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## **Strategy**

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# **ENERGY**

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**March 2012**

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Department of  
**Enterprise, Trade  
and Investment**  
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**Department of Enterprise,  
Trade and Investment**

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# **Offshore Renewable Energy Strategic Action Plan**

## **2012-2020**

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March 2012



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# FOREWORD

By Arlene Foster, MLA, Minister of Enterprise, Trade and Investment



## **Ministerial Foreword**

Northern Ireland has a strong renewable resource and the Strategic Energy Framework 2010 called for its further development to provide greater energy security and diversity, address climate change and deliver challenging renewable energy targets by 2020. We have both onshore and offshore resources which together can help shift our energy balance away from imported fossil fuels to a more sustainable long term solution. Indeed just recently my Department has consulted on an On Shore Electricity Strategic Action Plan which looks at how best to optimise the on shore renewable resource in the period to 2020. What has become clear through that work is that a combination of both offshore and on shore renewable energy will be needed to meet the target of 40% electricity consumption from renewable resources by 2020.

Therefore, over the last two years or so, we have been engaged in a major programme of work to develop our offshore renewable resource. This has involved undertaking detailed environmental assessments of our draft proposals and extensive consultation with a wide range of stakeholders, for example, across other Departments, marine sectors and the wider public. I would like to thank all those who have engaged with us in this process and I am keen that this engagement should continue as we implement the Plan and work with project developers over the coming years. The successful establishment last year of the Offshore Renewable Energy Forum, with external stakeholder membership, will help us in that task.

I am very pleased that The Crown Estate has worked positively with us as this Plan has developed. The first NI Offshore Leasing Round is well underway with the prospect of development rights being offered to successful developers by September 2012 in relation to our offshore wind and tidal resource. Such projects will not only contribute to our 2020 targets but will develop further in the period 2020-2030. In addition, they offer economic opportunities for local companies and I am keen that all sectors appreciate and can realise the benefits that these activities can provide.

This Offshore Renewable Energy Strategic Action Plan presents our vision for the delivery of offshore renewable energy in Northern Ireland waters. It contains actions to facilitate the opportunities and also address the challenges of offshore development. We will aim to strike a balance between economic, social and environmental needs as we take forward this Plan in a way which realises the ambition for renewable energy and associated economic development but minimises impacts on the environment, other marine users and consumers.

Renewable and sustainable energy, reduced emissions, less reliance on imported fossil fuels and new business opportunities are among the benefits to be secured. This Plan, which has been endorsed by the Executive, sets the framework for development.

A handwritten signature in black ink that reads "Arlene Foster". The signature is written in a cursive, flowing style.

**Arlene Foster MLA Minister of Enterprise, Trade and Investment.**

# INTRODUCTION

# 1

## **Strategic Energy Framework 2010**

1. The Department of Enterprise, Trade and Investment (DETI)<sup>1</sup>, following NI Executive endorsement, published an overarching Strategic Energy Framework 2010 in September for Northern Ireland. It sets out a vision for a much more sustainable system where energy is used as efficiently as possible; where much more of Northern Ireland's energy is from renewable sources; and where Northern Ireland ensures that all generation is as competitively priced as possible.

2. Four key energy Goals were identified:

Competitiveness - promoting competition to reduce energy costs continues to be a major energy market policy driver.

Security of supply - pressures on international gas supplies and, along with volatile price fluctuations and declining UK gas stocks, have highlighted the risks facing European gas and electricity markets. This has signalled the growing importance of securing reliable sources of fuel supplies for the future – in particular the further development of indigenous onshore and offshore resources.

Sustainability - Energy efficiency must be maximised and much more of our energy needs to come from renewable sources with the resulting economic opportunities fully exploited for the benefit of NI businesses. The Executive has set a challenging target of 40 % of electricity consumption from renewable sources by 2020.

Infrastructure - A robust and flexible energy infrastructure is required to support economic development, facilitate increasing levels of onshore and offshore renewables and provide security of supply.

3. The overall aim of SEF 2010 is to set out the direction of travel on energy policy for the energy industry and consumers, the key goals, objectives and associated timeframes and to send clear signals of Government's priorities over the short to medium term. It provides the overarching framework for the range of actions to develop Northern Ireland's renewable resources, including offshore wind and marine renewables.

## **Electricity Consumption from renewable sources in Northern Ireland**

4. Electricity consumption from renewable sources currently stands at an average of 12% during 2011, with some months achieving as high as 18%. DETI expects that the 2012 target for 12% of electricity consumption from renewable sources will be achieved, albeit primarily from on shore wind, which is currently the most readily available and affordable renewable energy for power generation. However it

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<sup>1</sup> [http://www.detini.gov.uk/strategic\\_energy\\_framework\\_\\_sef\\_2010\\_-3.pdf](http://www.detini.gov.uk/strategic_energy_framework__sef_2010_-3.pdf)



is envisaged that while on shore wind may continue to be the principal source of renewable electricity generation in Northern Ireland in the short to medium term, further work on renewable generation scenarios as part of the On Shore Renewable Electricity Action Plan (OREAP) indicate that off shore energy will be needed to achieve a 40% target by 2020.<sup>1</sup>

5. The 40% renewable electricity target is therefore not an onshore wind target but was based on work to establish the evidence base for a number of possible scenarios for increased renewable deployment. No scenario will represent a firm prediction of what our energy mix will look like by 2020 – the market and investors will ultimately decide what will be built within the confines of appropriate market and environmental regulation - rather they represent realistic possibilities.
6. DETI believes that offshore renewables can contribute to this 2020 target and beyond. Offshore renewables can increase energy security and diversity of supply, contribute to climate change mitigation and provide economic benefits through new market opportunities for local companies. Indeed, the All-Island Generation Capacity Statement 2011-2020, produced by the System Operator in Northern Ireland (SONI), forecasts that by 2020 there could potentially be a total of 2163MW<sup>2</sup> of renewable generation capacity installed in Northern Ireland. When all this renewable generation is taken into consideration and the possible delivered energy is taken as a percentage of the total expected energy demand then the 40% target (estimated to be between 1500 – 1800 MW depending on the mix) is exceeded.

### **Cross Departmental Working**

7. While DETI is responsible for overarching energy policy, the policies and programmes of other Northern Ireland Departments directly influence the deployment of renewable energy. Consequently, the Executive agreed to the establishment of the Sustainable Energy Interdepartmental Working Group (SEIDWG) which is chaired by the DETI Minister.
8. The aims of SEIDWG are to ensure a co-ordinated approach across Government to the promotion of sustainable energy and that all Government Departments work together to ensure that policies and practices are in concert with each other, with the aim of maximising use of public funding and delivering value for money in the support of sustainable energy initiatives in Northern Ireland. In February 2011 the Executive agreed the SEIDWG recommendation to develop an Executive-wide Sustainable Energy Action Plan (SEAP) with a list of key actions, programmes and funding proposals, prioritised according to economic benefit to Northern Ireland, carbon savings and feasibility. One action within SEAP will be a high level and strategic socio-economic analysis of onshore and offshore renewable energy initially up to 2020 but also considering the longer term to 2050. In relation to the offshore aspects of this analysis, the activities of the fishing, shipping and ports, tourism and recreation sectors will be considered. It is anticipated that the Executive-wide SEAP, which will include offshore renewable actions from this Plan, should be agreed by the Executive in April 2012.

### **EU, UK and ROI Renewable Energy Policy**

9. Over the last few years, there has been an increasing emphasis on the development of renewables, including offshore renewables, with a growing range of Directives, strategic and policy publications across the EU, UK and ROI. There is discussion and consideration of the key issues with the Department of Energy and Climate Change and the other Devolved Administrations and ongoing dialogue with the Republic of Ireland on its offshore renewable plans. In addition, through the British – Irish Council, these Administrations join with those of the Isle of Man, Guernsey and Jersey to address areas of mutual interest , including marine energy.

### **National Renewable Energy Action Plan**

10. Under Article 4 of the EU Renewable Energy Directive, Member States are required to outline national policies for meeting the binding targets in a National Renewable Energy Action Plan (NREAP). This was prepared by DECC in June 2010 with contributions from Northern Ireland and the other Devolved Administrations.

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<sup>1</sup> <http://www.nigridenergysea.co.uk/wp-content/uploads/2011/10/Draft-OREAP-Oct-2011.pdf>

<sup>2</sup> Based on figures as at September 2010

11. The NREAP is based on the UK Renewable Energy Strategy and sets out a “lead scenario” which demonstrates that it is possible to achieve the 15% renewable energy target set by the EU for the UK by 2020. This scenario is a result of analysis by DECC and suggests that the UK could meet the 2020 target with a mix of approximately 30% electricity, 12% heat and 10% transport energy from renewable sources. It is, however, only one indication of the potential technology mix going forward and does not represent fixed targets for particular sectors.

### **UK Renewable Energy Roadmap**

12. Most recently at the UK level, DECC has published its Renewable Roadmap in July 2011 which sets out a UK wide analysis of renewables deployment together with a targeted programme of actions to meet the UK’s target of 15% renewable energy by 2020. The Roadmap focusses on the eight technologies that have either the greatest potential to help the UK meet the 2020 target in a cost effective way or offer great potential for the decades that follow. The eight technologies ( that are considered capable of delivering more that 90% of the required renewable energy for 2020) are onshore and offshore wind, marine energy, biomass electricity, biomass heat, ground source and air source heat pumps and renewable transport.
13. The Roadmap recognises that the costs of renewable energy technologies are uncertain but are expected to fall over time as supply chains develop, technical challenges are overcome, and the cost of capital reduces with lower risk. Driving deployment across the UK will be key to reducing the costs of renewables, enabling technologies to mature so that over the medium to long-term they no longer need additional support to compete on a level playing field against other low carbon technologies.

### **Offshore Technology Costs**

14. The existing costs of offshore wind are high – more than twice the costs of conventional generation. If the UK is to realise its full potential it is important to drive down costs of offshore wind and make this technology competitive with other forms of low carbon power generation by the end of this decade.
15. Industry has indicated that the levelised costs<sup>1</sup> of offshore wind can be reduced significantly, with technology progression and innovation, industrialisation and increased competition. If a target of cost reduction can be achieved, such that levelised costs fall to £100/MWh, while other technology costs remain as projected, then offshore wind’s share of a cost-effective low carbon mix would increase.
16. Analysis by RenewableUK<sup>2</sup> indicates that delivery of around 20GW by 2020 could allow a supply chain to develop with healthy competition between manufacturers, driving technology progression and resulting in targeted cost reductions. It would also position offshore wind strongly to cover any overall shortfall in renewable energy if that were to emerge over the coming years and to make a major contribution to renewables growth to 2030 and beyond.
17. The UK Government and the Devolved Administrations are committed to working with developers and the supply chain on setting such a cost reduction target, and an industry-led Offshore Wind Cost Reduction Task Force was announced as part of the Renewable Energy Roadmap in July 2011. The Task Force will report to DECC Ministers and Devolved Administration Ministers by Spring/ Summer 2012 setting out a path and action plan to reduce the costs of offshore wind to £100 MWh by 2020.
18. The wave and tidal sector is currently reaching a critical stage in its development as it needs to move from an R&D focus towards , initially, demonstration of small scale arrays ( in the 5-10MW range) and subsequently commercial scale deployment up to 2020. It will be necessary to prove that the technology will operate on a commercial basis in arrays and demonstrate that costs of generation can be reduced sufficiently to make the technology cost-effective in the longer term with respect to other forms of renewables. Given the current stage of development, capital costs vary considerably but it is estimated that demonstration stage devices for tidal stream devices range between £3m to £4.6m per MW. This capital cost can be expected to drop considerably as first deployment of arrays will reduce costs. Levelised costs for tidal stream are currently estimated to be over £200MWh at 2020.

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<sup>1</sup> Levelised cost is a single figure to represent the sum of all lifetime generation costs – capital, operating and fuel costs – in relation to the amount of lifetime electricity generation.

<sup>2</sup> UK Offshore Wind: Building and Industry, Analysis, Scenarios for industrial development, June 2010.

19. Recognising the longer term value of the successful development of the wave and tidal sector to the UK – predictable renewable generation, decarbonisation, economic supply chain benefits – DECC and the Devolved Administrations have proposed higher support levels for a limited period within the Renewables Obligation to hasten the commercial deployment of the sector ( discussed further in Chapter 4). Once the technology is proven and reaches commercial deployment levels, costs are expected to decrease and support levels can be reduced for new build.

### **Electricity Market Reform**

18. In July 2011 DECC published its White Paper on Electricity Market Reform (EMR). These proposals are intended to ensure the supply of reliable, low carbon and affordable electricity for the UK. A key element of the proposal is to introduce a Feed in Tariff with Contracts for Difference (CfD FIT) for large scale renewables. It is intended that the CfD FIT will replace the Renewables Obligation which will close to new generation in 2017. The EMR contains four main energy policies:
- **Carbon price support:** - this will provide a higher tax on fossil fuels used for electricity generation to strengthen carbon price signals to investors.
  - **Feed in Tariffs with contracts for difference:** long term contracts that will increase clarity of long term revenue for all forms of low carbon generation: renewables, nuclear, and carbon capture and storage. They are intended to remove the bias towards fossil fuels in the current market.
  - **Capacity payments:** these are retainer payments for flexible plant and demand side resources that will provide a guaranteed level of spare generating capacity to ensure continued security of supply as we make the transition to a low-carbon generating mix. NI has its own capacity mechanism so the EMR proposal will not apply here.
  - **Emissions Performance Standard:** this is intended to provide a back-stop regulation that will ensure no new investment in unabated (i.e. without carbon capture) coal plant.
19. DETI is actively considering how these proposals could be shaped to work within the Single Electricity Market and the DETI Minister will announce the way forward on EMR in Spring 2012. In the meantime the Renewables Obligation (discussed further in Chapter 4) will continue to be available to incentivise renewable electricity generation.

### **The UK Marine Environment**

20. The UK Marine Policy Statement (MPS) was<sup>1</sup> jointly published in March 2011 by all UK Administrations as part of a new system of marine planning being introduced across UK seas.
21. Adopted by the UK Government, the Scottish Government, the Welsh Assembly Government and the Northern Ireland Executive, the MPS will help achieve the shared UK vision for clean, healthy, safe, productive and biologically diverse oceans and seas. The MPS will enable an appropriate and consistent approach to marine planning across UK waters, and ensure the sustainable use of marine resources and strategic management of marine activities from renewable energy to nature conservation, fishing, recreation and tourism.
22. The MPS will form the backdrop to the Department of the Environment (DOE)'s ongoing development of a Northern Ireland Marine Bill, including marine spatial planning and DETI will continue to work with the DOE led Inter Departmental Marine Co-ordination Group (IMCG) on this.
23. To complement the MPS and enhance public understanding of the concept of marine planning. DoE, on behalf of the Northern Ireland Executive, and in conjunction with the IMCG prepared a Northern Ireland Marine Position Paper. This paper sets out existing departmental policies and strategies which will contribute to the sustainable development of the Northern Ireland marine area and DoE is currently seeking views through a public consultation exercise<sup>2</sup>.

### **DECC Select Committee Inquiry in the Future of Marine Renewables in the UK**

<sup>1</sup> <http://www.defra.gov.uk/publications/2011/09/30/pb13654-marine-policy-statement/>

<sup>2</sup> <http://www.doeni.gov.uk/index/information/foi/recent-releases/publications-details.htm?docid=8608>

24. In February 2012, the DECC Select Committee published the report of its inquiry into the future of marine renewables in the UK. The Committee considered the opportunities and constraints to the successful development of the wave and tidal sectors. It identified challenges to the development of the marine sector including finance, grid connections, the consenting process, public acceptability and environmental integrity and made a number of recommendations.
25. We will work with DECC and the other Devolved Administrations in the consideration of the Committee's report and its recommendations as we take forward the ORESAP.

# The development of the draft ORESAP

## 2

1. Within the overall context set out in Chapter 1, the draft Offshore Renewable Energy Strategic Action Plan 2009-2020 (ORESAP) was the subject of a Strategic Environmental Assessment (SEA)<sup>1</sup> during 2009, the purpose of which is to integrate environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development.
2. The SEA, which was undertaken by the consultancy firms of AECOM and Metoc , was managed by a DETI led Project Steering Group (PSG) comprising other relevant NI Departments and key organisations i.e. the Department of Agriculture and Rural Development, the Agri-Food and Bio-sciences Institute, the Department of the Environment, the Northern Ireland Environment Agency, the Department for Culture Arts and Leisure, the Department for Regional Development, The Crown Estate and the Maritime and Coastguard Agency.
3. The SEA is a system of incorporating environmental consideration into strategic plans at an early stage of their development. There are a number of key stages within the SEA process - one of which was the development and public consultation in May 2009 of the Scoping Report. The Scoping Report set the context for the SEA, identified the topics to be considered, presented the baseline data and approach to be used to assess the effects which the development of offshore renewable energy might have on the environment and other users. The feedback on the Scoping Report from a wide range of key stakeholders who attended the seminar or commented on the report was very useful in developing the Environmental Report. and helping to inform the draft ORESAP. A dedicated website ([www.offshoreenergy.co.uk](http://www.offshoreenergy.co.uk) ) includes all the key documents from this work.
4. The draft ORESAP and the SEA Environmental Report were published for a three month consultation in December 2009 to March 2010 and were widely circulated across the UK and ROI to key stakeholders. A seminar was held in Belfast in February 2010 which was attended by some 100 delegates from all sectors operating within the marine environment. As with the earlier Scoping Stage Seminar, this engagement enabled a wide audience to discuss the ORESAP proposals and understand how DETI was planning to proceed with the development of offshore renewables. The ongoing engagement and feedback through the consultation process has been very useful in the final development of the Plan.
5. Over 30 written responses were submitted to this public consultation and a Post Consultation Report was published setting out the consultee comments and DETI's responses in September 2010. In the main, consultees responses were supportive of how DETI was taking forward this work but noted that key issues identified by the Environmental Report such as data gaps, potential impact on the environment and other marine users needed to be fully taken into account as this work progressed.

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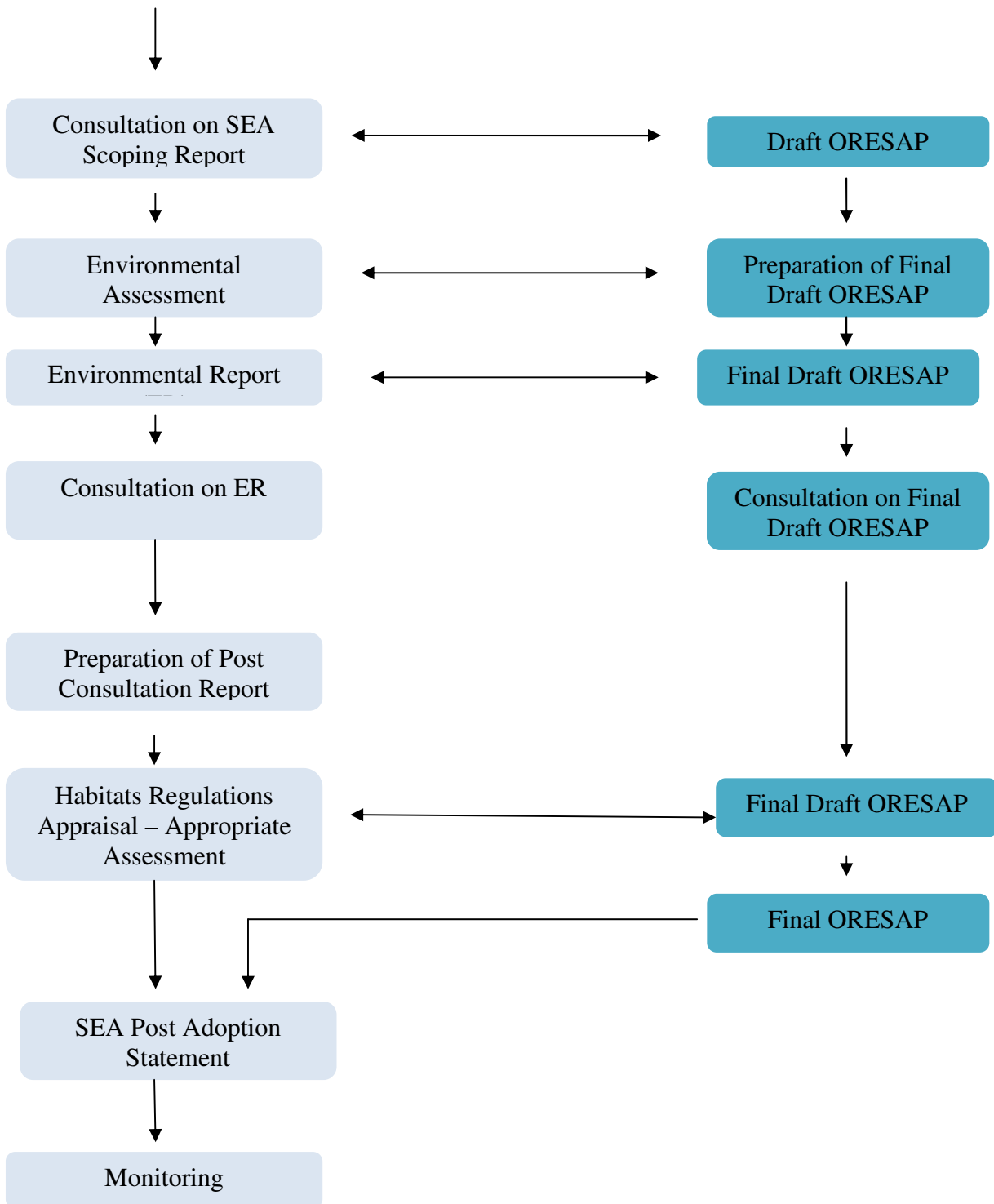
<sup>1</sup> Part financed by the European Regional Development Fund under the European Sustainable Competitiveness Programme Northern Ireland.

6. The Post Consultation Report also confirmed that DETI would undertake a Habitats Regulations Appraisal (HRA)<sup>1</sup> of the draft ORESAP to enable it , as the Competent Authority, to make an Appropriate Assessment (AA) as to whether there would be any adverse effect on the integrity of a European/Ramsar site arising from the implementation of the ORESAP. This work was carried out from October 2010 to March 2011.
7. Under the HRA, the statutory consultee, in this instance, is the Northern Ireland Environment Agency. In addition to consulting with the Northern Ireland Environment Agency, DETI also consulted at the screening and the AA stage with Scottish Natural Heritage, Natural England, Marine Scotland, Joint Nature Conservation Committee, Council for Nature Conservation and the Countryside, Countryside Council for Wales, National Parks and Wildlife Service and the Environmental Protection Agency. The comments from these organisations have been very helpful and were taken into account at both stages in the process.
8. The key recommendations and mitigation measures from the SEA and the HRA work have been built into the ORESAP and are set out in Chapter 3 and included within the actions set out in Chapter 4 and will be reported on through the monitoring arrangements set out in Chapter 5.
9. The relationship between the ORESAP, SEA and AA processes has been set out in Table 1 below. In accordance with the SEA Directive, a Post Adoption Statement is being prepared and will be published shortly.

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<sup>1</sup> Part financed by the European Regional Development Fund under the European Sustainable Competitiveness Programme Northern Ireland.

Figure 1: Relationship between the SEA and ORESAP Processes.



# The Strategic Environmental Assessment and Habitats Regulations Appraisal of the ORESAP

## 3

1. The SEA Environmental Report (ER) reviewed the overall energy and renewable policy context at EU, UK and local level. It also considered the marine environment policies including the work on the then UK Marine and Coastal Access Bill (now the UK Marine and Coastal Access Act 2009) and the proposed NI Marine Bill and the implementation of the Marine Strategy Framework Directive.
2. It addressed the following SEA topics which could be affected by the draft ORESAP:
  - Water, soil, sediment,
  - Biodiversity, flora and fauna including fish, birds, marine animals and mammals,
  - Cultural heritage including archaeological heritage,
  - Population and human health including commercial fisheries, ports and harbours, recreation and tourism,
  - Material assets such as cables/ pipelines,
  - Landscape/seascape,
  - Climactic factors.
3. In addition, it reviewed earlier studies which had identified offshore wind resource off the North and East Coasts and tidal resource off the North Coast, around Rathlin, off the Copeland Islands and in Strangford Lough, where the MCT Sea Gen 1.2 MW tidal stream demonstration project is currently operating. While more limited, wave resource had been noted off the North Coast. A review of the main characteristics of current offshore renewable energy devices was also undertaken as part of the ER.
4. For each of the SEA topics at 2 above, the ER undertook a generic assessment of offshore developments in Northern Ireland waters, considering the characteristics of the different technologies. This assessment was then refined to focus on the key Resource Zones which had been identified by earlier studies and developer interest.
5. These Resource Zones are set out in the map in Annex C. Again each SEA topic was considered within each of the Resource Zones, but still at a strategic level. While the SEA focussed on these Resource Zones, this would not preclude development outside these Zones as all Northern Ireland waters have been covered in the generic assessment. This was then followed by a cumulative assessment which considered a number of possible future development scenarios and reviewed the cumulative effects of different levels of development within each of the Resource Zones. The cumulative effects of other plans and programmes were also considered.



## **The results of the SEA**

6. In light of these assessments, the ER concluded that between 900MW and 1200MW of electricity could be generated by 2020 from offshore wind and tidal energy in Northern Ireland waters, without significant adverse effects on the environment or other marine users.
7. The two main offshore wind Resource Zones are located off the North and the East Coasts and, with the identified mitigations measures, could potentially offer up to 900MW.
8. As regards tidal development, of the five Tidal Resource Zones noted in Annex C, the three smaller Zones at the Maiden Islands, the Copeland Islands and Strangford Lough have not been considered suitable for commercial scale development, due to potential significant adverse effects on the environment and other marine users. This would not, however, preclude small scale testing/ demonstration projects in these Zones. This leaves Tidal Resource Zones 1 and 2 which, with the necessary mitigation measures, could offer up to 300MW of tidal energy.
9. Wave resource was identified off the North Coast but it is limited and this technology was not included within the development opportunities for the ORESAP. However, this does not preclude wave development , should projects come forward within Northern Ireland waters.
10. The ER also noted that there were still notable gaps in some baseline data, in particular relating to benthic ecology, seabirds, marine mammals and reptiles and commercial fisheries. The likely significance of effects would also be influenced by the particular characteristics of the projects being developed (including the effective use of mitigation measures identified for each Resource Zone) and the locations within the Zones in which they are deployed.
11. A fundamental element of the SEA process is mitigation to avoid or reduce the potential effects on the environment and other marine users. The ER identified a number of mitigation measures that DETI should undertake both at the Strategic and Project Level. At the Strategic Level, it recommended that DETI should:
  - (i) establish an Offshore Renewable Energy Forum, building on its existing cross departmental Project Steering Group, to engage with relevant external stakeholders. The Forum would help advise on the ongoing development of this draft Plan;
  - (ii) consider a cross departmental approach to filling strategic data and knowledge gaps and increasing the collection and availability and accessibility of current data sets;
  - (iii) promote proposals for the adoption of a “deploy and monitor “approach to the deployment of commercial scale development on a phased approach, to increase knowledge of possible impacts as well as building on information from other developments such as those being deployed in the Pentland Firth;
  - (iv) examine the opportunities of preparing Locational Guidance to assist developers, stakeholders and decision makers in the selection of specific sites for development and identified the key interactions between the main sectors operating within the marine environment – eg the fishing , ports and harbours and tourism; and
  - (v) develop a Project Level Mitigation Strategy to ensure that the necessary mitigating actions, as identified in the Environmental Report, are satisfactorily considered and addressed as individual projects come forward –e.g. that certain surveys/monitoring regimes would be a requirement for development consent.

## **The results from the Habitats Regulations Appraisal (HRA)**

12. The Habitats Regulations require that a “competent authority“must undertake an Appropriate Assessment of the possible implications of a Plan for European sites before deciding to undertake or give any consent, permission or other authorisation for a Plan or Project which is not directly connected with or necessary for management of European sites but which is likely to have a significant effect on such sites (either in combination with other plans or projects). This

includes consideration of Special Areas of Conservation (SACs), candidate SACs, Sites of Community Importance (SCIs), Special Protected Areas (SPAs) and potential SPAs and, under UK policy, Ramsar sites.

13. In this instance DETI is the competent authority and was required to establish that the ORESAP could be taken forward without generating adverse effects on these sites, the interests for which they had been designated and their conservation objectives. DETI appointed Entec UK Ltd to undertake this work on its behalf <sup>1</sup>. Annex A provides details of the key elements of the HRA work
14. The overall conclusion of the HRA was that the ORESAP will have no adverse effect on integrity of any European or RAMSAR sites, subject to the inclusion and implementation of the mitigation measures specified in the HRA (and set out at Annex A). Any proposed developments that would have an adverse effect on integrity would, by definition, not be compliant with the ORESAP and would not receive NIEA or DETI approval. Projects will be required to undergo project level AA wherever the possibility of likely significant effect on a European/RAMSAR site cannot be excluded. Each individual project will be required to undertake work in a manner which does not have an adverse effect on site integrity. The NIEA considers that the conclusions drawn from the HRA of the ORESAP can be reasonably and objectively accepted.
15. This Plan level AA gives direction to these future project level AAs by setting out the measures/survey work which should be considered at that stage to avoid an adverse effect. These project level assessments and associated monitoring work will be part of and will help inform reviews of the ORESAP – see Chapter 5.

#### **Appropriate Assessment**

16. In light of the HRA conducted by Entec Ltd and the NIEA view of its coverage and conclusions, DETI, as the competent authority, has concluded that on the basis of the application of appropriate mitigation measures, there will be no adverse effect on the integrity of a European / Ramsar site arising from the ORESAP.

#### **Adoption of Mitigation Measures**

17. The mitigation measures identified through the HRA and the SEA have been adopted within the ORESAP and will be built into the Project Level Mitigation Strategy to be developed in 2012. It should be noted, however, that the mitigation measures identified in the SEA and the HRA process currently represent best practice and will form the basis of any consideration of what measures / surveys etc that will need to be carried out at project level in due course. As this may be a couple of years from now and with the ongoing development of the sector and growing understanding of its potential impacts on the environment and other marine users, it may be that current best practice is superseded. DETI and NIEA will wish to ensure that the most relevant and appropriate measures are used to ensure the ultimate aim of avoiding/reducing any potential impact on the environment and other marine users.

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<sup>1</sup> [http://www.detini.gov.uk/offshore\\_renewable\\_energy\\_strategic\\_action\\_plan\\_2009-2020\\_-\\_habitats\\_regulations\\_assessment\\_-\\_screening\\_report\\_and\\_appropriate\\_assessment\\_july\\_2011](http://www.detini.gov.uk/offshore_renewable_energy_strategic_action_plan_2009-2020_-_habitats_regulations_assessment_-_screening_report_and_appropriate_assessment_july_2011)

# The ORESAP 2012-2020– its aim and key actions

## 4

1. On the basis of the ER and the HRA Appropriate Assessment and the consultation responses, DETI has now finalised the ORESAP and this chapter sets out the key actions proposed to facilitate the sustainable development of offshore renewables.

2. The overall aim of the ORESAP is;

**to optimise the amount of renewable electricity sustainably generated from offshore wind and marine renewable resources in Northern Ireland's waters in order to enhance diversity and security of supply, reduce carbon emissions, contribute to the 40% renewable electricity target by 2020 and beyond and develop business and employment opportunities for NI companies.**

**The associated development opportunity is for up to 900 MW of offshore wind and 300 MW from tidal resources in Northern Ireland waters by 2020.**

3. These figures reflect the potential contribution which offshore renewables could make towards the 40% renewable electricity target by 2020 set in SEF without a significant adverse effect on the environment and other marine users and also on the basis of current environmental knowledge and offshore technology. DETI will keep these figures under review as technology develops and baseline data and knowledge on the interactions between different devices and environmental receptors increases.

### First Offshore Renewable Energy Leasing Round in Northern Ireland Waters

4. The Crown Estate (TCE) launched the process for the NI Offshore Renewable Energy Leasing Round in March 2011, following which they held an industry focussed Design Discussion stage in April/ May 2011. This enabled the sector to offer views on how the opportunities could be presented to maximise market interest and commitment to development as well as the benefits to Northern Ireland.
5. Recommended by the ER, DETI brought forward work on the Regional Locational Guidance (RLG)<sup>1</sup> in advance of the Leasing Round to facilitate consideration by developers and other stakeholders of the opportunities and constraints for developing offshore renewables in NI waters. The RLG was developed after extensive consultation with these key marine stakeholders. Based on the SEA work, it provides further detail on the different interests / interactions at each of the Resource Zones, possible landfalls and advice and guidance on the statutory marine licence and consents procedures.
6. Following consideration of the views expressed by the sector, TCE launched two parallel leasing rounds in December 2011 for offshore wind and tidal developments:

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<sup>1</sup> [http://www.detini.gov.uk/regional\\_locational\\_guidance\\_rlg\\_for\\_offshore\\_renewable\\_energy\\_developments\\_in\\_ni\\_waters](http://www.detini.gov.uk/regional_locational_guidance_rlg_for_offshore_renewable_energy_developments_in_ni_waters)

Part financed by the European Regional Development Fund under the European Sustainable Competitiveness Programme Northern Ireland.

- The offshore wind area, off the south east coast of County Down, will be leased to a single development company to deliver up to 600MW of generating capacity and
  - Given the current development status of the tidal sector, there is a demand for both commercial scale and demonstration schemes such as small scale arrays and, with this in mind, the Rathlin Island and Torr Head Strategic Area with up to 200MW generating capacity will be leased to developers for the delivery of multiple projects. Applications have been invited for projects for commercial demonstration leases ( up to and including 10 MW ) and full commercial leases (over 10MW and up to 100MW)
7. The areas for lease in this Leasing Round are within two of the Resource Zones identified through the SEA process and reflect market demand and environmental considerations. The offshore wind and tidal resources off the North West coast of Northern Ireland (identified in the SEA as 300MW and 100MW respectively) are located in deeper waters than offshore technology is currently operating. In addition, the nearby Giant's Causeway World Heritage Site was also taken into account in considering areas for leasing in this initial Leasing Round. As technology advances, areas off the North West coast may be offered as part of any future Leasing Round.
8. In addition to the above leasing opportunity at Rathlin Island and Torr Head Strategic Area, TCE operates a separate competition for demonstration projects up to 10MW across all UK waters including NI waters outside the Rathlin Island and Torr Head Strategic Area. Other areas within Northern Ireland waters e.g. the tidal Resource Zones identified within the SEA may be suitable for such developments. In addition, the availability of wave and tidal test facilities operated by Queen's University Belfast at Strangford Lough and its Marine laboratory at Portaferry offer the opportunity for early stage testing of prototype devices.
9. An estimated timeline for development, which would be subject to review and further detail as the Leasing Round progresses, is as follows;

December 2011	Parallel offshore wind and tidal Leasing Rounds announced by TCE. Following an initial Expression of Interests stage, companies will be invited to submit bids which will be assessed by TCE during Spring / Summer 2012.
March 2012	Publication of the ORESAP.
September 2012	Development rights offered by TCE to successful companies. DETI and NIEA will engage with those companies at this point to ensure they understand the statutory marine licence, electricity consenting and stakeholder engagement requirements.
2012-2015	Consenting/licensing stages, including project level Environmental Impact Assessment /Habitats Regulations Appraisal requirements, which, if successful, would lead to full TCE leases.
2015 -2016 onwards	Initiation stages for projects leading to subsequent deployment to 2020 and beyond.

10. DETI will continue to work closely with TCE to ensure the optimum benefits for Northern Ireland through successful offshore renewable energy leasing and to tailor a programme of enabling actions to support the development of offshore renewables in Northern Ireland waters as part of the Leasing Round activity.

## **Key actions**

11. There are a number of critical actions which will need to be addressed to support the overall ORESAP aim and the Leasing Round and these are set out in the following sections.

### **Implement the recommendations from the SEA and HRA**

The SEA and HRA identified a number of recommendations and actions for DETI to take forward to ensure that the ORESAP is being implemented in such a way to ensure that it did not cause any significant adverse effects on the environment and other users. These are;

- (i) *to consider a cross departmental approach to filling strategic data and knowledge gaps and increasing the collection and availability and accessibility of current data sets.*

In addition to considering how such gaps could be filled within an NI framework, consideration is also being given to seeking inclusion of NI within UK wide studies and NI is now represented on a number of UK wide groups considering research activities e.g the Offshore Renewable Research Steering Group. This action could also help increase developer confidence and encourage investment in Northern Ireland waters by reducing the financial constraints placed on individual developers as a result of data collection, surveying and monitoring requirements when generic research/survey could benefit the sector as a whole or a number of developers within NI waters. This work will also increase overall knowledge to support the development of emerging marine environment policy and legislation.

We will work through the Offshore Renewable Energy Forum members to develop an initial programme by autumn 2012 to fill strategic data gaps.

- (ii) *to promote proposals for the adoption of a “deploy and monitor” approach to the deployment of commercial scale development on a phased approach, to increase knowledge of possible impacts as well as building on information from other developments such as those being deployed in the Pentland Firth;*

This concept was first considered in relation to the Scottish Pentland Firth and Orkney Waters wave and tidal development as there is less information on the possible effects of marine renewable devices than on offshore wind devices. Marine Scotland is developing a “Survey, Deploy and Monitor” approach within its overall Marine Licensing regime to provide regulators and developers with an efficient risk based approach for taking forward marine renewable energy projects. This approach can provide a template for consideration of an NI “Survey, Deploy and Monitor” regime.

The aim of this approach is to acquire necessary information on how marine renewable energy (in particular wave and tidal) developments interact with the marine environment, in particular how interactions and associated potential effects change as developments are scaled up from demonstration projects through to a full scale commercial developments. This information is essential for helping to increase confidence and certainty amongst regulatory authorities and stakeholders on the potential effects of commercial scale marine renewable energy developments and associated potential cumulative effects. The publication in January 2012 of the results of the comprehensive Environmental Reporting Programme undertaken in relation to the SeaGen tidal demonstration project in Strangford Lough will also inform future consideration of this issue.

In light of Marine Scotland’s work and the outcomes for the SeaGen work, DETI, in conjunction with NIEA will, develop and publish a “Survey, deploy and monitor” approach for Northern Ireland waters by December 2012.

- (iii) *to develop a Project Level Mitigation Strategy to ensure that the necessary mitigating actions, as identified in the Environmental Report and the HRA are satisfactorily considered and addressed as individual projects come forward –e.g. that certain surveys/monitoring regimes would be a requirement for development consent.*

The SEA ER and the HRA have both identified a range of measures which need to be taken forward at the project level at all stages of the deployment and across all of the issues. This may involve specific site level surveys, research and monitoring work and would include engagement with other marine users such as the fishing, shipping and ports, tourism and recreation sectors to ensure that additional information from and potential interactions with these sectors can be fully considered at the earliest opportunity. However, unless there is a commitment made within the ORESAP to implement them, as appropriate, through the project level Environmental Impact Assessment/ consents process, they do not satisfy the requirements of the SEA or the HRA Regulations.

As noted in Chapter 3, the mitigation measures identified in the SEA and the HRA process currently represent best practice and will form the basis of any consideration of what measures/surveys etc that will need to be carried out at project level in due course. As this may be a couple of years from now and with the ongoing development of the sector and growing understanding of its potential impacts on the environment and other marine users, it may be that current best practice is superseded. DETI and NIEA will wish to ensure that the most relevant and appropriate measures are used to ensure the ultimate aim of avoiding/reducing any potential impact on the environment and marine users.

By December 2012, DETI, in conjunction with NIEA, will publish the Project Level Mitigation Strategy drawing together the mitigating measures identified in the SEA Environmental Report and the HRA in one document for each of the Resource Zones identified within ORESAP as a reference guide for regulators, developers and stakeholders for the consents process.

#### **Support the work of the Offshore Renewable Energy Forum (OREF)**

As recommended by the ER, DETI established the OREF in January 2011 to advise DETI on the implementation of the ORESAP. It builds on the existing cross Departmental Project Steering Group membership and includes representatives from key stakeholder groups – ie the fishing sector, the ports and harbours sector, the renewable industry, Invest NI, environmental groups and local authorities. The Forum is chaired and serviced by DETI and meets on a regular basis.

The main role of the OREF is to advise DETI on the implementation of the mitigating measures identified by the SEA and the HRA (Chapter 3 and above) – ie collaborative cross departmental approach to filling strategic data and knowledge gaps, the development of the deploy and monitor approach and the Project Level Mitigation Strategy. The OREF decided that the initial focus would be on consideration of how to fill the strategic data and knowledge gaps taking into account the need to consider other work taking place across the UK/ROI and the need to avoid duplication.

In addition to this work programme, OREF will also consider how best to ensure that there is a strong process for engagement and dialogue between all parties as the sustainable development of offshore renewable energy continues. Different marine and coastal stakeholders may have different and at times competing interests. It will be very important to identify those potentially overlapping interests and interactions between the sectors and identify ways of handling and resolving such issues as the Leasing Round progresses and as developers come forward with individual projects.

We will continue to work with the OREF to ensure that lessons are learned from development approaches elsewhere across the UK.

#### **The Electricity Grid**

**Work with NIE, the System Operator (SONI) and the Utility Regulator of Northern Ireland (UREGNI) to facilitate the development of the NI Grid to handle the increasing renewable electricity generated offshore.**

Electricity networks transport electricity from the point of generation to the point of use. Connection to a robust grid system within an appropriate timeframe is an essential enabler for all renewable technologies and will be a critical issue for offshore generation.

The draft Onshore Renewable Electricity Action Plan (OREAP) has recently been consulted on by DETI and examines the potential contribution of a range of onshore technologies to the 40% renewable

electricity by 2020. OREAP, which has been the subject of an SEA, also takes into account, at a strategic level, the impact of onshore and offshore renewable generation on the transmission and distribution network.

The OREAP recognises that achievement of 40% of electricity consumption from renewable sources will require an unprecedented level of grid strengthening, particularly in the west to maximise the connection of the plentiful onshore wind resource there. It is estimated that in the region of £1billion investment, including both backbone network reinforcement and specific renewable related reinforcement, may be needed by 2020.

It is however for NIE, in conjunction with SONI and UREGNI, to take forward detailed grid development programmes. Every five years UREGNI reviews the prices which NIE is allowed to charge for network services. The next price control period is set to run from 1 October 2012 – 31 March 2017. NIE has already submitted its capital investment requirements (which include £215m for renewables integration and £76m for interconnection) for this period and a decision is awaited from the Utility Regulator. UREGNI has indicated that they expect the renewables projects with the current RP5 to be approved on a project by project basis.

Initially, and by 2020, the goal is to develop a network that can achieve a 40% penetration of renewables. It will be crucial, therefore, to design a network now in such a way as to provide a robust infrastructure that can be easily adapted to accommodate increasing levels of renewables well beyond 2020. We must ensure that decisions relating to grid strengthening taken now do not deter the potential for the development of emerging technologies in the next 10-20 years. It will be essential to ensure that going forward there is adequate network capacity to carry power from all forms of generating stations, including offshore renewable sources which must be connected to the electricity grid onshore, in a reliable manner whilst meeting the likely increasing demand for electricity.

NIE, in conjunction with SONI and EirGrid, is developing a Renewable Integration Development Project, Phase 3 of which is due to be published in early 2012. Phases 1 & 2, which included screening studies and detailed technical studies, have been completed and laid the groundwork for phase 3's feasibility and cost studies. Phase 3 will focus on potential transmission reinforcement options for the North West region, including Northern Ireland and Donegal and will lead to the development of individual projects which will be taken forward to planning and Environmental Impact Assessment process.

In addition NIE, with input from SONI, is developing a Network 25 Plan for Northern Ireland which will explore the need for future grid strengthening and will address grid requirements for all forms of generation including biomass and connecting offshore renewable energy developments to the network.

To facilitate current and planned work, we have established a sub group of the SEIDWG to consider strategic grid matters, membership of which includes representation from NIE, SONI and UREGNI.

**Consider, with Scotland and the Republic of Ireland, the initial findings of the joint Isles Project to assess the potential for an offshore regional marine electricity grid linking Ireland and Scotland**

In addition to the planned work to strengthen the onshore Grid to accommodate onshore and offshore renewables, DETI along with the Irish and Scottish Governments has funded work to consider the potential for an offshore grid. The Isles study, supported by the EU Interreg IVA programme, examined the feasibility of constructing an offshore electricity transmission network linking across to Great Britain, potential sites of the west coast of Scotland, the north and east coasts of Northern Ireland, the north western coast of Ireland and the Irish Sea.

Key issues addressed are the challenges that Governments and developers face in technology and infrastructure, environment and planning, regulation, export potential, finance, construction and deployment of technologies for offshore wind, wave and tidal sites. The study is not a development blueprint but rather it has presented detailed concepts for a Northern offshore grid system in a Scotland - Northern Ireland - Donegal renewable area and a Southern Irish Sea renewable area stretching down the eastern coast of Ireland. The preliminary results of the Isles study were launched in November 2011 with reports to the partner Governments<sup>1</sup>.

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<sup>1</sup> <http://www.scotland.gov.uk/Resource/Doc/917/0123092.pdf>

The findings of the Study will be considered further with the partner Governments and will inform, as appropriate, ongoing consideration of offshore renewable energy development across the three jurisdictions.

### Infrastructure and Supply Chain

**Continue to work with Invest NI, The Crown Estate and others in promoting the opportunities for local manufacturing and service sectors to secure offshore energy supply chain business in relation to projects considering investment in NI waters and also in the wider international and national markets.**

The growth of offshore renewables could lead to new infrastructure and supply chain opportunities not just for developments within Northern Ireland waters but for the wider national and international markets. Key areas of supply chain opportunity could include research and development; device manufacturing and assembly; installation and decommissioning engineering services and operation and maintenance services. In addition, ports with suitable enabling infrastructure – large areas of operational storage (i.e. greater than 8 ha.), high quay load bearing capacity and deep water access – could provide a focus for such activities. The announcement by DONG Energy, one of the world's leading offshore wind developers, to locate its £50m logistics terminal on a 50 acre site at Belfast Harbour is evidence that Northern Ireland has the appropriate infrastructure and technical expertise and is well positioned geographically to develop a strong supply chain to serve the offshore energy sector.

Invest NI has been actively developing this opportunity to assist Northern Ireland companies to supply into these markets and has supported the establishment of the Global Wind Alliance and with support from the MATRIX Panel has supported the Global Maritime Alliance. These groups are targeting the business opportunities presented by these growing markets with the competences and skills of local companies to secure business and attract further investment.

Through ongoing research and work with Sustainable Energy Authority Ireland (SEAI) and the Department for Energy and Climate Change (DECC) to establish the business/supply chain activities, Invest NI will continue to provide detailed information on the sectoral opportunities and increased networking to capitalise on this growing market. The successful TCE/Invest NI Offshore Business Opportunities conferences held in 2010 and 2011 in Belfast have significantly increased the profile of the offshore sector and identified the opportunities for local companies.

As regards the UK Offshore Wind Supply Chain, the Offshore Wind Developers Forum, co-chaired by DECC and on which DETI is represented, the sector confirmed in February 2012 its vision that UK firms should provide more than 50% of the content of future wind farms. DETI and Invest NI will seek to ensure that Northern Ireland firms can target these opportunities.

In September 2011, DEL published an independently produced study into the skills required to support the growth of companies in the Northern Ireland sustainable energy sector over the next ten years<sup>1</sup>. DETI and Invest NI were represented on the Steering Group for this work. One of the sub-sectors examined in the report was offshore energy including offshore wind, wave and tidal. The clearest short term skills need identified was in relation to offshore wind installation, operation and maintenance. The report suggested that providers should develop capacity in offshore / marine technician training. In the medium to longer term, the study noted the importance of continuing dialogue between industry, government and skills providers to anticipate specific needs. DEL has used the findings of this report to develop a Policy Framework which will inform DEL's future support of skills for the sustainable energy sector in Northern Ireland. DETI will continue to work with DEL and others involved in this report as specific projects come forward within the Northern Ireland Leasing Round to ensure that the relevant skills are available to support these developments.

Business and employment opportunities within the offshore renewable sector will form a key element of the ongoing work of the DETI led Sustainable Energy Inter Departmental Working Group's sub Group on Economic Opportunities.

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<sup>1</sup> [http://www.delni.gov.uk/ni\\_se\\_final\\_report\\_-\\_pdf\\_version\\_-\\_final.pdf](http://www.delni.gov.uk/ni_se_final_report_-_pdf_version_-_final.pdf)



## **Regulatory and Legislative Framework**

### **Continue to work with the relevant authorities in the UK and Ireland to build on the progress achieved through the signing of the Memorandum of Understanding for offshore renewables.**

Because there has been no formal, legal delimitation of the marine border between Northern Ireland and Ireland, it was recognised that developers and the investment community would need further certainty on the status of these waters before advancing projects and building installations in this area. Thus, in order to progress the development of offshore renewable energy in the waters around Ireland the Irish and United Kingdom governments have adopted a Memorandum of Understanding (MOU).

The MOU states that the Governments of Ireland and the United Kingdom of Great Britain and Northern Ireland may each arrange for the lease of the seabed to facilitate the development of offshore renewable energy installations, and for the licensing of construction and operation of such installations, up to their respective sides of the two lines constituted by the lists of coordinates and depicted on illustrative maps<sup>1</sup>.

The MOU represents a political commitment between the two Governments and we will continue to work with the relevant authorities to move towards a legal agreement on this issue.

### **Participate fully in the DOE led Inter Departmental Marine Co-ordination Group to ensure that DETI's offshore energy interests are effectively represented within the development of new marine environment policy and legislation.**

Within Northern Ireland, DOE is leading on significant UK wide work to introduce a legislative framework for an integrated approach to the management of the marine environment, based on the principles of sustainable development.

For some of this work Northern Ireland is included within the UK Marine and Coastal Access Act (UK MCA) 2009 – e.g. DOE has, in line with the rest of the UK, put in place a new marine licensing system from April 2011 which replace the previous Food and Environment Protection Act 1985 (FEPA) regime and also covers appeals, fees, exemptions, civil sanctions and the registration of marine activities.

Also flowing from the UKMCA is the Marine Policy Statement (MPS) which was adopted across the UK in March 2011 and sets out a framework of high level objectives for the marine environment and how it should be managed in order to contribute to the achievement of sustainable development of the UK marine area.

DOE is also leading on the development of a Northern Ireland Marine Bill which will address a number of areas which fall within Northern Ireland's devolved settlement arrangements. The development of marine plans will translate the policies of the MPS in more detail to the local level. Together the MPS and the associated marine plans will set the long term direction of the management of the marine environment; provide increased certainty for business and other users; promote the sustainable use of marine resources and help users of the sea and coastal communities understand what is happening in the marine environment. The NI Marine Position Paper, currently undergoing a public consultation exercise, will also complement the MPS and will help inform the development of the NI Marine Plan.

In addition to marine planning, the Northern Ireland Marine Bill will also contain provisions for marine nature conservation and possible further streamlining of licensing of devolved activities. The Bill was introduced to the Assembly in February 2012 and it is anticipated that the legislation will be enacted early in 2013.

The ER on the ORESAP has researched and co-ordinated a significant volume of spatial data on the Northern Ireland marine environment and the activities of marine users and the publication in September 2011 of the Regional Locational Guidance has added to this knowledge. While this information will be very useful as DOE takes forward its marine planning work, the ORESAP is not a marine plan and it is not the role of the SEA or this Plan to deliver marine spatial planning.

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<sup>1</sup> [http://www.detini.gov.uk/memorandum\\_of\\_understanding\\_for\\_offshore\\_renewable\\_energy-2](http://www.detini.gov.uk/memorandum_of_understanding_for_offshore_renewable_energy-2)

DETI is a member of the DOE led Inter Departmental Marine Co-ordination Group and will continue to work closely with DOE and other NI Departments to ensure that the potential for offshore renewables to contribute to climate change mitigation and sustainable development are fully acknowledged and recognized within the overall marine planning framework as it is developed.

**With the Northern Ireland Environment Agency, develop during 2012-2013 streamlined administrative guidance for developers and officials on the licensing and consenting regimes for offshore renewable energy projects.**

In advance of any potential streamlining of consenting regimes within a Northern Ireland Marine Bill, there is scope to consider more immediate actions to set out clearly for developers and regulators respective roles and responsibilities and timeframes for the licensing and consenting of offshore renewable energy projects.

The current offshore electricity licensing and consenting regime involves a lease from The Crown Estate, as owners of the seabed; a Marine Licence from the NIEA, required for placing anything on or removing material from the seabed, and electricity generation consents from DETI and UREGNI under the Electricity Order 1992. Within their respective legislative frameworks, NIEA, DETI and DOE Planning Service (in respect of any land based development arising from the project) require three separate Environmental Impact Assessment (EIA) regulations to be met.

The development of a streamlined and timetabled procedural guide would provide clarity for all parties and would help create a smooth development pathway for future offshore renewable energy projects coming forward – e.g. the submission of one EIA document to meet the necessary requirements rather than three separate documents.

A Memorandum of Understanding on this issue between DETI and DOE is being finalised.

**Establish through legislation, the necessary offshore energy production and decommissioning regime, similar to that in force in GB waters, for offshore renewable energy installations in NI waters.**

The Energy Act of 2004 (and amended in 2008) sets out a range of requirements in relation to the offshore production of energy, including the application of safety zones and statutory decommissioning regimes for offshore renewables energy installations and related activity. These provisions do not apply in Northern Ireland's territorial waters but similar provisions are being included within a forthcoming NI Energy Bill.

DETI is developing proposals, based on those operating within GB waters, and will undertake a full public consultation on these proposals as part of the Energy Bill consultation which is scheduled for spring 2012. The Energy Bill would then progress through its passage in the Northern Ireland Assembly and is expected to be operational by autumn 2013. This will result in a decommissioning and safety regime for NI waters similar to that which applies in GB waters.

### **Support Regime**

**Continue to support the generation of electricity from offshore and marine renewables through appropriate incentivisation mechanisms.**

The main support mechanism for the production of renewable electricity in Northern Ireland is the NIRO. It operates in tandem with similar mechanisms in the rest of the UK and places an obligation on electricity suppliers to account for a specified and increasing proportion of their electricity from renewable sources.

The NIRO was introduced on 1 April 2005 and has been the subject of a number of amendments, the most recent in April 2011. The NIRO operates alongside the two Obligations in Great Britain. ROCs issued in Northern Ireland under the NIRO (NI ROCs) are tradeable with those issued under the two GB Obligations (GB ROCs) in a UK-wide market for ROCs; both NI ROCs and GB ROCs are accepted as the necessary evidence under each of the Obligations.

DETI has recently consulted on further banding changes which will come into effect from 1 April 2013. In relation to offshore technologies it is important to note that the consultation proposes the following:

- An increase in ROC levels for wave and tidal projects from the current 2 ROCs to 5 ROCs (subject to a 30MW project cap) to reflect the higher costs associated with these embryonic technologies and to encourage increased deployment;
- A sliding scale reduction for large scale offshore wind, anaerobic digestion, dedicated biomass with energy crop and geothermal – reducing on an annual basis from 2 ROCs to 1.8 ROCs in 2016/17.

The UK Government intend to introduce a Feed in Tariff with Contracts for Difference (CfD FIT) for large scale renewables within the Electricity Market Reform (see chapter 1) and the Renewables Obligation will close to new generation in 2017. DECC is developing new legislation which will include the powers to introduce a CfD FIT and the UK wide institution to administer it. DETI is actively considering how the UK Government's Electricity Market Reform proposals could be shaped to work within the Single Electricity Market. The DETI Minister will announce the way forward on EMR in Spring 2012 and we will continue to work with DECC on the legislative issues over the coming years in relation to the CfD FIT.

### **Ensure that Northern Ireland benefits from the range of NI and UK wide regimes and groups supporting research, development and deployment of offshore renewable energy.**

At the UK level, there is a significant range of support for research and development and innovation for renewable energy, including offshore wind and marine technologies. Research Councils, the Technology Strategy Board, the Energy Technologies Institute, the Carbon Trust and the Environmental Transformation Fund all provide support at differing stages in the development of new technologies e.g. research, applied research and development, demonstration and pre-commercial deployment.

The Spending Review of November 2010 announced innovation funding of over £200 million for low carbon technologies over the four financial years from April 2011, which will include support for offshore renewable energy development. In June 2011, DECC announced that a UK wide initiative involving £20 million of this funding would be used to support two marine projects to test prototypes in array formations. DETI, along with the other Devolved Administrations has been working with DECC on this proposal and it is expected that this scheme will be launched in Spring 2012.

DETI and Invest NI will continue to work with DECC and other UK bodies to ensure that Northern Ireland and Northern Ireland companies and Universities are fully aware of research funds and can, where appropriate, bid for UK wide resources which could enhance Northern Ireland's position as an offshore renewable energy investment location and also secure additional business for local manufacturing companies.

In addition, we will continue to participate in a number of UK wide offshore renewable groups to ensure best practice approaches from those with offshore renewable energy development experience can be tailored to meet Northern Ireland's needs – for example The Offshore Renewable Research Steering Group, the Fishing Liaison with Offshore Wind and Wet Renewables Group and the Renewable Energy Regulators Group. DETI is also a member of the DECC led Offshore Wind Developers Forum and the Marine Energy Programme Board.

# Reporting, Monitoring and Evaluation

## 5

1. It will be important to be able to identify to what extent ORESAP's aim and actions are being achieved and what impact this Plan has had on the sustainable development of offshore renewables in NI waters. It will also be important to ensure that environmental and technological data within the SEA Environmental Report is still relevant and appropriate as knowledge and experience of offshore renewables develop.
2. As part of the SEA it was identified that two main types of monitoring are required; (a) strategic level monitoring which includes monitoring the implementation of the actions set out in ORESAP and (b) monitoring for potential significant adverse effects to the environment through the implementation of ORESAP at the later project stages over the coming years.

### **Strategic Level Monitoring**

3. As regards the strategic level monitoring of the implementation of the Plan, DETI will be reporting on an ongoing basis to the Offshore Renewable Energy Forum at meetings on progress against the actions set out in Chapter 4. DETI will also produce an annual report on progress against these planned actions and any new actions coming forward for the incoming year. This report will be considered by the Sustainable Energy Inter Departmental Working Group and the Offshore Renewable Energy Forum. It will also be forwarded to the ETI Committee and placed on the DETI website.

### **Monitoring for Potential Significant Environmental Effects**

4. As regards the monitoring for potential significant adverse effects through the development of offshore renewable energy projects in due course, the ER identified the key issues which would need to be addressed at project level along with proposed mitigation measures. This information will be drawn together as a Project Level Mitigation Strategy to inform regulators, developers and stakeholders as to the key issues to be addressed at specific site/ project level. The recommendations from the HRA will also be included in this Strategy.
5. As noted in Chapter 4, the Forum will oversee the development of this Strategy in 2012. The Strategy will be used as the basis for future project level consenting and licensing considerations leading to the monitoring regimes which would be applicable for any given project. Further additional or alternative mitigation measures may be required at specific project level and these will be set by the NIEA as the marine licensing authority.
6. The monitoring and reporting procedures for individual projects coming forward within the ORESAP will also feed into the monitoring of cumulative environmental effects as required within the SEA process.

## **Review of the ORESAP**

7. The ORESAP will be subject to a mid-term review in 2016. This review will include progress against all actions identified in the ORESAP, the need for any corrective action or change of direction and consideration of the potential need to review any aspects of strategic level findings and recommendations of the SEA or HRA of the ORESAP in light of emerging developments. There will be a post project evaluation of the ORESAP post 2020 and at that stage, the SEA and HRA can also be reviewed, in light of any new information and understanding that may be available at that stage.

## The Habitats Regulations Appraisal (HRA) <sup>1</sup>

1. The Habitats Regulations require that a “competent authority” must undertake an Appropriate Assessment of the possible implications of a Plan for European sites before deciding to undertake or give any consent, permission or other authorisation for a Plan or Project which is not directly connected with or necessary for management of European sites but which is likely to have a significant effect on such sites (either in combination with other plans or projects). This includes consideration of Special Areas of Conservation (SACs), candidate SACs, Sites of Community Importance (SCIs), Special Protected Areas (SPAs) and potential SPAs and, under UK policy, Ramsar sites.
2. In this instance DETI is the competent authority and was required to establish that the ORESAP could be taken forward without generating adverse effects on these sites, the interests for which they had been designated and their conservation objectives. DETI appointed Entec UK Ltd to undertake this work on its behalf. This Annex, which is part of the ORESAP, presents the key stages and outcomes of the work and cross references the full HRA which is available on [www.detini.gov.uk](http://www.detini.gov.uk)

## **Overall approach to the HRA**

3. It is necessary to determine whether there is a likely significant effect (LSE) of the ORESAP on each site and in accordance with case law, this must be carried out using the precautionary approach which means that if it cannot be shown with confidence that there will be no impact then the site must be “screened in”. Although there is no clear definition of the boundary between the level of detail of information used in the screening process and the additional information that may be used in the more detailed Appropriate Assessment, the process that has been adopted in most cases has been for the screening process to consider receptor characteristics in terms of
  - site boundaries; and
  - mobility of designated interest features;and effects characteristics in terms of:
  - Resource Zone boundaries; and
  - extension of effects outside Zone boundaries based on simple indicators such as tidal ellipses.
4. The screening stage was further sub-divided by inserting a pre-screening process as a means of documenting the fact that a highly precautionary approach, considering European and Ramsar sites over a very wide geographical areas and then refining these areas to produce a list of sites entering the screening process. The sites for which the possibility of LSE on one or more interest features could not be excluded at the screening stage were then brought forward to the AA stage for further consideration.

## **HRA at Plan level and project level**

5. The aim of the ORESAP is to set a strategic framework for the development of offshore wind and marine renewables in the Northern Ireland waters. Specific renewable energy projects for delivery of the plan are yet to be defined, which means that the likelihood of significant effects and the nature of the effects themselves can only be determined in very general terms at plan-level. Even if there is sufficient information available to enable a conclusion to be reached that there are LSEs, there may be insufficient information to undertake an AA without relying on

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<sup>1</sup> [http://www.detini.gov.uk/offshore\\_renewable\\_energy\\_strategic\\_action\\_plan\\_2009-2020\\_-\\_habitats\\_regulations\\_assessment\\_-\\_screening\\_report\\_and\\_appropriate\\_assessment\\_july\\_2011](http://www.detini.gov.uk/offshore_renewable_energy_strategic_action_plan_2009-2020_-_habitats_regulations_assessment_-_screening_report_and_appropriate_assessment_july_2011)

conditions in the plan that will need to be addressed by further assessment at project level. This means inevitably that, for many aspects of the plan, the final conclusions of the HRA process at plan level will be dependent on choices that are made at the project-level being shown to comply with the conditions (such as incorporation of mitigation measures) on which the plan-level HRA has relied.

6. The HRA was carried out in line with the current best practice advice -the 2010 David Tyldesley and Associates "Habitats Regulations Appraisal of Plans: Guidance for Plan – Making Bodies in Scotland" report to the Scottish Natural Heritage.
7. Some potential effects cannot be assessed completely at the ORESAP level, whether at the screening or Appropriate Assessment stage. For the effects that cannot be meaningfully assessed, there will be a requirement for further HRA work to be carried out at a later date in relation to individual projects coming forward within the ORESAP.
8. There is a need for the ORESAP to include conditions that will ensure no adverse effect on integrity of European and Ramsar sites and for lower tier plans or projects to be able to change the nature and/or scale and/or location of what is being proposed in order to avoid such adverse effects. It is therefore imperative that the ORESAP provides the flexibility that is required to enable individual projects to be designed in such a way that there is no adverse effect on the integrity of European/Ramsar sites.
9. The SEA ER concluded that up to 900MW of offshore wind could be developed in NI waters without significant adverse impact on the environment. This involved two main commercial scale development zones – one off the North coast (300MW) and the other off the East coast (600MW). The ER and the draft ORESAP noted the north coast zone's proximity to the Giant's Causeway/Causeway Coast AONB and the potential visual impact which any development in that zone might have. It was noted that any potential effects on seascape would need to be assessed in greater detail at the project design and development stage.
10. While this development opportunity was not ruled out in either document, the draft ORESAP proposed that at least 600MW of offshore wind energy capacity and 300MW of tidal energy resources in Northern Ireland waters should be developed by 2020 and that DETI would keep these targets under review.
11. In considering the best approach to provide a degree of flexibility as it takes forward the ORESAP, DETI has amended the ORESAP targets also to include the 300MW from wind energy resources on the North coast at this overall strategic level. This ensures that this higher resource level has been properly assessed under the HRA process and provides the opportunity for this level of development to take place. Such development would, of course, be subject to projects, at Environmental Impact Assessment (EIA) and AA stages, addressing the necessary conditions already identified in the SEA Environmental Report and which are identified through this current HRA process and included within the finalised ORESAP.
12. The revised wording of the ORESAP for Chapter 4 will therefore refer to "*up to 900MW from offshore wind and up to 300MW from tidal resources in Northern Ireland waters by 2020 and to keep these targets under review in light of ongoing development and deployment of offshore renewables.*"
13. This allows DETI and the NIEA as regulators to approve projects from zero up to 900MW of offshore wind and 300MW of tidal energy (and allows some flexibility to amend these targets at a later date if appropriate). Crucially for the HRA, it gives DETI and NIEA flexibility to refuse any and all development that has been assessed at the project level as having an adverse effect on the integrity of a European or Ramsar site.
14. The HRA Report was conducted on the basis that DETI would change the text in the ORESAP to reflect the recommendation above. On this basis the ORESAP stipulates that no developments as proposed as part of its implementation would be allowed to proceed if they have an adverse effect on integrity of any European/Ramsar site (in light of the site's conservation objectives) and subject to inclusion of appropriate conditions in the ORESAP to ensure that this is the case.

## The approach to the HRA of the ORESAP

15. The overall approach to the HRA of the ORESAP( HRA Chapter 1) was to establish
  - Environmental changes that could result from activities that could form part of the construction, operation or decommissioning works associated with delivery of the Plan;
  - The relationship between these activities and the European/Ramsar site features that could be affected by them ;and
  - The European /Ramsar sites that could be significantly affected by the ORESAP.
16. Interest features were considered for assessment as follows: the habitats present as interest features themselves or of importance in supporting interest features in the identified sites; non-mobile species present in the SACs/Ramsar sites as interest features; mobile or migratory species, including mammals and migratory fish present in the SACs/Ramsar sites as interest features; birds which are as interest features for the SPAs/Ramsar sites. (HRA Tables 3.4-3.7)
17. Within each of these categories, one of the following conclusions was reached for each European/Ramsar site as a result of screening different aspects of the ORESAP and incorporating the basic mitigation measures which form part of the plan.
  - Category A - no potential impacts whatsoever on a European and Ramsar site (no LSE)
  - Category B - potential impacts may occur but there would be no likely significant effects (LSE) on a European and Ramsar site, either alone or in combination,
  - Category C – likely significant effects on a European and Ramsar site, alone
  - Category D – likely significant effects on a European and Ramsar site, in-combination with other plans or projects,
18. For any which fell within Category C or D, recommendations were made as to how the ORESAP could be amended to bring them into Categories A or B – ie no likely significant effects.
19. Sites and features across UK and Ireland were considered through the screening process with detailed screening forms for each site/feature. The conclusions of the screening process in respect of each aspect of the plan and each interest feature or type of interest feature were considered and the conclusions combined to provide an overall conclusion for each site in accordance with the categories listed above. (HRA Chapters 4 and 5 and Appendices B-E)

## Appropriate Assessment

20. The sites for which the possibility of LSE on one or more interest features could not be excluded at the screening stage were then brought forward to the AA stage (HRA Chapter 6). These sites were as follows ; North Inishowen Coast( SAC); Rathlin Island (SAC); Skerries and Causeway (dSAC) ; All SPAs including pSPAs and SPA extensions in ROI and UK for bird features; Carlingford Lough (SPA); Killough Bay (SPA); Outer Ards (SPA); All Ramsar sites for bird features; Carlingford Lough (Ramsar); Killough Bay (Ramsar) and Outer Ards (Ramsar).

## Conclusions regarding habitats

21. The overall conclusion of the HRA is that the ORESAP will have no adverse effect on integrity of any sites through effects on habitat interest features or habitats that support birds (Chapter 7.1), subject to:
  - inclusion in the ORESAP and enforcement of all mitigation measures in HRA Table 2.5 and replicated below;
  - inclusion in the ORESAP and enforcement of project specific mitigation to protect the biological communities of sea caves at Rathlin Island SAC and Skerries and Causeway dSAC;



- inclusion in the ORESAP and enforcement of project specific mitigation to protect intertidal mudflats and sandflats which are supporting habitat for bird interest features of Carlingford Lough SPAs and Ramsar site and Outer Ards SPA and Ramsar site.
22. In the case of tidal power development in Resource Zone at Rathlin Island and Torr Head, the following mitigation measure will be added to the ORESAP.
- To be in accordance with this action plan and for permission to be granted, detailed proposals, including applications for marine consents in principle, for the development of tidal power generation in Tidal Resource Zone at Rathlin Island /Torr Head, must demonstrate that the location, type and energy ratings of tidal power devices proposed to be installed will not lead to changes in tidal water levels that would adversely affect invertebrate and algal communities on the side walls of sea caves that are interest features of the Rathlin Island SAC or the Skerries and Causeway dSAC, either alone or in combination with other plans or projects.
23. In the case of wind power development in Resource Zone on the East Coast, the following mitigation measure will be added to the ORESAP.
- To be in accordance with this action plan and for permission to be granted, detailed proposals, including applications for marine consents in principle, for the development of wind power generation in Resource Zone Wi2, East Coast, must demonstrate that the turbines are located so as not to cause changes in tidal currents that will cause adverse effects on intertidal mud and sand flats that are supporting habitat for the bird interest features of Carlingford Lough SPAs and Ramsar site or Outer Ards SPA and Ramsar site.
24. With inclusion of these mitigation measures, delivery of the ORESAP will result in no adverse effect, either alone or in combination with other plans or projects, on the integrity of any European or Ramsar site.

### **Conclusions regarding species**

25. The overall conclusion of the HRA is that, subject to inclusion in the ORESAP and enforcement of all mitigation measures identified in the Table 2.5, the ORESAP will have no adverse effect on integrity of any sites through effects on species interest features other than birds (Chapter 7.2).
26. In the case of certain bird species in HRA Table 6.5 that are interest features of SPAs or Ramsar sites, further work will be required at project level to establish the behaviour of birds at the proposed development location, in order that wind power development can be designed in such a way as to ensure that there is no adverse effect on integrity of any of the particular SPAs or Ramsar sites (HRA Table 7.1). Thus further HRA work will be required at project level and if this shows that such a design cannot be achieved at any particular location within a wind resource zone, then the proposed development will not be permitted at that location. To ensure that the ORESAP can be delivered without adverse effects on integrity, the following mitigation measure will be included in the ORESAP.
- To be in accordance with this action plan and for permission to be granted, detailed proposals, including applications for marine consents in principle, for the development of wind power generation in both Resource Zones must demonstrate that the adequate site-specific studies have been undertaken (including bird survey work where appropriate), so that it can be shown that the design and location of the development project is such that there will be no effects on birds sufficient to cause adverse effects on integrity of the bird interest features of any European or Ramsar site, either alone or in combination with other plans or projects.
27. With inclusion of this mitigation measure, delivery of the ORESAP will result in no adverse effects on the integrity of any European or Ramsar site.

### **Overall Conclusion**

28. The overall conclusion of the HRA is that the ORESAP will have no adverse effect on integrity of any European or RAMSAR sites, subject to the inclusion and implementation of the mitigation measures specified in the HRA and set out (Chapter 7.3). Any proposed developments that would have an adverse effect on integrity would, by definition, not be compliant with the ORESAP and would not receive NIEA or DETI approval. Projects will be required to undergo project level AA wherever the possibility of likely significant effect on a European/RAMSAR site cannot be excluded – this may be survey work or further assessment at project level. Each individual project will be required to undertake work in a manner which does not have an adverse effect on site integrity.
29. This Plan level AA gives direction to these future project level AAs by setting out the measures/survey work which should be required/considered at that stage to avoid an adverse effect. These project level assessments and associated monitoring work will be part of and will help inform the regular reviews of the ORESAP – see Chapter 5.
30. The mitigation measures identified through the SEA ER and the HRA will be built into the Project Level Mitigation Strategy to be developed in 2012.
31. The NIEA is of the opinion that the HRA undertaken for the ORESAP is fit for purpose and that the conclusions drawn in the HRA report can be reasonably and objectively accepted.

**Basic mitigation measures included in the ORESAP**

Activity	Potential causes of effects	Basic mitigations
Survey	Noise Physical disturbance Vessel activity	<p>Design of an appropriate survey methodology to provide required data whilst avoiding excessive habitat/species disturbance; plan to be produced to the satisfaction of statutory consultees and regulators</p> <p>Where there is evidence that this would mitigate adverse effects on sensitive species, timing of survey work to avoid sensitive life-cycle stages where possible (e.g. avoiding geotechnical surveys in diadromous fish migration seasons)</p> <p>It is also recommended to read the JNCC guidelines<sup>1</sup> on minimising the risk of injury to marine mammals from noise produced during seismic surveys</p>
Device installation/ decommissioning (including repowering)	Noise	<p>Where there is evidence that this would mitigate adverse effects on sensitive species, timing of piling activities to avoid sensitive life-cycle stages (e.g. diadromous fish migration seasons)</p> <p>Minimise, where possible, use of high noise emission activities</p> <p>Where appropriate, use full sound insulation on plant and equipment design</p> <p>If piling is undertaken use techniques such as soft start and/or Acoustic Deterrent Devices (ADD)</p> <p>Use of bubble curtains (expensive and only effective in shallow water)</p> <p>Use of mammal observers and Passive Acoustic Monitoring (PAM) system to facilitate implementation of exclusion zone during noisy activities (500m zone recommended by JNCC). The exclusion zone should take into consideration breeding and migration cycles.</p> <p>Where projects are being undertaken close together, so that cumulative effects of construction noise may occur, this should be mitigated through appropriate timings of activities</p> <p>It is also recommended to read the JNCC guidelines<sup>2</sup> on minimising the risk of injury to marine mammals from piling noise</p>

<sup>1</sup> JNCC, 2010. *JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys*. JNCC, Marine Advice, Aberdeen.

<sup>2</sup> JNCC, 2010. *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise*. JNCC, Marine Advice, Aberdeen.

Activity	Potential causes of effects	Basic mitigations
Device installation/ decommissioning (including repowering) (Cont'd)	Sediment mobilisation	<p>Suspended sediment dispersion modelling at the project stage Minimise dredging</p> <p>Use device installation method that minimises sediment re-suspension (device dependent)</p> <p>Carry out work in appropriate tidal conditions to minimise spatial extent of effect</p> <p>Avoid siting devices in areas where sediment transport pathways are modelled as highly sensitive to change</p> <p>Micrositing of devices to avoid sensitive habitats/species or areas of sediment contamination, where sediment re-mobilisation could result in toxic effects or smothering</p>
	Physical habitat disturbance	Careful site selection avoiding sensitive sites for devices
	Toxic contamination	<p>Use low toxicity materials Minimise contact of potentially harmful materials with water</p> <p>Minimise quantity of potentially harmful materials used</p> <p>Carry out potentially hazardous operations under appropriate weather/tide conditions</p> <p>Avoid device/infrastructure placement within 500m of areas of known sediment contamination</p> <p>Carry out pre-installation bottom surveys</p> <p>Use installation methods that minimise disturbance of sediments</p> <p>Avoid sensitive time periods for local receptors</p> <p>Risk assessment and contingency planning</p> <p>If munitions are encountered Crown Estates (2006) guidance <i>Dealing with munitions in marine aggregates</i> should be followed</p>

Activity	Potential causes of effects	Basic mitigations
	Vessel activity	<p>Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to marine mammals both during construction activities and in transit to the construction area if entering areas of high animal abundance</p> <p>Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)</p> <p>Use of Best Practicable Environmental Option (BPEO) vessel anchoring/positioning methodology and implementation of an appropriate Pollution Event Contingency Plan</p> <p>There is the potential for ducted (or cowled) propellers to cause fatal injuries to seals<sup>1</sup>; vessels with this type of propeller are in widespread use but use of such propellers for dynamic positioning of vessels during wind farm construction may present particular risks to seals. There are no clear cut generic mitigation measures for this and mitigation measures (e.g. use of marine mammal observers) should be drawn up on a site-specific basis to the satisfaction of the relevant authorities</p>
	Changes in coastal processes	Modelling the effects on coastal processes should form part of pre-project activities to optimise location
	Minimising collision risks for animals and birds	Where possible avoid installation activities at night if bird collision is identified as a risk (birds are more vulnerable to collisions at night due to lighting of work areas and consequent attraction of birds) <sup>2</sup>
Device operation	Scour	<p>Careful site selection to minimise scour</p> <p>Use of appropriately designed/located scour protection for device bases or anchors</p>
	Physical habitat disturbance	<p>Careful site selection and assessment of effects</p> <p>Avoid device placement in sensitive areas/features</p>
	Operational noise	<p>Use full sound insulation on plant where appropriate.</p> <p>Noise from operating turbines can be reduced by using isolators. However this has not been tested over the long term or to account for cumulative effects</p>

<sup>1</sup> Thompson, D., Bexton, S., Brownlow, A., Wood, D., Patterson, T., Pye, K., Lonergan, M., & Milne, R., 2010. *Report on recent seal mortalities in UK waters caused by extensive lacerations*. Report produced by the Sea Mammal Research Unit, St Andrews.

<sup>2</sup> Jones, J. and Francis, C.M., 2003. The effects of light characteristics on avian mortality at lighthouses. *J. Avian Biol.*, **34**, 328-333.

Activity	Potential causes of effects	Basic mitigations
Device operation (continued)	Maintenance vessel activity	<p>Design for minimum device maintenance</p> <p>Enforce speed limits for vessels used in maintenance and establish a code of conduct to avoid disturbance to marine mammals both during maintenance activities and in transit to the construction area if entering areas of high animal abundance</p> <p>Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)</p> <p>Compliance with all relevant regulations including COLREGS Use of Best Practicable Environmental Option (BPEO) vessel anchoring/positioning methodology and implementation of an appropriate Pollution Event Contingency Plan</p>
	Decrease of water flow	Careful site selection and assessment of effects on water flow
	Contamination	<p>Minimise use of antifoulants</p> <p>Use of non-toxic antifoulants</p> <p>Design devices to minimise leakage of pollutants</p> <p>Carry out potentially hazardous operations under appropriate weather/tide conditions</p> <p>Minimise use of sacrificial anodes</p> <p>Use of low toxicity grout</p> <p>Minimise contact of grout with water</p> <p>Minimise quantity of grout used</p> <p>Risk assessment and contingency planning</p>

Activity	Potential causes of effects	Basic mitigations
	<p>Minimising collision and other risks for animals and birds</p>	<p>Design device for minimal impact</p> <p>Improve the visibility of rotating tidal device blades through lighting and/or colour for minimising fish collision</p> <p>Use Acoustic Deterrent Devices where benefit of such devices can be demonstrated</p> <p>Tidal turbine blades should not be shiny (diving birds may mistake them for fish)</p> <p>Use of protective netting or grids</p> <p>Consider siting wind turbines close together to minimise the area accommodated by a wind farm, grouping turbines to avoid alignment perpendicular to main bird flight paths and providing corridors (up to a few kilometres wide) between groups of turbines to allow passage by birds</p> <p>Soften collision by adding smooth and/or softer edges</p> <p>Consideration should be given to whether any surface platforms have moving parts that could cause injury</p>
	<p>Barrier to movement</p>	<p>Do not site devices in particularly sensitive areas – e.g. migration routes, feeding, breeding areas</p> <p>Protect against entrapment by incorporating escape hatches into device design</p> <p>Avoid placing devices in constrained waterways where it could block or cause a significant perceptual barrier to marine mammals</p>

Activity	Potential causes of effects	Basic mitigations
Cable installation/ decommissioning	Physical habitat disturbance  Sediment mobilisation  Toxic contamination  Noise  Vessel activity	<p>Selection of cable landfalls to avoid adverse effects on European and Ramsar sites</p> <p>Micrositing of cables to avoid particularly sensitive coastal / intertidal / subtidal habitats, areas particularly important for bird interest features and areas of known contamination where sediment re-mobilisation could result in toxic effects</p> <p>Where there is evidence that this would mitigate adverse effects on sensitive species, timing of cable installation activities to avoid sensitive life-cycle stages (e.g. diadromous fish migration seasons, bird breeding/overwintering periods)</p> <p>Intertidal cabling works undertaken at low tide to reduce the level of resuspension and transport of sediments</p> <p>Careful planning of terrestrial site access to avoid sensitive habitats on the upper shore (e.g. vegetated shingle) and employment of appropriate mitigation measures to reduce impacts on these habitats</p> <p>Use of appropriate installation techniques to avoid adverse impacts on intertidal / coastal habitat features Where cable trenching in the intertidal is unavoidable, backfilling of trenches to reduce the potential for sediment remobilisation and facilitate recovery of benthic communities</p> <p>Use of cable laying techniques most appropriate to the nature of the intertidal / subtidal substrate to avoid excessive sediment mobilisation</p> <p>Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to marine mammals both during construction activities and in transit to the construction area if entering areas of high animal abundance</p> <p>Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)</p> <p>Use of Best Practicable Environmental Option (BPEO) vessel anchoring/positioning methodology and implementation of an appropriate Pollution Event Contingency Plan</p> <p>There is the potential for ducted (or cowled) propellers to cause fatal injuries to seals<sup>18</sup>; vessels with this type of propeller are in widespread use but use of such propellers for dynamic positioning of vessels during wind farm decommissioning and cable installation may present particular risks to seals. There are no clear cut generic mitigation measures for this and mitigation measures (e.g. use of marine mammal observers) should be drawn up on a site-specific basis to the satisfaction of the relevant authorities</p> <p>Suspended sediment dispersion modelling at the project stage</p>



Activity	Potential causes of effects	Basic mitigations
Cable operation	Electromagnetic fields Scour	Burial of cables to an appropriate depth where this is considered necessary to mitigate effects on electrosensitive species, including <i>Salmo salar</i> <sup>1</sup>  Cable protection in the intertidal / subtidal area (e.g. burial, scour protection, pinning over bedrock) to reduce excessive scour

Source: adapted from DETI (2009) ORESAP SEA Environmental Report Table 14.2 and HRA Table 2.5

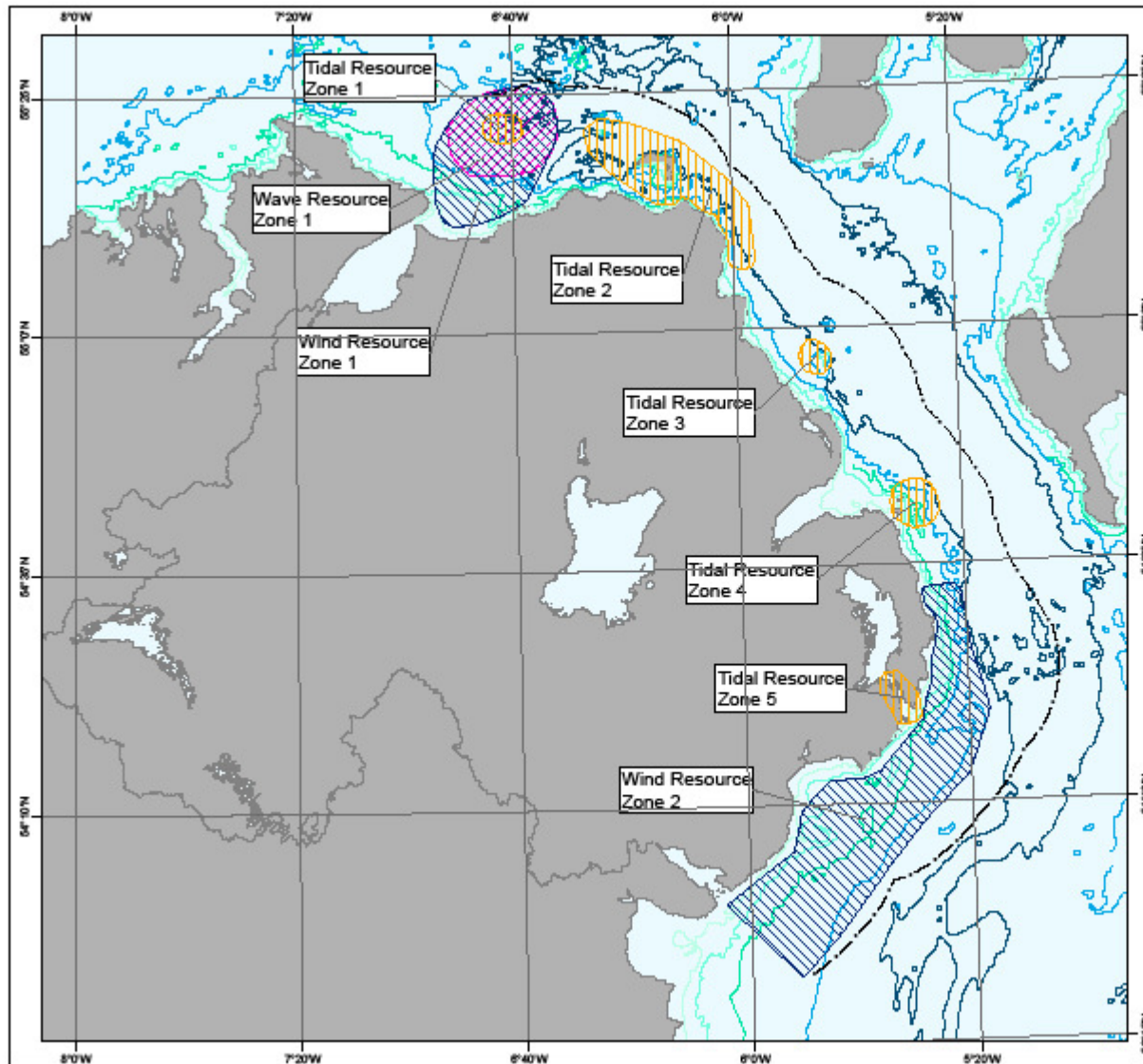
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<sup>1</sup> Gill, A.B. & Bartlett, M., 2010. *Literature review on the potential effects of electromagnetic fields and subsea noise from marine renewable energy developments on Atlantic salmon, sea trout and European eel*. Scottish Natural Heritage Commissioned Report No. 401.

## GLOSSARY

AA	Appropriate Assessment
BIC	British Irish Council
CfDFIT	Feed in Tariff with Contracts for Difference
DECC	Department of Energy and Climate Change
EIA	Environmental Impact Assessment
EMR	Electricity Market Reform
ER	Environmental Report
FEPA	Food and Environmental Protection Act
HRA	Habitats Regulations Appraisal
IMCG	Inter Departmental Marine Co-ordination Group
Isles	Irish-Scottish Links on Energy Study
LSE	Likely Significant Effect
MCA	Marine and Coastal Access Act
MOU	Memorandum of Understanding
MPS	Marine Policy Statement
NIE	Northern Ireland Electricity
NIEA	Northern Ireland Environmental Agency
NIRO	Northern Ireland Renewables Obligation
NREAP	National Renewable Energy Action Plan
OREAP	Onshore Renewable Electricity Action Plan
OREF	Offshore Renewable Energy Forum
ORESAP	Offshore Renewable Energy Strategic Action Plan
PSG	Project Steering Group
RLG	Regional Locational Guidance
SAC	Special Area of Conservation




SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority Ireland
SEAP	Sustainable Energy Action Plan
SEF	Strategic Energy Framework
SEIDWG	Sustainable Energy Interdepartmental Working Group
SONI	System Operator for Northern Ireland
SCI	Sites of Community Importance
SPA	Special Protected Areas
TCE	The Crown Estate
UREGNI	Utility Regulator of Northern Ireland








Northern Ireland Offshore Wind and Marine Renewables SEA Environmental Report  
Figure 11.1: Resource Zones


**Legend**


**Resource Zones**


-  Tidal
-  Wave
-  Wind




**Water depth (m)**

-  10
-  20
-  30
-  50
-  100

 Land

 Northern Ireland 12nm limit

  
Not to be used for navigation

Date	Thursday, July 30, 2009 15:05:54
Projection	Irish National Grid
Spheroid	Airy
Datum	TW65
Data Source	UKHO digital data
File Reference	J:\P1161\Mod\SEA\Zones of Interest.mxd Figure 11-1 - Resource Zones
Checked	Produced By: James Lester Reviewed By: Sally Holroyd
  	



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