layers. Improvements in modelling, validated through field measurements, will improve the quality of marine planning, developer site selection, and engineering design.

**Environmental characteristics:** Work is in progress through several routes to improve the coverage of high resolution bathymetric maps. The coordination of this work through MAREMAP is helpful. However, there is a general need to improve the data for the intertidal zone and shallow water (<20m depth) which are important areas for some forms of development and potential environmental impact. Data in water >100m depth are also

required in support of potential floating wind farm developments. Associated improvements are needed in seabed surface sediment mapping, and collation of sub-bottom profiling information to assess data gaps.

The Poisson kriged ESAS data set provides a broad view of the distribution of seabirds at sea. However, many of the data were collected some years ago, and while some new high-density data are being added, they can be difficult to integrate with the existing data. More specifically, information in the same format is not available for some species thought to be sensitive to marine developments (e.g. divers), and for black guillemot.

Information on the distribution and seasonality of occurrence of some iconic species is either on a rather coarse scale (cetaceans) or of limited spatial coverage (basking sharks). Work is in hand to improve our understanding of the behaviour of salmon at sea, concentrating on swimming depths and potential migration through development areas. Improvements would allow greater weight to be given to all these species in sectoral planning and site assessment.

Better understanding of the interactions between renewables developments and the designated

features of SACs, SPAs, and MPAs will allow better discrimination in how these areas are weighted in spatial modelling (Scoping stage), Regional Location Guidance and EIAs.

Other users of the sea: Some aspects of the use of the sea by commercial vessels are captured in AIS data, which can provide detailed descriptions of the use of the sea by larger vessels. Fishing vessel (> 15m) movements can be derived from VMS data, although with much less detailed resolution. Information on smaller fishing vessels, and other commercial vessels not required to carry AIS equipment is difficult to obtain, as is information on recreational vessels. However, recent work by the MMO with the Royal Yachting Association may be transferable to Scottish waters and provide new information on the relative importance of sailing, cruising areas and routes.

Areas particularly worthy of further investigation relate to the socio-cultural value of sea areas. Some information can be gained from coastal landscape and seascape designations, the distribution of archaeological sites and wrecks, and work is in hand to improve understanding of recreational use of the sea. However, the Scoping process currently takes no account of ecosystem services such as spiritual or inspirational value, educational value, and characteristics such as “wildness” and “existence value”. More generally, a review of the SMP process in terms of ecosystem good and services may indicate novel approaches that could be applicable at both national and local scale.