Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone

Strategic Environmental Assessment Screening and Scoping Report

July 2011

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1. INTRODUCTION

Background

1.1 Marine Scotland is currently commencing preparation of a draft Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone (the plan). The plan will cover Scottish territorial waters[1] and Scottish offshore waters[2] (Figure 1).

1.2 It is considered that the plan has the potential to give rise to significant environmental effects. Marine Scotland has therefore undertaken screening under the Environmental Assessment (Scotland) Act 2005. Marine Scotland's view is that the plan has the potential to result in significant environmental effects, and therefore that a strategic environmental assessment (SEA) is required. In consequence, Marine Scotland has carried out a scoping exercise to identify the scope and level of detail of the assessment.

1.3 Given the scope of the plan, the SEA will be undertaken in accordance with both the requirements of the Environmental Assessment (Scotland) Act 2005 and The Environmental Assessment of Plans and Programmes Regulations 2004.

1.4 Marine Scotland will also undertake a Sustainability Appraisal of the plan, in line with the requirements of the UK Marine and Coastal Access Act 2009. It is Marine Scotland's intention to deliver the Sustainability Appraisal through four key initiatives: the SEA; a Habitats Regulations Appraisal; a socio-economic impact assessment; and public consultation. The approach to plan preparation and the Sustainability Appraisal is summarised in Figure 2.

1.5 An SEA for Scottish Marine Renewables was undertaken during 2004-6 and the Environmental Report was published in 2007. This SEA is therefore being undertaken as a "maintenance exercise" to take account of policy developments in the Scottish marine renewables sector and will build on the conclusions of the 2007 SEA.

1.6 Marine Scotland is the Responsible Authority for the plan. The SEA is being led by the Scottish Government's Environmental Assessment Team.

1.7 The purpose of this screening and scoping report is to set out:

- Marine Scotland's screening opinion;
- the scope and level of detail of the SEA; and
- the proposed duration of the consultation period, for both the plan and the Environmental Report.

The views of the Scottish Consultation Authorities (CAs) and the UK Consultation Bodies on the screening opinion and the scoping report are now being sought. A set of consultation questions is provided in Box 1.

[1] 0-12 nautical miles
[2] 12-200 nautical miles

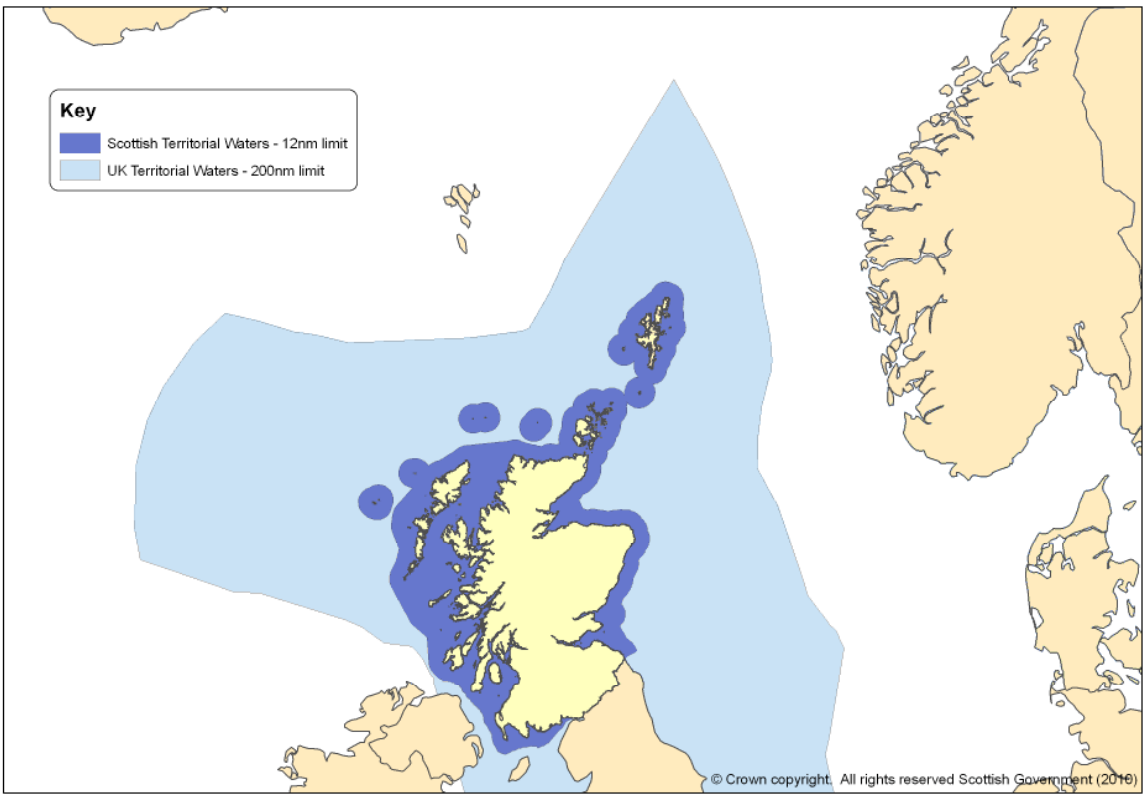


Figure 1. Map showing Scottish Territorial Waters and Scottish Offshore Waters

Report Structure

1.8 The remainder of this report is structured as follows:

- Section 2 introduces the plan, including its legislative and policy context, and provides an overview of the approach to its preparation.
- Section 3 defines the context for the SEA, including an overview of relevant environmental protection objectives and information on the environmental baseline to which the plan relates.
- Section 4 sets out the approach to the assessment.
- Section 5 provides details of the next steps in the preparation of the plan and the SEA, including proposed consultation timescales.
- Appendix 1 provides the screening opinion prepared by Marine Scotland.
- Appendix 2 provides supporting information on the plan.
- Appendix 3 provides the environmental protection objectives.

Box 1. Consultation Questions

1. Is the role of the SEA within the plan preparation process clear and understandable?

2. The environmental protection objectives are based on the objectives of international, European, UK and Scottish legislation and/or policy. Are there any recent changes to this that we should incorporate into the environmental protection objectives framework provided in Appendix 3?

3. Are you content with the level of detail proposed for the environmental baseline? Is there recently published information, not included here, of which we should be aware?

4. Are you content with the scope of the assessment, in terms of:
   i. the environmental topics that are scoped in and out of the assessment?
   ii. the scope of the plan to be assessed (i.e. 0-200 nautical miles around the whole of Scotland's coast)?

5. We would welcome your views on the proposed assessment methodology, including the proposed SEA objectives.

6. We would welcome information on the plans/projects that you consider should be included in the cumulative effects assessment.

7. We would welcome your views on the reasonable alternatives which we propose to assess.

8. Are you content with the proposed consultation process, including the sectoral and community engagement elements?

2. CONTEXT FOR THE PLAN

2.1 The purpose of this section is to provide the background to the plan, set out its legislative and policy context and provide an overview of its likely content.

Background

2.2 A Marine Renewables SEA was undertaken during 2004-06 to examine the environmental effects of developing wave and tidal power and to inform the preparation and delivery of the Scottish Government's strategy for the development of marine energy in Scotland's marine environment out to 12 nautical miles. The SEA also provided marine developers with data on the most appropriate and best locations to place wave and tidal devices on the north and west coasts of Scotland, and set out the issues which had to be tackled to facilitate the breakthrough of the wave and tidal energy sectors. The reports from the SEA and responses to the consultation are still available to view online at: http://www.seaenergyscotland.co.uk/.

2.3 The SEA reported that there were significant marine renewable energy resources around Scotland and that there were also significant levels of existing users and constraints within the marine environment. The SEA highlighted that the sector would require locational guidance and simplified regulation and that uncertainties concerning environmental interactions with new technology deployments would need to be addressed.

2.4 The Marine Energy Spatial Planning Group was formed to respond to the conclusions of the SEA and to initiate streams of work to fill the knowledge gaps identified through the SEA process. A number of the key initiatives are drawing to a close and will provide developers and regulators with key baseline environmental information and streamlined licensing procedures.

Legislative and Policy Context for Plan Preparation

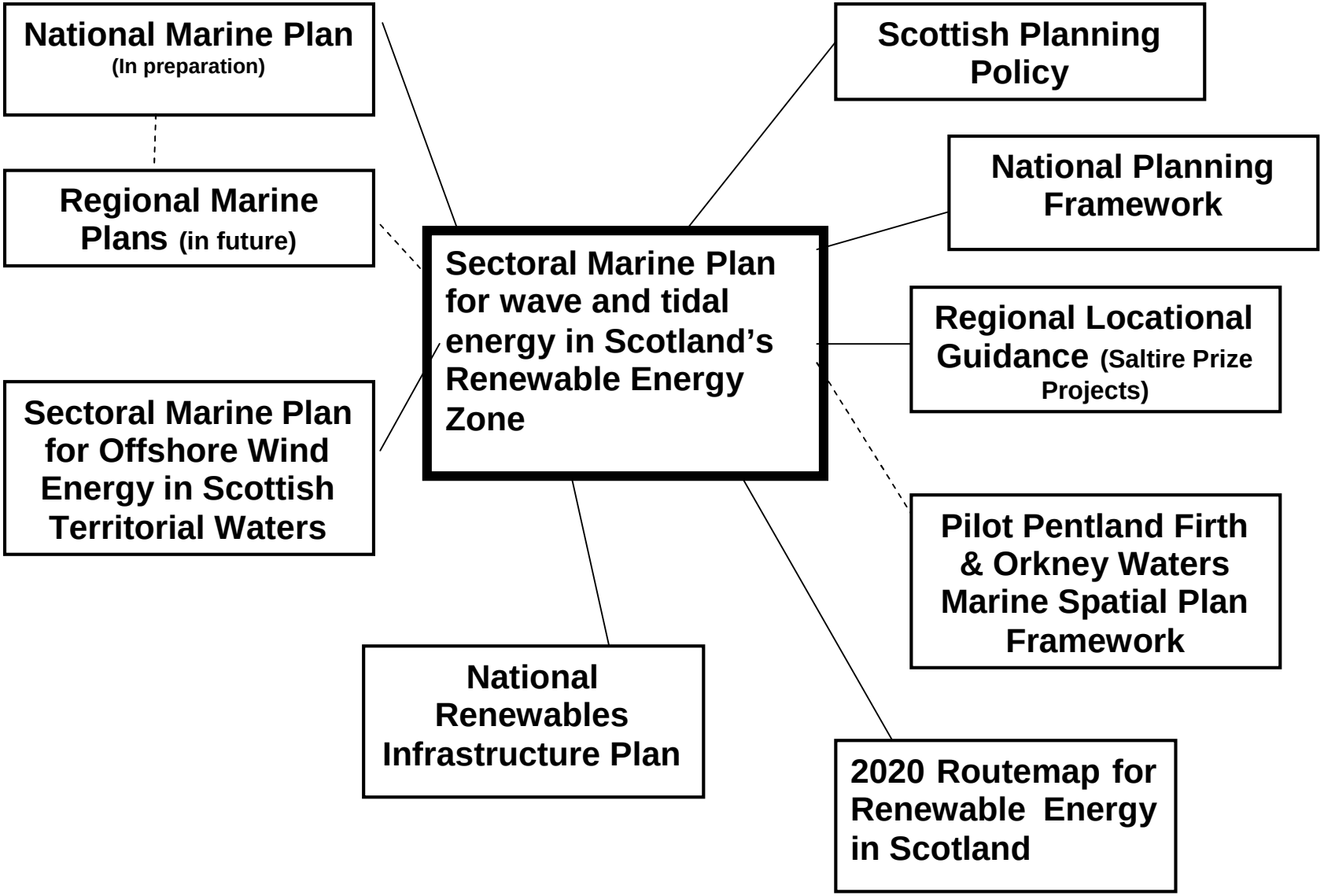
2.5 The plan is being progressed in the light of Scottish marine planning initiatives and Scottish climate change and renewable energy policies. The marine planning policy context is shown in Figure 2.

Climate change and renewable energy

2.6 Climate change abatement targets have been set at Scotland, UK, EU and international levels[3]. The Climate Change (Scotland) Act 2009 commits Scotland to reducing its greenhouse gas emissions by at least 80% from 1990 levels by 2050 (including its share of those from international aviation and shipping). The Act includes an interim target of 42% by 2020, and there is also a requirement for annual targets to be set for the years 2010-2050, starting in 2010. These targets are reflected in the Scottish Government's Purpose, which has sustainable development at its core. High-level measures for the delivery of these targets are identified in the Scottish Government's Climate Change Delivery Plan (June 2009).

[3] Including the Kyoto Protocol, the EU Emissions Trading Scheme and the UK Climate Change Act 2008.

Figure 2. UK and Scottish Government Marine Planning and Offshore Renewable Energy Policy



2.7 The Scottish Government has committed to achieving the EU 2020 renewables target, i.e. 20% of EU's energy consumption from renewable sources by 2020. The recently published *2020 Routemap for Renewable Energy in Scotland* identifies includes a new target for generating an equivalent of 100% of Scotland's electricity demand from renewable resources by 2020.[4] This would be achieved by a mix of onshore and offshore renewables.

2.8 There are a significant number of policy and legislative drivers at the national, European and international levels that apply to the various sectors which make use of the marine environment (including transport, shipping, fishing, energy and other components of the offshore renewable energy sector). These will be taken into account in the preparation of the plan.

Marine planning

2.9 The Marine (Scotland) Act 2010 brought into force powers to implement a new statutory marine planning system to manage the increasing, and often conflicting, demands on Scottish seas. A National Marine Plan is currently in preparation. Once developed, the Sectoral Marine Plan for wave and tidal energy will be incorporated into the National Marine Plan and reflected in Regional planning decisions, where appropriate . A pre-consultation draft of the National Marine Plan was issued for consultation in Spring 2011, as the first stage of delivering the final plan in 2012. A draft National Marine Plan will be issued for consultation in 2011.

2.10 The Act also sets out a new regime for marine licensing which will simplify the existing regulations. This new licensing regime, which came into force in April 2011, covers all anticipated activities in the marine environment which currently require licensing (apart from aquaculture within 3 nautical miles, which local authorities have the power to regulate). Marine plans, as defined in the Act, will be material considerations to decisions made on licensing.

2.11 In addition to the National Marine Plan, the Act allows for regional marine plans to be developed in as yet undefined regions[5]. In advance of the introduction of the National and Regional Plans , a marine spatial planning process is being piloted in the Pentland Firth and Orkney Waters Strategic Leasing Area. The Pentland Firth and Orkney Waters were chosen to pilot a marine spatial plan framework approach due to the known high level of wave and tidal resources, which has recently led to the world's first commercial leases for wave and tidal renewable energy developments. The pilot marine spatial plan framework should inform future decisions made on developments in this area and ensure that relevant onshore planning and development can be coordinated with offshore activities.

[4] http://www.scotland.gov.uk/Publications/2009/07/06095830/2020Routemap
[5] The consultation on the regional marine plan boundaries closed on 18 February 2011 (http://www.scotland.gov.uk/Publications/2010/11/22125407/0).

2.12 The SEA will take account of policies and/or developments contained in the draft National Marine Plan and the pilot Pentland Firth and Orkney Waters Marine Spatial Plan Framework respectively.

2.13 Marine Scotland published 'Blue Seas, Green Energy', the Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters, in March 2011. This plan considers the potential of Scottish territorial waters to accommodate offshore wind energy developments from a national perspective, making proposals for the short, medium and long term. The plan was developed in consultation with key stakeholders, including industry and environmental stakeholders. The links between this plan, the plan for wave and tidal energy and the National Marine Plan will be taken into account and the potential for cumulative effects will be explored in the SEA.[6]

National Renewables Infrastructure Plan

2.14 The National Renewables Infrastructure Plan (N-RIP) has been developed by Scottish Enterprise and Highlands and Islands Enterprise on behalf of the Scottish Ministers. The purpose of the N-RIP was to identify sites that had suitable laydown and quayside access, with the focus on Scottish ports and harbours, for the development of a globally competitive offshore renewables industry based in Scotland. The focus of the N-RIP is on the feasibility of, or potential for, economic investment in this regard. The N-RIP Stage 1 report (February 2010) developed a spatial framework of eleven first phase port and harbour sites, based on best fit locations against offshore wind industry needs, with a view to creating clusters of economic activity around these key locations. The N-RIP Stage 2 report (July 2010) set out the investment required to fully develop these sites and set out the timescale for development of wave and tidal projects in the Pentland Firth and Orkney Waters area.

2.15 An SEA was undertaken of the offshore wind component of the N-RIP and the Environmental Report was published for public consultation in September 2010. The focus was on offshore wind, as the wave and tidal energy sector is at an earlier stage of development. Accordingly, its requirements for port infrastructure are still evolving. In the light of this uncertainty, it was not possible to assess the potential environmental effects of port development in support of the wave and tidal energy sector at this stage. The N-RIP will be updated in due course to consider support for the wave and tidal energy industry, as more information about the industry's requirements becomes available. SEA of port developments to support the wave and tidal energy sector will be undertaken at that time.

2.16 The SEA will consider the environmental effects of wave and tidal array construction in general. However, the onshore environmental effects of construction will be considered as part of the updated N-RIP SEA.

[6] The cumulative effects assessment will also consider the other activities in the marine environment; see Section 4 of this report which discusses the assessment methodology.

Description of the Plan

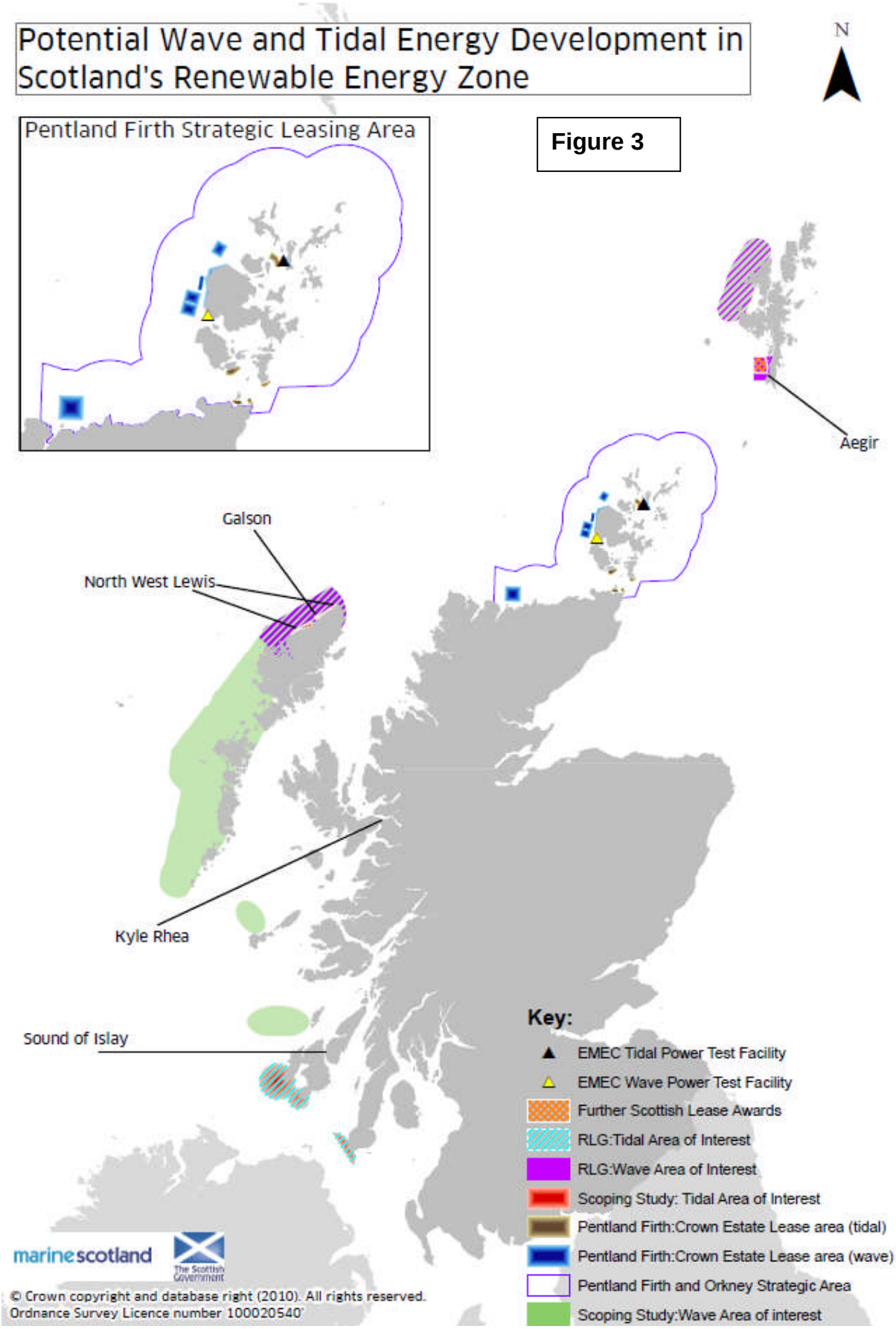
2.17 Work has been undertaken by The Crown Estate and Marine Scotland to identify areas in Scottish territorial waters which are suitable for wave and tidal development. A summary of this work is provided in Appendix 2. The plan will build on the areas identified to date (Figure 3):

- the eleven Pentland Firth and Orkney Waters Leased Areas;
- the five areas of interest identified through the Saltire Prize Programme Regional Locational Guidance work; and
- the three sites included in The Crown Estate's Further Scottish Leasing Round announced in May 2011.

These areas have the potential to be classed as areas for development.

2.18 It will also be necessary to consider whether there are additional areas that could be considered for development to provide a fuller picture of national opportunities for development. The Saltire Prize Scoping Study undertaken by Marine Scotland Science, for example, will be the source of an initial set of proposals that could be considered for additional development. Marine Scotland Science will also investigate the feasibility of sites in offshore waters (i.e. 12-200 nm). The results of this work will be reported as Regional Locational Guidance. It is also likely that Marine Scotland Science will investigate the feasibility of wave and tidal development on the east coast (0-200 nm), as this area was excluded from the 2007 SEA.

2.19 Wave and tidal demonstration sites have been identified (see Appendix 2). These will not be included in the plan and will therefore not be subject to SEA. However, they will be included in the cumulative effects assessment.


Potential Wave and Tidal Energy Development in Scotland's Renewable Energy Zone
N
Pentland Firth Strategic Leasing Area
Figure 3
Aegir
Galson
North West Lewis
Kyle Rhea
Sound of Islay
Key:
EMEC Tidal Power Test Facility
EMEC Wave Power Test Facility
Further Scottish Lease Awards
RLG:Tidal Area of Interest
RLG:Wave Area of Interest
Scoping Study: Tidal Area of Interest
Pentland Firth:Crown Estate Lease area (tidal)
Pentland Firth:Crown Estate Lease area (wave)
Pentland Firth and Orkney Strategic Area
Scoping Study:Wave Area of interest
marine scotland
The Scottish Government
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2.20 The approach to plan preparation is set out in Figure 4. The key tasks of plan preparation will comprise:

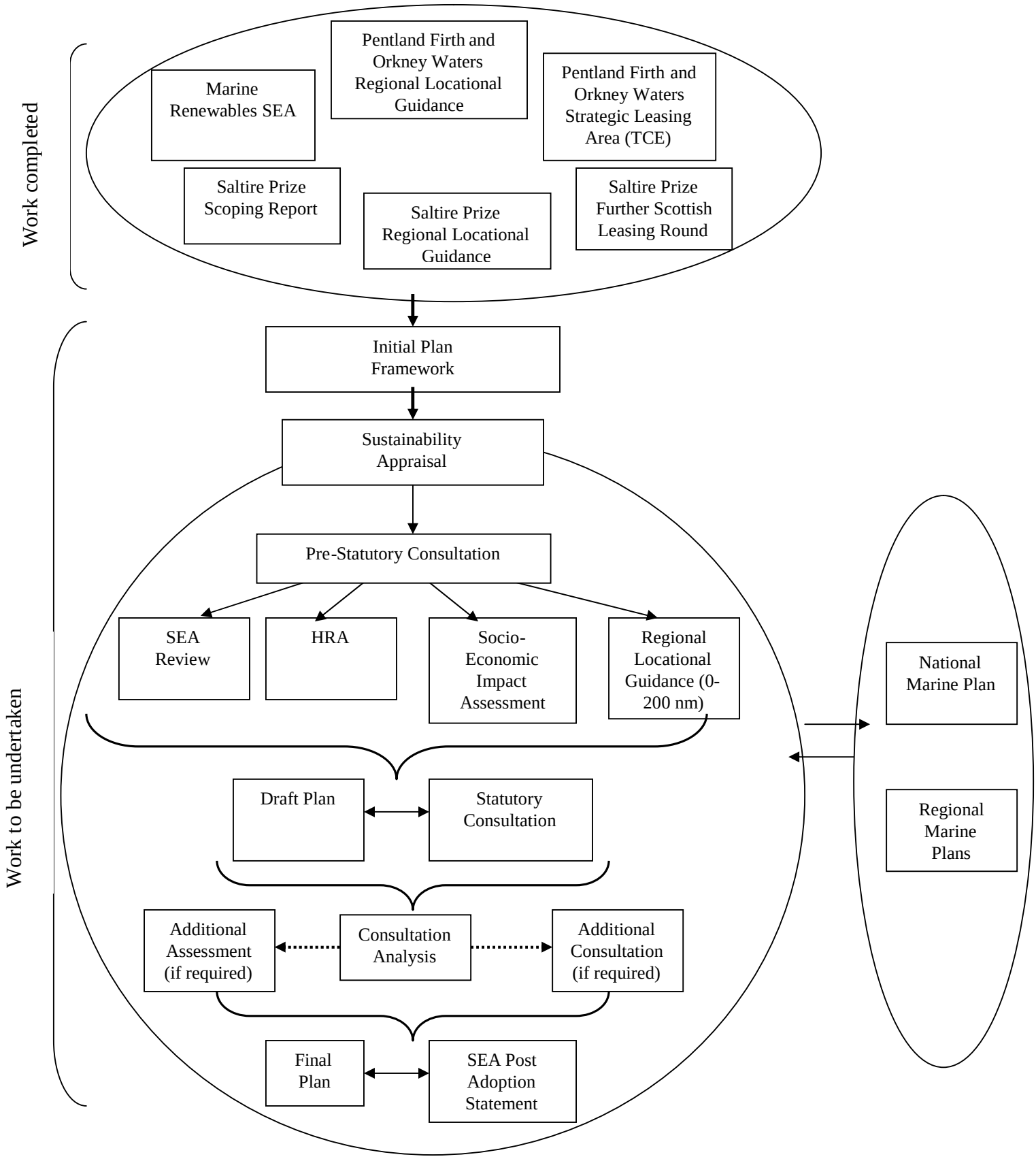
- collating the existing leased areas and 'Areas of Opportunity' into an Initial Plan Framework;
- commencing the pre-consultation process with key stakeholders. Information and issues identified during the pre-consultation will be fed into the Sustainability Appraisal assessments. This process will continue throughout draft plan preparation;
- undertaking the Sustainability Appraisal assessments of the Initial Plan Framework, comprising SEA, Habitats Regulations Appraisal (HRA), the socio-economic impact assessment, and the Regional Locational Guidance (12-200 nm), to front-load plan preparation. These will be undertaken concurrently and will assess 'Areas of Opportunity' arising from the Regional Locational Guidance as these become available;
- in light of the results of these assessments, preparing the draft plan. It is likely that there will be iteration between this step and the Sustainability Appraisal assessments;
- publishing the draft plan and Environmental Report for public consultation;
- analysing the consultation responses and, if necessary, amending the draft plan; and
- publishing the plan and the Post-Adoption Statement.

2.21 Key facts about the plan are summarised in Table 1.

Table 1. Key facts about the Plan

Responsible Authority	Marine Scotland
Title	Sectoral Marine Plan for wave and tidal energy in Scotland's Renewable Energy Zone
Purpose	To provide a framework for progressing the development of wave and tidal energy projects in Scottish territorial and offshore waters.
What prompted the plan?	Scottish Government's climate change and renewable energy policy and EU commitments
Subject	Renewable energy, marine planning and environment
Period covered	2012-2030
Frequency of updates	The plan is to be reviewed every 2 years and updated if required. The review cycle will in due course be aligned with other sectoral Plans and the National Marine Plan.
Area covered	Scottish territorial and offshore waters
Summary of nature/ content	The plan has not yet been drafted, but it is expected that it will include a national strategy for the development of wave and tidal energy in Scottish territorial and offshore waters, which sets out potential areas for development in the short, medium and long term.
Objectives?	Yes. These are in preparation.
Date	July 2011
Contact	Amanda Chisholm, Environmental Assessment Team amanda.chisholm@scotland.gsi.gov.uk or 0131 244 7806 Phil Alcock, Marine Scotland, Marine Renewables and Offshore Wind Team: phil.alcock@scotland.gsi.gov.uk or 0131 244 6602

Figure 4. The Plan Preparation Process



3. CONTEXT FOR THE SEA

Policy Framework

3.1 The Environmental Assessment (Scotland) Act 2005 requires responsible authorities to identify the broader policy context and the environmental protection objectives relevant to the plan that is being assessed. The broader policy context is described in Section 2 of this report.

3.2 Relevant environmental protection objectives are set out in Appendix 3[7]. In summary, the following key environmental protection objectives are of particular relevance to the plan:

- **Biodiversity** policies range from broad commitments to protection and enhancement of key species and habitats, to objectives that focus specifically on conserving marine ecosystems. Marine features account for a significant proportion of all protected resources. Particular protection is afforded to migratory birds and marine species, including cetaceans, through international agreements.
- Relevant objectives that support **population and human health** include those which aim to control bathing water quality. Access legislation and guidance on recreational use are also relevant considerations.
- Objectives relating to the **water** environment (inland, coastal and offshore) aim to reduce pollution and improve the ecological status (including overall water quality) of water bodies, as well as controlling other operations such as engineering and coastal flood defences. Both the Water Framework Directive and the Marine Strategy Framework Directive set environmental objectives for the marine environment.
- **Climate**-related objectives set targets for the mitigation of greenhouse gas emissions at the international and national levels, including both emission reduction and adaptation measures.
- **Cultural heritage** objectives include commitments to protecting the historic environment whilst increasing understanding and awareness of its value. Key objectives relate to coastal and offshore designated and non-designated features, including archaeology and wrecks.
- Objectives relating to **landscapes and seascapes** reflect the broader framework provided by the European Landscape Convention, which emphasises a broad and inclusive approach to landscape protection and enhancement. The diversity and scenic value of coastal seascapes is included as a key theme in the updated Natural Heritage Futures series produced by SNH.

Environmental Baseline

3.3 The Environmental Assessment (Scotland) Act 2005 requires responsible authorities to provide details of the character of the environment which may be affected by the proposed plan, including any existing environmental

[7] This information draws on previous relevant SEAs, including the SEA of the Scottish Government's plan for offshore wind energy in Scottish territorial waters and the SEA of the Marine Bill.

problems. This section of the scoping report provides an indication of the content and level of detail to be provided in the environmental baseline for the assessment of the plan.

3.4 As the plan will propose areas where wave and tidal development could be supported, national-level environmental information will be used to establish the environmental baseline to be used in the SEA.

3.5 The SEA will build on the baseline information provided in the Marine Renewables SEA 2007. Additional information will come from:

- Scotland's Marine Atlas, published in March 2011. The assessment of the baseline environment contained in the atlas will contribute to the evidence base for the development of the plan and will also assist in identifying existing problems in the marine environment;
- the suite of SEA studies undertaken by DECC and other administrations, e.g. Northern Ireland, in support of offshore energy (see paragraph 4.8);
- environmental research studies undertaken by Marine Scotland (in partnership with SNH and The Crown Estate) in the Pentland Firth and Orkney Waters, as the results of these become available;
- the results of EMEC device research at Billia Croo and Falls of Warness;
- emerging outputs from the Pentland Firth & Orkney Waters Inshore Fishing Study; and
- emerging outputs from the Sound of Islay tidal demonstration site.

Details of the baseline information we expect to collect and use in the course of the assessment are set out in the following paragraphs.

Biodiversity, flora and fauna

3.6 Baseline information will include:

- Natura sites (Special Areas of Conservation, Special Protection Areas). This will include (but not be limited to) inshore and offshore SACs and the 31 SPAs extended in 2009 to protect their adjacent marine habitats;
- Ramsar sites;
- European Protected Species, e.g. cetaceans and other marine mammals including dolphins and seals;
- Scottish Marine Protected Areas for biodiversity (should this information become available in the course of the assessment);
- Priority Marine Features, where this information can be applied;
- UK biodiversity action plan species and habitats; and
- coastal sites with biodiversity interest, e.g. Sites of Special Scientific Interest.

Identified habitats will include marine, coastal, intertidal, benthic and terrestrial habitats, as appropriate.

Population and human health

3.7 Baseline information on population and human health will relate to the environmental aspects of these topics[8] and will include:

- bathing and shellfish water quality
- coastal and marine recreation and access

3.8 We do not intend to include baseline information on air quality, given that air quality has been scoped out of the assessment (see Section 4).

Water

3.9 The water topic will include inshore, coastal, intertidal and marine waters. Inland waters will be included where appropriate, for example where riverine discharges affect estuarial water quality. Baseline information will include the ecological status of these water bodies. The topic of flooding will be explored to ascertain whether existing sensitivities would be affected by offshore wave and tidal developments; if so, baseline information regarding flooding risk will be included.

Climatic factors

3.10 Baseline information will include predictions regarding the results of climate change, e.g. increase in water temperatures, sea level rise, changes to the coastline, wave heights, etc. The most up-to-date UKCIP scenarios will be used.

Air

3.11 We do not intend to include baseline information on air quality, given that air quality has been scoped out of the assessment (see Section 4).

Soil, geology and coastal processes

3.12 Baseline information will include:

- coastal Sites of Special Scientific Interest designated for their geological and/or geomorphological interest
- areas of the coast sensitive to changes in erosion/accretion patterns (where this information is available)
- bathymetric, hydrographic and marine sediment information

[8] The socio-economic aspects of population and human health will be more appropriately captured by the socio-economic impact assessment.

Cultural heritage

3.13 Baseline information will include:

- location of key historic environment features in the coastal and marine environment, including listed buildings, scheduled monuments, Gardens and Designed Landscapes and designated wrecks; and
- where available, information on marine archaeology.

Landscapes and seascapes

3.14 Baseline information will include:

- location and special qualities of National Scenic Areas; and
- coastal and seascape character units (from Scott et al, 2005. Note that sensitivity information contained in this report will not be used in the SEA).

4. APPROACH TO THE ASSESSMENT

4.1 The SEA will be undertaken in two parts:

- the gathering and analysis of baseline information will be used to front-load the development of the plan; and
- the areas identified as potentially suitable for development will be subject to assessment.

Scope of the Assessment

4.2 The maintenance exercise will involve revisiting the Marine Renewable SEA 2007, updating it, and extending it. The 2007 SEA only considered the north and west coasts within Scottish territorial waters. However, following executive devolution of renewable energy in Scotland's offshore zone to Scottish Ministers in 2006, this SEA will also consider the possibilities of development in the entirety of Scottish waters (0-200 nm).

4.3 The scope of the environment to be subject to assessment will include potential effects on the marine, coastal, and terrestrial environments.

4.4 An initial review of the plan's contents and the receiving environment suggests that effects on any specific SEA topic area cannot be entirely ruled out at this stage, apart from effects on air quality and material assets. Consequently, Marine Scotland proposes that all the environmental topics will be scoped into the assessment apart from air quality (Table 2).

Scope of the Plan to be Assessed

4.5 As noted in Section 2, the plan will identify potential areas for wave and tidal energy development. The SEA will assess, in the first instance, the potential of these proposed areas for environmental effects. These areas will include:

- the eleven Pentland Firth and Orkney Waters Leased Areas;
- the five areas of interest identified through the Saltire Prize Programme Regional Locational Guidance work; and
- the three sites included in The Crown Estate's Further Scottish Leasing Round announced in May 2011.

4.6 The assessment will also take account of:

- the emerging results of the Regional Locational Guidance (0-200 nm), including any potential 'Areas of Opportunity' on the east coast of Scotland.
- the potential effects of onshore and offshore grid connections, where this information is available.
- the emerging outputs from the Pentland Firth and Orkney Water Marine Spatial Plan pilot project.

Relationship Between this SEA and Previous Assessments

4.7 A considerable amount of work has already been undertaken which explores the environmental effects of a range of activities within the UK and Scottish marine environment. This SEA will build on, rather than duplicate, existing sources of information. This includes the SEA work done by DECC on offshore energy; the SEA of the Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters; and the Sustainability Appraisal of the National Marine Plan for Scotland (on-going).

Table 2. Proposed scoping in / out of SEA topics

Topic	Potential Effect	Scope in?
Biodiversity, flora and fauna	• potential loss and/or damage to marine and coastal habitats (including benthic and intertidal), e.g. smothering of benthic habitats, substratum loss • potential effects on species (e.g. physical disturbance, noise, collision risk, habitat exclusion, barriers to wildlife movement) • effects on coastal habitats and species from changes to coastal processes • effects of pollution on species and habitats, including increased suspended sediment/turbidity • effects on marine wildlife from electric and magnetic fields associated with sub-sea cables • effects on habitats and/or species resulting from changes in tidal flow and wave regime	Yes
Population and human health	• noise emissions • effects on recreation and access, including disruption	Yes
Water and marine environment	• effects on ecological status • effects on water quality, e.g. due to accidental contamination, increased turbidity • effects on flooding	Yes
Climatic factors	• the direct effect of wave and tidal arrays on climatic factors is uncertain, so this topic has been scoped in • carbon benefits assessment	Yes
Air	• emission of pollutants from marine activities is not considered to be significant	No
Marine geology and coastal processes	• potential effects on coastal processes • disturbance of contaminated sediments, e.g. during device installation • changes in sediment and coastal processes due to energy extraction	Yes
Cultural heritage	• loss of and/or damage to historic environment features and their settings, including coastal and marine archaeology	Yes
Landscape / seascape	• effects of infrastructure development on landscape and/or seascape	Yes
Material assets	• effects on other marine users and infrastructure will be included in the socio-economic impact assessment, e.g. navigational safety; collision risk for vessels; long-term displacement of fishing activity; etc	No

4.8 The suite of SEA studies undertaken by DECC includes the following:

- SEA 1 Deep water along the UK and Faroese boundary – oil and gas (2001)
- SEA 2 Central spine of the North Sea – oil and gas (2002)
- SEA 2 (extension) Outer Moray Firth – oil and gas (2002)
- SEA 4 north and west of Shetland and Orkney – oil and gas (2004)
- SEA 5 Parts of the northern and central North Sea to the east of the Scottish mainland, Orkney and Shetland
- SEA 6 Parts of the Irish sea (2006)
- SEA 7 Offshore areas to the west of Scotland (2008)
- Offshore Energy Strategic Environmental Assessment (2009)
- Offshore Energy Strategic Environmental Assessment 2 (nearing completion)
- Offshore Renewable Energy Strategic Action Plan (Northern Ireland) 2009-2020 (DETI)

Assessment methodology

4.9 The SEA will consider the environmental effects of proposed 'Areas of Opportunity' and consider appropriate mitigation measures that could be introduced on a strategic scale.

4.10 The potential areas proposed for wave and tidal development will be assessed using:

- SEA objectives; and
- spatial information stored on the Scottish Government's Geographic Information System (GIS).

Table 3 sets out the SEA objectives, which have been developed on the basis of the initial review of the existing environment and the environmental protection objectives (Section 3).

4.11 The Scottish Government's GIS will be used to identify suitable areas for development, in addition to those already identified. The Crown Estate's Marine Resource System (MaRS) may also be used for this purpose. Should this occur, prior consultation with the Consultation Authorities and the UK Consultation Bodies will take place to discuss the use of this system, for example, the weights to be assigned to each of the siting criteria.

Reasonable alternatives

4.12 The identification of reasonable alternatives will be undertaken as part of the plan preparation process. For this plan, it is considered that the reasonable alternatives are likely to comprise different areas for development. 'Areas of opportunity' can only be considered to be reasonable where there is sufficient wave or tidal resource to support development. In addition, as much as possible, the identification of these areas will employ the avoidance of

environmental effects through the locational exercise, e.g. the Regional Locational Guidance (0-200 nm)

4.13 All the areas identified to date (see paragraph 4.5) will be treated as reasonable alternatives, as well those which will be identified through the Regional Locational Guidance (0-200 nm).

Alternatives may also be identified as mitigation measures, where necessary, and these would also be subject to assessment.

Consultation

4.14 The plan preparation process includes pre-consultation with key stakeholders. Information and issues identified during the pre-consultation will be fed into the SEA, as well as into the plan. This process will continue throughout draft plan preparation.

4.15 Consultation on the screening and scoping report will involve:

- the Consultation Authorities in Scotland, including JNCC;
- the Consultation Bodies in England, Wales and Northern Ireland;
- potentially affected Member States and other non-EU countries, including Norway; and
- key stakeholders, including environmental and industry organisations.

4.16 The draft plan and the Environmental Report will be published for public consultation, and public workshops will be held where both of these will be the subject for discussion. Marine Scotland propose a period for consultation of 16 weeks on the draft plan and the Environmental Report. The Non-Technical Summary will be an important tool for the consultation.

Table 3. Proposed SEA Objectives

SEA Topics	Proposed SEA Objective
Biodiversity, flora and fauna	• To safeguard marine and coastal ecosystems, and their interactions.
Population and human health	• To avoid adversely affecting recreational users. • To avoid adverse effects on human health from water pollution and nuisance effects e.g. noise.
Water	• To avoid pollution of the coastal and marine water environment. • To maintain or work towards good ecological status. • To avoid increased flooding risk as a result of wave and tidal arrays.
Climatic factors	• To reduce greenhouse gas emissions from marine activities. • To ensure that adaptation to climate change impacts is built into plans for future infrastructure.
Air	• No SEA objectives are proposed, as this topic has been scoped out of the assessment.
Marine geology, sediment and coastal processes	• To avoid exacerbating coastal erosion. • To maintain integrity of sediment and coastal processes. • To maintain and protect the character and integrity of the seabed.
Cultural heritage	• To protect and, where appropriate, enhance the historic marine environment. • To avoid damaging known and unknown coastal and marine archaeology.
Landscape	• To avoid adversely affecting landscape/seascape. • To promote the protection of seascape and coastal landscapes.
Material Assets	• No SEA objectives are proposed, as this topic has been scoped out of the assessment.

Assessment framework

4.15 The findings will be set out in matrices with explanatory text to describe how decisions were reached and to record the evidence that was used. Thematic cumulative and synergistic effects will be assessed and recorded, as will characterisation of effects. The matrices will be appended to the Environmental Report for reference. The proposed format is set out in Table 4.

Table 4: Proposed assessment matrix

Receptor	Effect	Characteristic[9]	Mitigation	Residual Effects
Biodiversity, flora & fauna	Loss of bird overwintering habitat to tidal array[10]	Significant negative effect: direct, permanent		
Population & health				
Water				
Climatic factors				
Air				
Soil				
Cultural heritage				
Landscape				
Material Assets				

4.16 The results of the assessment will be reported in the Environmental Report as a summarised narrative, supported by the detail in the assessment matrices appended to the report. The narrative will include, as appropriate:

- baseline characteristics of the areas likely to be affected by the activity;
- the results of the appraisal of the plan elements;
- the results of the assessment of potential cumulative effects[11]; and
- proposed mitigation and residual effects.

Identifying mitigation and monitoring proposals

4.17 Mitigation measures will be identified as an integral part of the assessment process. Monitoring proposals are likely to focus on the significant environmental effects that are identified during the course of the SEA and on implementation of mitigation measures where appropriate. Where possible, existing data sources and indicators will be linked with relevant indicators, to minimise resourcing requirements for additional data collection.

[9] timescale, primary / secondary, cumulative, synergistic etc
[10] example only
[11] the cumulative effects assessment will consider the potential cumulative effects of other plans and projects, including demonstration sites

5. NEXT STEPS

5.1 This final chapter sets out the next steps for the SEA, including an indicative timeline and milestones (Table 5).

Table 5. Indicative timescale and milestones for the plan and its SEA

Indicative timing	Plan	SEA
Summer 2011	commence plan preparation	
July 2011	preparation of Initial Plan Framework	SEA Screening and Scoping Report submitted to SEA Gateway (and thence to Consultation Authorities/Bodies and key stakeholders)
August 2011		Screening and scoping responses received from Consultation Authorities/Bodies and others
September 2011		Assessment of SEA Screening and Scoping Consultation responses
September 2011-April 2012	draft plan preparation HRA socio-economic impact assessment	undertake SEA and prepare Environmental Report
Summer 2011-Autumn 2012	consultation as part of plan preparation and AoS/SEA	
September 2011	pre-consultation workshops	
Autumn 2012	publish draft plan for public consultation (16 weeks)	publish Environmental Report for public consultation (16 weeks)
Autumn 2012	undertake public consultation events	undertake public consultation events
Spring 2013	Publish final plan	Publish Post Adoption Statement

Appendix 1: Screening Opinion
Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone

A1.1 The Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone falls under section 5(4) of the Environmental Assessment (Scotland) Act 2005 ('the Act'). This is because the Section 5(3) criteria do not all apply to the plan; in particular, the plan is not the result of a legislative, regulatory or administrative provision. As a result, Marine Scotland has undertaken screening to determine whether or not the plan will generate significant environmental effects. This has been determined by an assessment against the criteria specified in Schedule 2 of the Act. Marine Scotland's views on this are set out in Table A1 below.

TABLE A1 – LIKELY SIGNIFICANCE OF EFFECTS ON THE ENVIRONMENT

Criteria for determining the likely significance of effects on the environment	Likely to have significant environmental effects?	Summary of significant environmental effects
1(a) the degree to which the PPS sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources	Yes	The plan will provide a national, overarching framework within which projects for wave and tidal energy will be developed further. It is likely to focus on locational requirements.
1(b) the degree to which the PPS influences other PPSs including those in a hierarchy	Yes	The plan will feed into the emerging process of marine spatial planning in Scotland.
1(c) the relevance of the PPS for the integration of environmental considerations in particular with a view to promoting sustainable development	Yes	The plan and its SEA have a key role to play in ensuring that plans for sustainable renewable energy development consider environmental sensitivities and capacity.
1(d) environmental problems relevant to the PPS	Yes	There are numerous sensitivities and environmental pressures already existing in the Scottish marine environment. Our understanding of the character and value of Scotland's marine environment remains relatively limited, and as a result it is likely that many key resources are not formally protected (e.g. unexplored habitats, unknown archaeology) and are therefore vulnerable to change and development.
1(e) the relevance of the PPS for the implementation of Community legislation on the environment (for example, PPS linked to waste management or water protection)	Yes	The plan has a key role to play in delivering European level objectives relating to climate change, and renewable energy, whilst also recognising the

Criteria for determining the likely significance of effects on the environment	Likely to have significant environmental effects?	Summary of significant environmental effects
		continuing importance of Directives relating to the marine and terrestrial environments (e.g. marine strategy, birds, habitats). Water protection objectives are also relevant to the plan and its assessment.
2 (a) the probability, duration, frequency and reversibility of the effects	Yes	The plan is likely to generate effects, and some may be irreversible, or could continue throughout the life of the wave or tidal development.
2 (b) the cumulative nature of the effects	Yes	The plan is of a national scale and could provide a framework within which several wave or tidal arrays may be developed. Developments in the plan could also act in combination with other plans or projects. There is therefore potential to generate cumulative effects in spatial terms (e.g. in and around specific areas) or in relation to particular environmental receptors (e.g. marine biodiversity, landscapes and seascapes etc.)
2 (c) transboundary nature of the effects (i.e. environmental effects on other EU Member States)	No	Based on the findings of a recent SEA by DECC of offshore wind and oil and gas in the renewable energy zone, no significant transboundary effects are expected. However, consultation with neighbouring Member States will be undertaken.
2 (d) the risks to human health or the environment (for example, due to accidents)	No	No specific risks to human health are expected as a direct result of the plan. Potential hazards to other users of the sea will be assessed by the socio-economic impact assessment.
2 (e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)	Yes	The plan covers all Scottish territorial and offshore waters, i.e. 0-200 nm. Its national scale suggests that its content has the potential to generate significant effects.
2 (f) the value and vulnerability of the area likely to be affected due to- (i) special natural characteristics or cultural heritage;	Yes	The plan relates to the marine environment. This has a wealth of natural assets. Many of its assets, however, remain

Criteria for determining the likely significance of effects on the environment	Likely to have significant environmental effects?	Summary of significant environmental effects
(ii) exceeded environmental quality standards or limit values; or (iii) intensive land-use.		unexplored and are not presently formally protected, making them vulnerable to adverse effects from development. This includes seabed habitats and offshore archaeology, seascapes and underwater landscapes.
2 (g) the effects on areas or landscapes which have a recognised national, Community or international protection status	Yes	Many National Scenic Areas in Scotland have coastal elements which have the potential to be directly or indirectly affected by wave or tidal development. There are also World Heritage Sites which may be similarly affected.

A summary of Marine Scotland's view regarding the potential significant environmental effects of the plan is provided below.

SUMMARY OF ENVIRONMENTAL EFFECTS

The Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone will provide a national framework within which development will be progressed over the coming years. Its national focus should provide scope to define where there may be more or less technical and environmental capacity to absorb this type of development without causing significant adverse environmental effects. The plan will also contribute positively to the wider policy agenda for climate change mitigation in Scotland. The nature of the development supported by the plan, combined with its scale and the sensitivity of the marine environment, suggest that it is likely to have significant environmental effects. As a result, Marine Scotland is of the opinion that an SEA of the plan will be required. In accordance with Section 9(3) of the 2005 Act and Regulation 9(2) of The Environmental Assessment of Plans and Programmes Regulations 2004., the views of the Consultation Authorities and Consultation Bodies are now sought.

APPENDIX 2: Summary of work undertaken to identify potential areas of wave and tidal development in Scottish waters

A2.1 The Crown Estate, after competitive leasing rounds for demonstration and commercial scale project sites, has awarded 11 lease agreements to marine renewable energy developers in the Pentland Firth & Orkney Waters - 6 wave and 5 tidal projects with a total potential generating capacity of 1.6 Giga Watts (GW):

- In March 2010, The Crown Estate announced the award of leases to wave and tidal developers for ten areas within the Pentland Firth and Orkney Waters. Collectively, these areas have a potential generation capacity of around 1.2 Giga Watts (GW).
- In October 2010, The Crown Estate announced the award of an additional lease for an area within the Pentland Firth, the Inner Sound lease area. This area has the potential to generate up to 400 Mega Watts (MW). With the addition of the Inner Sound the total potential generating capacity is 1.6 GW.

A2.2 In support of The Crown Estate's lease awards, Marine Scotland (in partnership with The Crown Estate and SNH) has been taking forward a number of environmental studies in the Pentland Firth and Orkney Waters to determine marine species movements, behaviour and potential interactions with devices. The research has specifically targeted seal, cetacean and bird species that are known to populate the Pentland Firth & Orkney area. The SEA will take account of the conclusions of these studies when they become available.

Saltire Prize Programme – Scoping Study Exercise

A2.3 The Saltire Prize of £10 million will be awarded by the Scottish Government to the team that can demonstrate a commercially viable wave or tidal stream energy technology that achieves the greatest volume of electrical output of at least 100 GWh over a continuous 2 year period before 2017. All wave and tidal stream energy developments, including the aforementioned projects in the Pentland Firth and Orkney waters, will be eligible to compete for the prize, under the condition that they are in a site in Scottish waters leased by The Crown Estate.

A2.4 Following The Crown Estate's award of lease agreements for development in the Pentland Firth Leasing Area, Marine Scotland and The Crown Estate worked in partnership to identify further areas for development. In March 2010, Marine Scotland published a Scoping Paper on the proposed geographic areas to be included in the Further Scottish Leasing Round for wave and tidal energy developments under the Saltire Prize Programme. Seven areas were identified as potentially suitable, two for tidal energy and five for wave energy. In response to comments received on the study, Marine Scotland undertook a further, more detailed, analysis of the proposed areas and produced Regional Locational Guidance.

A2.5 The selection took account of a number of characteristics, namely that potential areas of interest should:

- have the necessary natural resources of wave and/or tidal stream power;
- be identified as having commercial potential;
- avoid sensitive areas and have limited impacts on existing marine uses;
- have regard to the requirements of national security; and
- have access to the necessary infrastructure, or be able to access new infrastructure provided within the Saltire Prize timescale.

A2.6 To select the proposed areas, Marine Scotland used The Crown Estate's Marine Resource System (MaRS) to develop a spatial representation of the relative strength of constraints applying to different areas of the sea. A wide range of constraints were taken into account. Some areas (termed exclusions) such as Natura sites and International Maritime Organization routes, and areas leased for future offshore wind farm developments, were treated as being unavailable for the further Scottish wave and tidal leasing round, while others (termed restrictions) were treated as partial constraints.

A2.7 The Scoping Study formed the basis for the preparation of more detailed Regional Locational Guidance for potential developers.

Saltire Prize Programme – Regional Locational Guidance

A2.8 The Regional Locational Guidance built upon the findings of the earlier Scoping Study and applied further environmental and technical sensitivity testing to the seven areas previously identified. Through the additional environmental and technical sensitivity testing Marine Scotland identified and proposed five 'areas of interest' which may be the most suitable for development in the Saltire Prize timescale: west of Shetland; south-west of Shetland; west of Lewis; west of the Mull of Kintyre; and south-west of Islay. The first two are for tidal energy; the last three are for wave energy.

A2.9 The Regional Locational Guidance provides guidance to planners, regulators, developers, consultants and interested stakeholders on the resource and physical characteristics of the five areas and the potential for interactions with other users and the environment. It is available at http://www.scotland.gov.uk/Publications/2010/09/17095123/0.

A2.10 The Regional Locational Guidance collates and presents a range of information relevant to the development process and, based on this, Marine Scotland's appreciation of the physical characteristics and the relative degree of constraints in these areas. Although the Regional Locational Guidance does provide knowledge and available data on environmental and technical interactions and constraints, the areas need to be considered further during the Sustainability Appraisal to ascertain, for example, further environmental impacts and appropriate mitigation measures.

The Crown Estate - Further Scottish Leasing Round

A2.11 The Regional Locational Guidance 'Areas of Opportunity' were used by The Crown Estate as a basis for the Further Scottish Leasing Round for wave and

tidal energy developments, announced on 22 September 2010 to facilitate the entry of projects to the Saltire Prize Programme. The lease awards were announced on 19 May 2011 for three new sites, one off West Shetland and two off West Lewis.

Demonstration Strategy

A2.12 Marine Scotland are taking forward a Demonstration Strategy for the siting of wave and tidal devices in Scotland's marine environment. The renewables demonstration strategy is a component of the MS approach to reducing the environmental uncertainty currently inherent in the licensing of renewables developments in Scottish waters. The principle is that MS would form partnerships with developers to take advantage of the opportunities presented by early projects to make targeted investigations of particular aspects of the environmental interactions of the development. Information, beyond the monitoring which would be required of the developer as consent conditions, would be obtained and used to inform the consenting of future developments.

A2.13 As part of The Crown Estate Further Leasing Round, leases were also awarded for two demonstration sites, Kyle Rhea and Sound of Islay[12].

[12] The two demonstration sites will not be assessed by the SEA, as they are not to be included in the plan; however, they will be included in the cumulative effects assessment.

Appendix 3: Environmental Protection Objectives

Plan, Programme or Strategy	Objectives	Implications / Comments
Marine Policy		
International		
UN Convention on the Law of the Sea 1982 (UNCLOS)	Defines the rights and responsibilities of nations in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of natural resources.	This framework emphasises the need to balance competing interests and objectives within the marine environment.
European		
European Marine Strategy Framework Directive 2007 (MSFD)	The MSFD is the most recent marine obligation on EU Member States. It extends the requirements of the Water Framework Directive (WFD) into seas beyond 1nm. The MSFD requires Member States to *"take necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest".*	Important overarching protective policy for the marine environment. The plan should seek to ensure that it supports these objectives.
European Integrated Maritime Policy 2007	Aims to deliver a sustainable development approach for Europe's oceans and seas. Its scope includes: a marine transport strategy and new ports policy; research and data collection and management strategies, and work to mitigate the effects of climate change on coastal regions.	This provides an important framework within which the plan will be developed.
EU Common Fisheries Policy	The current reform of the Common Fisheries will include proposals for the protection of certain fish species.	The plan should take into account the aims of the reform.
United Kingdom		
Coast Protection Act 1949 (as amended by The Coast Protection (Notices) (Scotland) Regulations 1988 and The Coast	Sets out the licensing and regulatory framework within which activities including navigation and flood defences are set. Aims to protect the coast from erosion and encroachment and to ensure safety in navigation. Excludes some tidal waters in Scotland. Local authorities which include coastline within their boundaries are designated as coastal protection authorities and given	The plan should take into account the aims of the legislation (coastal and navigational protection) and ensure that any elements of its proposals comply with its provisions.

Plan, Programme or Strategy	Objectives	Implications / Comments
Protection (Notices) (Scotland) Amendment Regulations 1996)	specific duties and powers to undertake coastal defence works where necessary.	
Marine and Coastal Access Act 2009	The key issues covered by the Act comprise: the creation of a Marine Management Organisation (MMO); planning in the marine area; licensing activities in the marine area; marine nature conservation; managing marine fisheries; reform of inland and migratory fisheries; modernisation and streamlining of enforcement powers; administrative penalties scheme for domestic fisheries offences; and access to coastal land.	This sets out the broader policy context within which the plan is being developed.
Our seas – a shared resource[13]	Sets out high level objectives for the UK marine environment. This includes achieving a sustainable marine economy, ensuring a strong, healthy and just society, living within environmental limits, promoting good governance and using sound science responsibly. Renewable energy is strongly supported by the strategy.	This provides a broader framework within which the plan will be developed.
Scotland		
Marine (Scotland) Act 2010	Aims to manage activities with Scotland's marine environment in a sustainable way. Notes the importance of protecting seas whilst facilitating sustainable economic growth. Introduces a new statutory marine planning system, a simpler licensing system, improved marine nature and historic conservation with new powers to protect and manage areas of importance for marine wildlife, habitats and historic monuments; improved protection for seals and enforcement powers.	This provides a broader framework within which the plan will be developed.
Biodiversity, Flora & Fauna		
International		
UN Convention	Article 6 requires that all parties to the	This broader framework

[13] http://www.scotland.gov.uk/Resource/Doc/1057/0080305.pdf

Plan, Programme or Strategy	Objectives	Implications / Comments
on Biological Diversity (1992)	Convention develop national biodiversity strategies, plans or programmes, and that they seek to integrate the provisions of these across other policy sectors. Article 7 requires the identification of key resources and their protection. Monitoring of potentially damaging processes and activities should also be undertaken. To establish representative networks of protected areas in the maritime environment by 2012.	sets the context within which specific environmental protection objectives have been developed. The principles defined within the Convention should be supported by the plan.
Bonn Convention on the Conservation of Migratory Species of Wild Animals 1979	Aims to conserve terrestrial, marine and avian species through international co-operation.	As with the previous Convention, these conservation objectives should be taken into account in the development of the plan.
Convention on Wetlands of International Importance 1971 (amended 1982/87)	Otherwise known as the Ramsar Convention, this emphasises the special value of wetland, particularly as a key habitat for waterfowl. The Convention resulted in designation of sites for management and conservation.	The plan should uphold commitments to environmental protection.
Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention).	This Convention led to establishment of a cross-regional commission promoting an ecosystems approach to marine management, including establishment of a network of Marine Protected Areas. Its five work areas are biodiversity and ecosystems, eutrophication, hazardous substances, offshore industry, and radioactive substances). Climate change is also a key cross-cutting theme. Also includes a Biological Diversity and Ecosystems Strategy.	The ecosystems approach to marine planning should be taken into account within the development of the plan.
Agreement on the Conservation of African-Eurasian Migratory Waterbirds	An independent international treaty developed under the auspices of the UNEP/Convention on Migratory Species. The AEWA covers 235 species of birds ecologically dependent on wetlands for at least part of their annual cycle, including	The plan should take into account the priority afforded to protecting bird species which are present within the Scottish terrestrial, coastal and marine environment.

Plan, Programme or Strategy	Objectives	Implications / Comments
1995 (AEWA)	species of divers, grebes, cormorants, herons, ducks, swans, geese, waders, gulls, and terns. An action plan addresses issues including: species and habitat conservation, management of human activities, research and monitoring, education and implementation.	
Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas 1992 (ASCOBANS)	An agreement on the protection of small cetaceans, noting that the migratory nature of dolphins, porpoises and whales means that they can be vulnerable to a range of marine activities and issues.	As noted above, the high priority given to protection of these species should be taken into account in the development of the plan.
UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks 2001	Sets out principles for the conservation and management of specified fish stocks and establishes that such management must be based on the precautionary approach and the best available scientific information. The Agreement elaborates on the fundamental principle, established in UNCLOS, that States should co-operate to ensure conservation and promote the objective of the optimum utilisation of fisheries resources both within and beyond the exclusive economic zone.	The plan should avoid conflicting with the aims of conserving and managing fish stocks.
International Plan of Action for the Conservation and Management of Sharks 1999	The objective of the IPOA-SHARKS is to ensure the conservation and management of sharks and their long-term sustainable use. There are 25 species of sharks in Scottish waters, of which a high proportion are already or nearly at risk.	The high level of protection afforded to sharks should be taken into account within the plan.
European		
Council Directive 92/43/EEC on the conservation of	Established a commitment to designating networks of sites of ecological importance across Europe. These are known as Natura 2000 sites and include special protection	The plan should take into account the potential effects of site development on the network of Natura 2000 sites. Commitments

Plan, Programme or Strategy	Objectives	Implications / Comments
natural habitats and of wild fauna and flora (the Habitats Directive)	areas (SPAs designated under the Birds Directive – see following paragraph) and special areas of conservation (SACs).	to protecting habitats and species should be upheld within the plan.
Council Directive 79/409/EEC on the conservation of wild birds (the Birds Directive)	Protects all wild birds (together with their nests and eggs) and their associated habitats. Commitment to designation of SPAs (included in Natura 2000 sites - see preceding paragraph).	Objectives to protect important species and habitats, including internationally designated sites, should be supported within the plan.
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	Aimed to promote co-operation between European states to protect biodiversity.	The broader framework for environmental protection across Europe should be supported by the plan.
The Pan-European Biological and Landscape Diversity Strategy (1995)	The Strategy aims to reverse the decline of landscape and biological diversity, by promoting innovation and proactive policy making. It supports preceding measures for protecting natural heritage, and aims to supplement this by further promoting a number of action themes relating to different environmental resources. Emphasises the rapid decline of some key characteristics and resources, including traditional human-made landscapes, coastal zones, marine areas, wetlands, mountains and grassland.	The SEA should help to deliver these broader objectives by ensuring that key areas and resources are protected in the plan.
EU Biodiversity Strategy (1998)	Aims to “anticipate, prevent and attack” any reduction or loss of species and habitats across Europe. Supports implementation of the Habitats and Birds Directives, supports the establishment of networks of protected sites, aims to achieve conservation by making plans for priority resources. Also notes the importance of biodiversity outside of protected areas. Refers to agriculture and its role in relation to	The plan should support these objectives by taking into account biodiversity protection and enhancement, within and outwith formally protected areas.

Plan, Programme or Strategy	Objectives	Implications / Comments
	biodiversity conservation.	
United Kingdom		
Wildlife and Countryside Act 1981	Provides the framework for protection of species other than European Protected Species. Sets out protection objectives for specified birds and wild animals. The Act's various schedules detail the species that are protected under the Act, including dolphins, porpoises, and numerous birds such as geese and ducks. This was reviewed and updated in December 2008 and it was recommended that several further species of marine fish should be added to the lists attached to the Act, including shark, seahorse and ray species.	The plan should take into account the particular protection afforded to key terrestrial, coastal and marine species.
The Conservation (Natural Habitats, &c) Regulations 1994	Transposes the requirements for protection of designated sites under the Habitats and Birds Directives, and the framework for protection of European Protected Species. Applies within 12nm. Several marine species are protected by various development consenting regimes covered by the Act. This includes marine turtles, all species of dolphins, porpoise and whale, seals and several types of marine fish (Atlantic salmon, barbel etc.)	The plan should take into account the particular protection afforded to key terrestrial, coastal and marine species.
The Offshore Marine Conservation (Natural Habitats, &c) Regulations 2007 (the Offshore Marine Regulations)	The Regulations extend protection to important species and habitats under the Birds and Habitats Directives beyond UK territorial waters (i.e. outside 12nm). Give protection to marine species, wild birds and habitats, mainly through the creation of offences and site protection mechanisms. Provide the definition of deliberate disturbance applicable to cetaceans, turtles and the Atlantic sturgeon	The plan should recognise and support the protection of important marine species and sites which form part of the Natura 2000 network.
UK Biodiversity Action Plan 1994 (UKBAP)	In response to the 1992 Convention on Biological Diversity, this describes the UK's biological resources, commits a detailed plan for the	The UKBAP specifically identified numerous habitats and species in the coastal and marine

Plan, Programme or Strategy	Objectives	Implications / Comments
	protection of these resources. Sets out 1150 species and 65 habitats which are priorities for conservation action in the UK. The list was last updated in 2007 and includes 87 species in the marine group. Numerous habitats are also relevant to Scotland's marine environment, including several which are specific to coastal areas (salt marsh, sand dunes) or the marine environment (including machair, maerl beds, mud habitats in deep water, estuarine rocky habitats, blue mussel beds, carbonate mounds, tide swept channels, reefs, and intertidal mudflats).	environment which should be protected. The plan should seek to ensure that any developments do not adversely affect these priorities.
Marine (Scotland) Act 2010	Provides for the protection and conservation of seals in and in adjacent territorial seas. The Habitats Directive and the 1994 Regulations (see above) introduced additional measures for the protection of seals.	Protection of seals should be taken into account in the development of the plan.
Scotland		
Nature Conservation (Scotland) Act 2004	Introduced a 'duty to further the conservation of biodiversity' for all public bodies, and sets out more specific provisions within this including for Sites of Special Scientific Interest. Also states a requirement for the preparation of a Scottish Biodiversity Strategy, to which all public bodies should pay regard. Applies to 12nm around Scotland and includes protection measures for marine species.	Biodiversity protection objectives cover the coast and the immediate offshore environment. The plan should seek to contribute positively to biodiversity protection objectives.
Scotland's Biodiversity – It's In Your Hands. A strategy for the conservation and enhancement of biodiversity in Scotland	Sets out Scottish aims relating to biodiversity over 25 year period. Seeks to go beyond a previous emphasis on protecting individual sites to achieve conservation at a broader scale. Aims to halt loss and reverse decline of key species, to raise awareness of biodiversity value at a landscape or ecosystem scale, and to promote knowledge,	The plan should note and aim to support recognised ecosystems. Where feasible operations and disturbance should be steered away from the most sensitive parts of the coastal and marine environment as noted in the biodiversity strategy.

Plan, Programme or Strategy	Objectives	Implications / Comments
(2004)	understanding and involvement amongst people. The Strategy notes the importance and health of Scotland's ecosystems, and summarises key trends.	
Population and Human Health		
United Kingdom		
Marine (Scotland) Act 2010	Replaces Part II of the Food and Environment Protection Act 1985. Protects the marine ecosystem and human health by controlling the deposit of articles or materials or scuttling of vessels in the sea or tidal waters.	The plan should contribute to the protection of ecosystem and human health via the marine environment.
Scotland		
Land Reform (Scotland) Act 2003	Set out a new right of responsible access in Scotland, and made provisions for community right to buy. Core paths to be identified in each local authority area and identified in an adopted plan, promoting more widespread functional and recreational walking, cycling and riding and thereby supporting improved levels of physical activity.	Focuses on access to land and inland water bodies. The plan should ensure that developments do not adversely impact on areas or activities of particular interest to recreational users.
Scottish Marine Wildlife Watching Code	Sets out a code of conduct which should be abided by recreational operators and users when wildlife watching at sea. Aims to minimise disturbance to marine wildlife.	The principles underlying the Code are relevant in setting the broader context for the plan.
Water		
International		
IMO International Convention for the Prevention of Pollution from Ships 1973 (MARPOL)	Aims to prevent marine pollution from ships and in part from oil rigs and production platforms. It includes annexes covering pollution by oil, noxious liquids, harmful substances, sewage, garbage and air pollution. Recent changes focus on reducing the sulphur content and particulate emissions from fuel in the shipping sector.[14]	The plan should be developed taking into account the broader protection provided by the convention.

[14] http://i.pmcdn.net/p/ss/library/docs/annexVI_revisions.pdf

Plan, Programme or Strategy	Objectives	Implications / Comments
International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990	Provides a framework for international co-operation in combating major incidents or threats of marine pollution.	As above.
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (as amended)	Prohibits the dumping of certain hazardous materials, requires a prior special permit for the dumping of a number of other wastes, and a prior general permit for other wastes or materials. It also creates a basis in international law to allow and regulate carbon capture and storage (CCS) in sub-seabed geological formations.	As above
European		
Water Framework Directive 2000/60/EC	This provides an overarching strategy, including a requirement for EU Member States to ensure that they achieve 'good ecological status' by 2015. River Basin Management Plans (RBMPs) were defined as the key means of achieving this. Recent Marine Strategy Directive will extend coverage of coastal waters beyond 1nm.	The WFD sets out an overarching framework that aims to ensure that good ecological status is met by 2015. Plans to achieve this are detailed in the RBMPs.
Bathing Waters Directive (2006/7/EEC)	Aims to protect the public and the environment from faecal pollution at waters used for bathing by large numbers of visitors. Achieves this by making information on quality public, and setting standards to be met by 2015.	The importance of protecting water quality in recognised bathing locations should be taken into account and supported by the plan.
United Kingdom		
The Merchant Shipping Regulations 2009[15]	Implements Directive 2005/35/EC	This contributes to the regulatory context within which the plan should be developed.
Merchant Shipping Act 1995	General provisions for merchant shipping, seamen, and safety. Part VI focuses on prevention of pollution, including oil pollution. Sets out responsibilities and liabilities. Also	This contributes to the regulatory context within which the plan should be developed.

[15] http://www.opsi.gov.uk/si/si2009/uksi_20091210_en_1

Plan, Programme or Strategy	Objectives	Implications / Comments
	covers international incidents. Other issues include lighthouses, salvage and wrecks.	
Environmental Protection Act 1990	Covers pollution control and waste management. Also covers litter, radioactive substances and genetically modified organisms. Pollution at sea is specifically controlled.	This forms an important regulatory context within which the plan should be developed.
Pollution Prevention and Control Act 1999	Implements Directive 96/61/EC (Integrated Pollution Prevention and Control). Regulating industrial and commercial activities which may cause environmental pollution and to prevent and control emissions that are capable of causing any pollution.	The plan should take into account wider pollution prevention measures relating to the water environment.
Scotland		
Environmental Liability (Scotland) Regulations 2009	Covers incidents of significant damage to biodiversity, water or land. In accordance with the European Environmental Liability Directive (2004/35/EC), aims to apply the polluter pays principle by requiring restoration in such instances.	This forms an important regulatory context within which the plan should be developed.
Water Environment and Water Services (Scotland) Act 2003 (WEWS Act)	Transposes the Water Framework Directive into the Scottish context. Aims to protect the water environment by ensuring a reliable and high quality supply of water, reducing groundwater pollution, and protecting marine and other waters.	The plan should support the protection of the water environment.
The Water Environment (Controlled Activities) (Scotland) Regulations 2005	Sets out the process by which activities that have the potential to affect Scotland's water environment are regulated. Authorisation under the CAR is required for discharging to waters, disposal of pollutants to land, abstractions, impoundments and engineering works affecting water bodies.	The CAR provides an important tool for mitigating adverse effects on the water environment. This should be taken into account within the plan.
Pollution Prevention and Control (Scotland) Regulations 2000	See Pollution Prevention and Control Act 1999	

Plan, Programme or Strategy	Objectives	Implications / Comments
SEPA (2008) River Basin Management Plans Scotland River Basin District / Solway Tweed River Basin District	Notes the key pressures and their environmental impacts on Scottish water bodies including coastal areas. Key issues affecting coastal areas include diffuse and point source pollution, organic matter and ammonia, faecal pathogens, toxic substances, and loss of intertidal areas. Some of these issues may be exacerbated by climate change. Objectives for specific water bodies can be found in an interactive map on SEPA's website[16]. This also shows the variation in quality of coastal water bodies at present.	The objectives defined by RBMPs covering Scotland are of indirect relevance to the plan.
Scottish Executive Environment Group (2002) Scotland's Bathing Waters A Strategy for Improvement	Aims to reduce water pollution in order to specifically improve bathing water catchments. Measures include changes to agricultural practices to address diffuse pollution, ensuring compliance with controls of industrial discharges, and making more use of Sustainable Urban Drainage Systems (SUDS).	The importance of bathing water quality should be taken into account and supported as far as possible within the plan.
Bathing Waters (Scotland) Regulations 2008	Implements Bathing Waters Directive.	
Flood Risk Management (Scotland) Act 2009	Includes new measures for sustainable flood risk management. This includes co-ordination and co-operation between relevant organisations, development of flood risk assessment and planning and tools for delivery and enforcement. Applicable to coastal flood protection measures.	Coastal flood risk management at present and planned for the future should be taken into account within the plan.
Climatic Factors		
United Kingdom		
Energy Act 2004	Covers the civil nuclear industry, sustainability and renewable energy sources. Aims to achieve diversification of supply in favour of	The broad aims and more specific requirements of the legislation should be taken into account within

[16] http://www.sepa.org.uk/water/river_basin_planning.aspx

Plan, Programme or Strategy	Objectives	Implications / Comments
	renewable sources. Augments the system for determining developments within territorial waters. Provided the Crown Estate with rights to license the generation of renewable energy and grant leases for development sites out to 200nm.	the development of the plan.
Scotland		
Climate Change (Scotland) Act 2009	The Climate Change (Scotland) Act includes a greenhouse gas emissions reduction target of 80% by 2050 and an interim target of 42% by 2020. Proposals include setting of targets for 2050 and interim periods, requirement for annual reporting, and provisions for meeting targets through additional policies and legislation. The targets include emissions from the aviation and shipping sectors.	
2020 Routemap for Renewable Energy in Scotland 2011	The Routemap is an update and extension to the Scottish Renewables Action Plan 2009. This Routemap reflects the challenge of the new target to meet an equivalent of 100% demand for electricity from renewable energy by 2020.	
Climate Change Delivery Plan: meeting Scotland's statutory climate change targets (2009)	Sets out the measures required to meet Scotland's targets for climate change mitigation included in the Act (above). Includes commitments to the development of the renewable energy sector, including marine renewables. Also aims to reduce emissions from aviation and shipping. Further reductions could arise from the use of biofuels in shipping and improved energy efficiency measures, but interventions will be required to achieve this. Notes that shipping can be an efficient mode of freight transport, despite the recorded emissions from the sector.	
Preparing for a Changing Climate (Consultation Paper) 2009	Second consultation on a climate change adaptation framework for Scotland. It focuses on developing a better understanding of exposure to climate change in Scotland,	

Plan, Programme or Strategy	Objectives	Implications / Comments
	improving organisational adaptive capacity, and taking into account and addressing competing pressures. Further discussion of the issues raised in the paper is provided in the baseline section below.	
Adapting Our Ways: Managing Scotland's Climate Risk: Consultation to inform Scotland's Climate Change Adaptation Framework	This recently published consultation document makes various reference to the need to assist natural resources with climate change adaptation, using examples such as the habitat networks that are proposed within the NPF. Second consultation recently published.	The plan should note that, in addition to high level commitments to climate change mitigation, there is a need to ensure that adaptation requirements are built into any long term plans. This could include measures to enhance offshore ecological networks in light of future climate change impacts.
Air		
European		
EC Directive on Air Quality 2008	Sets out the framework within which national level strategies are developed. Defines the targets for key emissions to air. Consolidates the previous Directives on air quality. Provides a new regulatory framework for $PM_{2.5}$.	The plan should take into account the objective of improving air quality and avoiding generating pollution which exceeds stated thresholds.
United Kingdom		
The Revised Air Quality Strategy for England, Scotland, Wales, and Northern Ireland (2007)	Identifies key standards and targets for reducing emissions. Includes a long-term set of objectives. Makes specific reference to the relationship between air quality and health.	The plan should avoid increasing emissions.
Soil, Geology and Coastal Processes		
Scotland		
Scottish Soil Framework	Provides an overarching policy framework for protection of soils in Scotland, in line with European Directive. Relates largely to the onshore environment, but this includes coastal areas and the principles are applicable more widely.	The plan should consider potential effects on onshore soil resources. Issues will primarily arise in terms of impacts on coastal zones.
Cultural Heritage		
International		

Plan, Programme or Strategy	Objectives	Implications / Comments
UNCLOS 1982 was ratified by the UK in 1997	Article 303 stipulates that 'states have the duty to protect objects of an archaeological and historical nature found at sea and shall co-operate for this purpose' and provides for coastal states to exert a degree of control over the archaeological heritage to 24 nautical miles	Similar to the above legislation, the plan should support commitments to protect the offshore historic environment.
United Kingdom		
Joint Nautical Archaeology Policy Committee (JNAPC) Code of Practice for Seabed Developers (JNAPC 2007)	The JNAPC Code is voluntary but provides a framework that seabed developers can use in conducting their activities in an archaeologically sensitive manner. A guidance note on protocols to deal with the marine historic environment developed specifically for the offshore renewable energy sector has also been prepared.	The guidance should be taken into account within the plan to identify where mitigation might be assumed or practicable.
Protection of Wrecks Act 1973	The 1973 Act provides protection for designated wrecks and for the designation of dangerous sites.	The plan should take into account effects on protected wrecks.
Ancient Monuments and Archaeological Areas Act 1979	Provides for the protection of archaeological heritage, including the scheduling of 'monuments'. The Act, which is administered by Historic Scotland, primarily deals with terrestrial locations but there is provision to designate submarine sites.	The plan should ensure that, as far as possible, areas with archaeological interest are avoided and / or effects are mitigated.
Scotland		
Scottish Historic Environment Policy (SHEP) (Updated 2009)	Provides the overarching framework for historic environment policy in Scotland, consolidating and replacing the previously separate SHEPs. Aims to promote effective conservation and to enhance enjoyment and understanding of the historic environment, linking it with the Scottish Government's central purpose. Recognises the importance of the historic environment as an economic resource and also states a Ministerial commitment to connecting the population with their cultural legacy.	The aims of protecting the historic environment should be taken into account in development of the plan.

Plan, Programme or Strategy	Objectives	Implications / Comments
SHEP on the Marine Historic Environment (Consultation Document)[17]	Set proposals for new legislation on the marine historic environment to be incorporated into the Marine Bill (now enacted). This included provisions to broaden the types of sites which can be designated on the basis of their national importance, arrangements for consultation in advance of designation, and proposals for powers and provisions to allow for site maintenance.	The plan should take account of any Marine Protected Areas proposed for the historic environment, where available.
Scottish Planning Policy (SPP)	Sets out the framework for protecting the historic environment through the planning system.	The plan should take into account the planning protection afforded to the historic environment.
Landscape		
European		
Council of Europe, European Landscape Convention 2000	States that landscapes across Europe make an important contribution to quality of life and cultural identity, but that they are being transformed as a result of a number of factors, including town planning, transport and infrastructure and the economy. Requires Member States to develop more comprehensive frameworks to protect and enhance landscapes. Notes that landscape has no boundaries and that people are central to its management. Includes inland water and marine areas in its coverage and emphasises the importance on non-designated landscapes in addition to those which are protected.	It is important that the plan takes into account the quality and character of coastal and marine landscapes/seascapes.
Scotland		
SNH Natural Heritage Futures 2008 Update: Coasts and Seas	Provides baseline information and draws attention to particularly important issues, assets and changes. The key objectives are to: • improve management, stewardship, awareness and understanding of marine ecosystems; • manage the coast in sympathy with natural processes;	The plan should take into account these issues and objectives, including the importance of recognising the integrated character of coastal areas and seascapes.

[17] http://www.historic-scotland.gov.uk/index/about/consultations/closedconsultations.htm

Plan, Programme or Strategy	Objectives	Implications / Comments
	• safeguard and enhance the fine scenery and diverse character of coastal seascapes and landscapes; • enhance populations of over-exploited commercial fish species and ensure that fishing is sustainable; • ensure salmon fishing and other forms of aquaculture are environmentally sustainable; • improve the water quality of estuaries and seas; and • promote access to the sea and coast for public enjoyment and recreation.	
Material Assets		
International		
UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks 2001	Sets out principles for the conservation and management of specified fish stocks and establishes that such management must be based on the precautionary approach and the best available scientific information. The Agreement elaborates on the fundamental principle, established in UNCLOS, that States should co-operate to ensure conservation and promote the objective of the optimum utilisation of fisheries resources both within and beyond the exclusive economic zone.	The plan should avoid conflicting with the aims of conserving and managing fish stocks.
Scotland		
Strategic Framework for Scottish Aquaculture (2003) (SFSA)	The SFSA is based on four guiding principles; economic; environmental; social and stewardship. It is the main policy instrument to deliver a diverse, competitive but sustainable aquaculture industry in Scotland and provides a set of parameters within which industry can balance socio-economic benefits against environmental impact.	The aims for the industry and associated environmental protection issues should be taken into account in the development of the plan.
Salmon and Freshwater Fisheries	This Act allows for the Salmon Conservation Regulations to be made where it is considered necessary to	The Regulations should be taken into account within the plan, with particular

Plan, Programme or Strategy	Objectives	Implications / Comments
(Consolidation) (Scotland) Act 2003	do so for the conservation of salmon e.g. relating to fishing in the sea, estuaries or rivers.	recognition of their potential role in assumed or proposed mitigation of possible environmental effects.
Aquaculture and Fisheries (Scotland) Act 2007	Covers fish farms and shellfish farms, refers to operational issues and covers both freshwater and sea fisheries. Covers payments relating to aquaculture and fisheries.	The plan should take into account operational issues relating to aquaculture as part of its broader context.
Scottish Aquaculture: A Fresh Start: A Renewed Strategic Framework for Scottish Aquaculture (2008)	Updating the existing aquaculture strategy. This includes five main themes: health, improved systems and finance for new developments, reduced escapes, and improved image and marketing.	As above.