Offshore Energy Strategic Environmental Assessment 2 (OESEA2)

Consultation Feedback

August 2011

CONSULTATION FEEDBACK

Responses were received from the following 22 organisations and individuals:

Carbon Capture and Storage Association (CCSA)
Chamber of Shipping (CoS)
Countryside Council for Wales (CCW)
EDF Energy (EDF)
English Heritage (EH)
Environment Agency (EA)
Greenpeace (GP)
Historic Scotland (HS)
Isle of Man Government (IoM)
Joint Nature Conservation Committee (JNCC), a joint response from the Statutory Nature Conservation Bodies (SNCBs)[1].
MAREN Project (Cardiff University Hydro-Environmental Research Centre), (MAREN)
Marine Conservation Society (MCS)
The National Federation of Fishermen's Organisations (NFFO)
The National Trust (TNT)
Northern Ireland Environment Agency (NIEA)
Royal Society for the Protection of Birds (RSPB)
Scottish Environment Protection Agency (SEPA)
Scottish Power Renewables (SPR)
The Crown Estate (TCE)
Tidal Energy Limited (TEL)
Welsh Assembly Government (WAG)
Whale and Dolphin Conservation Society (WDCS)

[1] CCW, JNCC, NE and SNH. Note that CCW also submitted its own response.

Carbon Capture and Storage Association (CCSA)
Response to

DECC's Offshore Energy Strategic Environmental Assessment (OESEA2)
February 2011

The CCSA welcomes this opportunity to respond to the OESEA2 for Future Leasing/Licensing for Offshore Renewable Energy, Offshore Oil & Gas, Hydrocarbon Gas and Carbon Dioxide Storage and Associated Infrastructure in the UK.

The CCSA brings together a wide range of specialist companies across the spectrum of Carbon Capture and Storage (CCS) technology, as well as a variety of support services to the energy sector. The CCSA exists to represent the interests of its members in promoting the business of CCS and to assist policy developments in the UK and the EU towards establishing a long term regulatory framework for CCS, as a means of abating carbon dioxide (CO_2) emissions.

The CCSA responded to the original scoping exercise for the Strategic Environmental Assessment (SEA) in April 2010. We welcome the progress that has been made, but we are concerned that there is no firm timetable for the publication of the post consultation report and subsequent process.

General Comments

1. In general, we consider that the OESEA2 is a comprehensive summary of potential environmental impacts from CCS and is accurate and has good supporting evidence.
2. In numerous categories considered in the Environmental Risk Assessment, we support the conclusions that, in general, CCS represents a negligible environmental risk over and above those associated with conventional oil and gas exploration and exploitation.
3. We welcome the explicit acknowledgment that CCS has an important role to play in mitigating the UK's CO_2 emissions and is an important element of the Low Carbon Transition Plan required to meet Government targets.
4. However, we are concerned that some of the detail is overly prescriptive on various environmental issues to be considered. This risks unnecessary delays and time-consuming detailed assessments when project developers begin to design a project.
5. Given the importance of CCS for the UK in meeting its low carbon objectives, we hope that assessments will be functional, but without being burdensome.
6. We welcome the recognition of the importance of CO_2 clustering and hope that this will be processed in an efficient manner that enables operational and investment efficiencies to be optimised.

7. The significant benefits for economic security of energy supply to the UK economy from Enhanced Hydrocarbon Recovery (EHR) are not acknowledged. To date in the UK, the main impediment to EHR has been insufficient quantities of available CO_2. With widespread deployment of CCS and greater access to CO_2, EHR is more likely to be deployed in the UK.
8. EHR can add extra life to declining North Sea oil and gas output, providing a revenue stream to offset investment in CCS, boost energy security and the UK economy.
9. The environmental impact of not implementing CCS and the likely consequent impacts from unmitigated climate change are likely to be far greater than any minor, localised impacts from CCS.

Specific comments

Section 2.1.1
It is stated that the Government has committed £1bn to help fund demonstration projects. In fact, the UK Government has formally committed *up to* £1bn to help fund the demonstration of CCS on coal or gas facilities and negotiations are ongoing with regard to the post capture plant at Longannet in Scotland.

Section 2.4.2
In section 2.4.2 it is noted that the environmental management capacity and track record of applicants for storage licences is considered by DECC, through written submissions and interviews, before licences are awarded. We would hope that this process would be proportionate and not overly burdensome on applicants and would welcome the opportunity to contribute to its development.

Section 2.11
We would like to address one particular sentence in section 2.11 (page 10), which states that CCS "has the potential to reduce emissions from power stations and other industrial installations by around 90%, but is generally considered not yet ready for general deployment". This statement gives the impression that CCS is still a technology option that is a long way off in terms of commercial availability, whereas in fact, it is the policy framework, rather than the technology that is the principle impediment to deployment. The separate parts of the CCS chain (capture, transport and storage) have all been safely used for many decades in various industries around the world.

Comments on the SEA

Section 5.3.1
This states that the noise related to seismic surveys generates among the highest source levels of any non-military marine activity and is a potential risk to the marine environment. It should be noted that there is already extensive mapping and knowledge of existing oil and gas wells that will inform CCS storage decisions and reduce the need for additional seismic surveys.

Section 5.9.5
Gas storage in saline aquifers and halite cavern construction
As stated, The *Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005* apply to discharges containing reservoir hydrocarbons and have been amended to apply to carbon storage. Currently, there is uncertainty as to whether these regulations apply to aquifer discharges that may result from CO_2 storage in saline aquifers. We would hope that the proposed permitting mechanism

to cover aquifer discharges is proportionate to the risk and their potential harm and we would welcome the opportunity to inform their development.

Section 5.11.2.5 (page 272)
Air Quality
This section mentions the Lake Nyos natural disaster. We believe this is an extremely unhelpful and misleading example of the potential impact of a CO_2 leak from a CCS storage site. It is not possible for a Lake Nyos-type accident to occur with a CCS project. The physical processes used to store CO_2 captured from CCS are very different to those which resulted in the release of CO_2 from Lake Nyos.

It is physically impossible for all of the CO_2 to leak from a storage site. In contrast to Lake Nyos the CO_2 captured by CCS is trapped deep below the earth's surface (typically at least 1000 – 2000 m beneath the surface) in stable and secure geological formations. The CO_2 is not stored as a large bubble but is instead stored in the microscopic pores between the grains of rock. The CO_2 cannot therefore be rapidly released.

CO2 would have to percolate up through 1000s of metres of rock before it reached the surface. Much of the CO_2 would be trapped by the overlying rock and any that did make it to the surface would be released at a relatively slow rate and dispersed into the atmosphere.

The EU CCS (2009/31/EC) Directive stipulates that the geological formations selected for CO_2 storage must be carefully assessed to ensure that they are suitable for the safe storage of CO_2. Sites that are unable to demonstrate their suitability for CO_2 storage will be unable to secure a storage permit and cannot be used. The CCS Directive also requires the CO_2 storage sites to be closely monitored to ensure that the CO_2 is safely stored.

Existing regulations, such as the Health and Safety at Work Act, the Control of Major Accident and Hazards (COMAH) and the Pipeline Safety Regulations require that the CO_2 that will be transported by pipelines from the power plant to the storage site will be appropriately designed and closely monitored to ensure safety. This will include regular physical inspections of the pipeline as well as the installation of equipment to continually monitor the pipeline and to immediately shut the pipeline in the event of any leaks. The volumes of CO_2 passing through the pipelines will be many times less than the volume of CO_2 released from Lake Nyos.

Section 5.12.2.5
This section states that significant survey work needs to be undertaken to avoid formations and storage areas with faults or other features that could cause loss of containment. Additionally, long term monitoring would need to be carried out on any storage site to make sure that leakages do not occur during operation and once the site is full to capacity. It should be noted that the CCS Directive sets out criteria to ensure suitable selection of safe geological storage and to minimise the risk of leakage and that only suitable sites will be licensed.

Section 5.13.2.1
As part of the Consideration of Evidence it is stated that it is impossible to quantify with any confidence the likelihood of accidental release of CO_2. However, this is contradicted by reference to a report by DNV (Risk analysis of the geological sequestration of carbon dioxide, 2003) for the then DTI (now BERR) which estimates the leakage potential. This report is 8 years old and the confidence and knowledge regarding storage sites is now more advanced. Furthermore, the DNV report states

that the view of a “panel of experts” is that the average quantity released would be a small fraction (less than 2.4% of the amount sequestered). This is highly misleading. There is currently no established correlation between the amount of carbon sequestered and the size of any potential leak. While it is perfectly valid to seek to quantify the probability of a leak from a CO_2 store, there is no reliable methodology for predicting what proportion of a store could leak. We would ask that these limitations on the modelling are explained.

There is already considerable experience with injecting CO_2 deep underground for storage at a number of industrial-scale CCS projects (see below). These storage sites have been carefully selected and the evidence from monitoring suggests that the CO_2 has been completely and safely locked into the geological formations. CO_2 has been stored for over 30 years in Enhanced Oil Recovery Projects and storage projects are on-going, with, for example, the Sleipner project operating since 1996. Other projects include BP’s In Salah project in Algeria and the Weyburn-Midale project in Canada.

It should be noted that physical and chemical processes ensure that CO_2 becomes **more** safely stored over time. In the first phase of storage, the CO_2 moves up through the storage site until it reaches an impermeable layer of rock overlaying the storage site, the cap rock, which traps the CO_2 in the storage formation. This is the same process that has kept oil and natural gas securely trapped under the ground for millions of years providing confidence that CO_2 can be safely stored indefinitely. Given this, the most likely point of leakage is therefore “man made” features such as well heads, where any leaks would be straight forward to detect.

As the injected CO_2 moves up through the geological storage site towards the cap rock some of it is left behind in the microscopic pore spaces of the rock. This CO_2 is tightly trapped in the pore spaces by a mechanism known as “residual storage”.

Over time the CO_2 stored in a geological formation will begin to dissolve into the surrounding salty water. This makes the salty water denser and it begins to sink down to the bottom of the storage site, known as “dissolution storage”. Finally “mineral storage” occurs when the CO_2 held within the storage site binds chemically and irreversibly to the surrounding rock.

As the storage mechanisms change over time from structural to residual, dissolution and then mineral storage the CO_2 becomes less and less mobile. Therefore the longer CO_2 is stored the lower the risk of any leakage.

5.13.2 Consideration of the evidence
Accidental events related to carbon dioxide (p.301)
The regulatory options contained within the NERA report (*Developing a Regulatory Framework for CCS Transportation Infrastructure*, June 2009) have been consulted on by DECC as part of its Call for Evidence on the Long Term Development of CCS Infrastructure. This work by DECC should be referenced within the SEA.

We agree with the statement that it is anticipated that the ecological effects of large scale accidental releases would be local, with the majority of the CO_2 passing rapidly through the water column to the atmosphere.

We support the conclusions that the modelling study performed by Blackford *et al*. (2009) which suggested that the chemical perturbation of a sequestration leak, when regionally integrated, is likely to be insignificant when compared with that from

continued non-mitigated atmospheric CO_2 emissions and the subsequent acidification of the marine system.

Section 5.13.3
Summary of findings and recommendations
We welcome the statement that the environmental consequences of large CO_2 releases are not considered likely to be severe (i.e. comparable with a large hydrocarbon release), but feel that the physical/chemical processes that ensure the security of CO_2 storage increases over time should be acknowledged (as previously explained).

Section 5.16.11
Accidental events
As noted in the OESEA, the scale of CO_2 storage activity likely to take place within the currency of OESEA2 may be reasonably expected to consist of either a single coal or gas fired power plant under the UK Government-funded demonstration programme, or potentially a demonstrator scale commercial project.

We support the conclusion that considering the scale of likely development, even a large CO_2 leak, when regionally integrated, is likely to be insignificant when compared with that from continued non-mitigated atmospheric CO_2 emissions and the subsequent acidification of the marine system. Consequently, significant cumulative effects from accidental events associated with CO_2 storage are not expected.

We welcome the statement that DECC and The Crown Estate should coordinate licensing and leasing decisions, to facilitate and promote the coexistence of uses where practicable, to minimise potential conflicts and industrial land take of the sea, and the inadvertent “sterilisation” of areas. We would welcome the opportunity to input into how to make this an effective process.

Conclusions

- **The economic and energy security benefits from EHR made possible by deployment of CCS should be explicitly acknowledged.**
- **The environmental impact of not delivering CCS is likely to be far greater than any potential localised environmental harm from CCS deployment.**
- **New regulation and environmental assessments should not unduly impede CCS given the necessity for rapid wide spread CCS deployment to meet the Committee on Climate Change’s recommendations for decarbonising the energy sector by the 2030s.**
- **The example of Lake Nyos as a means of illustrating the risk of harm from a CO_2 release from a CCS storage site is misleading as the two are not analogous.**
- **The physical and chemical processes that ensure that CO_2 storage security increases over time should be acknowledged and explained.**
- **The CCS Directive contains regulatory mechanisms to ensure that only sites with a very low risk of leakage will be licensed for CO_2 storage.**

Delivering for Britain

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12 May 2011

Dear Sir/Madam

RE: DECC OESEA2 Environmental Report

The Chamber of Shipping welcomes the opportunity to provide comments on the second UK Offshore Energy Strategic Assessment (OESEA2) Environmental Report. With 139 members and associate members, the Chamber represents over 932 ships of about 25 million gross tonnes and is recognised as the voice of the UK shipping industry. Collectively, among our members and associates, we account for 90 per cent of British shipping and represent various sectors such as ferries, cruise ships, container ships, tankers, dry bulk carriers, offshore support vessels, aggregate carriers and other specialist vessels.

While the Chamber is fully supportive of the Government's offshore renewable energy deployment targets, the development of offshore renewable energy installations (OREI) should not be detrimental to navigational safety or the economic and environmental performance of the shipping industry. The maritime sector is vitally important to the UK; making a direct contribution of £13.1 billion to GDP and providing some 227,000 jobs according to a 2011 study by Oxford Economics[1]. OREIs can pose significant economic and safety threats to the shipping industry and these considerations should be placed at the forefront of the leasing, planning and development processes.

Open and transparent dialogue between OREI developers, the Crown Estate and navigational stakeholders should be encouraged in order to reduce the potential for conflict between OREI development and navigational activities. Early identification of navigational

[1] http://www.cpl.biz/ChamberMinisite/docs/Maritime%20UK%20statistics.pdf

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activities in a given area should be highly desirable for developers in order to avoid the need for costly site redesign during the latter stages of the application process. In future leasing rounds, the Crown Estate should seek to engage with navigational stakeholders prior to finalising lease areas and awarding development rights. This would be an important step towards ensuring that both industries can co-exist harmoniously.

Overall, we recognise that the Environmental Report does take a number of key shipping related economic issues, including increased journey times/distances and reduced trade/supply opportunities, into account. These issues should be taken into consideration by all OREI developers and the Chamber welcomes their coverage in the Report. However, we believe that there should be an increased focus on the potential economic impacts on the shipping industry to complement the extensive work that has been undertaken on safety impacts. Marine Scotland's report "Economic Assessment of Short Term Options for Offshore Wind Energy in Scottish Territorial Waters: Costs and Benefits to Other Marine Users and Interests" should be used as a point of reference for the type of economic analysis that can provide a clearer indication of the potential economic impacts facing the shipping industry. This report analyses the potential financial costs facing shipping and other industries over a fifty year period on both a regional and national basis as a result of offshore wind development[2]. The Chamber recommends that similar analysis is undertaken on a UK-wide basis, particularly in light of the new Oxford Economics statistics included above.

Analysis of economic impacts should, as a minimum, cover:

- Increased steaming distance/time;
- Potential long-term loss of revenue;
- Reduction of scope for shipping lane expansion to increase trade/supply opportunities; and
- Loss of jobs and reduction of opportunities for job creation.

In addition to the request for increased economic analysis, the Chamber wishes to make a number of further comments on the potential impacts facing the shipping industry. In order to mitigate these impacts, major navigational routes should be mapped using a combination of AIS and radar data ahead of proposing any area for OREI development. Analysis of such data should seek to take account of seasonal variations in traffic densities. Developers should then seek to avoid proposing sites in areas that directly coincide with major shipping lanes and the MCA's Marine Guidance Notice (MGN) 371 should be used to determine safe clearance between site boundaries and lanes.

Furthermore, analysis of the following issues should be required:

- Changes to existing navigational arrangements requiring additional buoyage;
- Interference with marine navigation radar systems;
- Displacement of recreational craft into commercial shipping lanes;
- Increased collision risk at sea; and
- Displacement of anchorages/fouling of anchors on cables.

In terms of the Environmental Report's consideration of the plan/programme alternatives outlined under Section 2.3 and analysed under Section 5.17, the Chamber recommends alternative (3), "To restrict the areas offered for leasing and licensing temporally or spatially", as the preferred option. Although this option may still have a potential negative impact on shipping activities, the impacts would most likely be reduced from those observed under alternative (2), where temporal and spatial restrictions are not enforced. Section 5.17.9 clearly supports this suggestion, and therefore the enforcement of temporal and spatial restrictions on OREI developments should be considered as an option in any future leasing/licensing rounds.

While we are pleased to see that Primary Navigation Routes have been considered as a "hard" constraint on spacial mapping under Section 5.15.2, the following statement, under Section 5.7.4, is somewhat unclear:

[2] http://www.scotland.gov.uk/Publications/2011/03/22104736/9

"Despite R3 OWF zones being large there is no clear evidence that, other than excluding the primary navigation network areas, any spatial constraints on positioning of OWF need to be considered on the grounds of navigational safety".

The identification of primary navigation network areas as a major navigational constraint on OWF development is encouraging. However, the Report's definitions of the primary navigation network and Primary Navigation Routes are unsatisfactory and require further clarification. The Chamber recommends that the following be considered as elements of the primary navigation network:

- Approaches and routes to and from UK ports (direct access) serving key import/export corridors for UK PLC (we consider a key route to be where 90 percentile of commercial shipping movement takes place);
- Bad weather routes and alteration points;
- Anchorage areas and drifting grounds; and
- Internationally agreed routeing measures, traffic separation schemes and areas defined in Mariners Routing Guide for safe navigation around the UK coast.

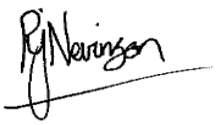
In addition, we believe there are other spatial constraints that need to be considered when assessing risks to navigational safety. These include the proximity of other OWF developments, the need to expand major navigational routes in the future for the benefit of the UK economy, and the possibility of future offshore renewable leasing rounds.

There appears to be a suggestion within the Report that vessels will simply adjust their routes in accordance with the development of OREI sites, with the Irish Sea area being used as one example under Section 5.7.2.3. While the AIS data provided in Figure 5.28 does indeed suggest that this may be the case, Figure 5.30 clearly shows the extent of future OREI developments in the region. The cumulative impacts of multiple developments in regions such as the Irish Sea are likely to lead to a succession of re-routing measures for vessels as the navigational space available to them is reduced. This can have a particular impact on vessels' ability to re-route in bad weather, significantly increasing the risks posed to crew and passengers in such scenarios.

While the use of Traffic Separation Schemes (TSS), as discussed under Section 5.7.2.3, can help to maintain navigational safety at "pinch points", they should not be over-deployed in an attempt to mitigate the effects of a severe reduction in navigational space caused by large-scale OREI development in a particular region. OREIs should be sited and designed in such a way that there is little need for a TSS to be considered as a necessary mitigation measure. Over-use of TSS can lead to situations where free and unconstrained navigational routes are not maintained. The need for unconstrained navigational routes is clearly highlighted under Section 5.15.1 and this principle should be adhered to.

We hope that the concerns and recommendations outlined in this response will be taken into account ahead of the Department formally adopting any plan/programme for the future of UK offshore energy. If you have any questions, or require clarification on any of the points raised in this response, please do not hesitate to contact us.

Yours faithfully,



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12th May 2011

Dear sir or madam

CCW Comments on the UK Offshore Energy Strategic Environmental Assessment (2) Environmental Report

The Countryside Council for Wales champions the environment and landscapes of Wales and its coastal waters as sources of natural and cultural riches, as a foundation for economic and social activity, and as a place for leisure and learning opportunities. We aim to make the environment a valued part of everyone's life in Wales.

Thank you for consulting the Countryside Council for Wales on the Offshore Energy SEA Environmental Report (ER). The CCW is the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales. CCW was created by the Environment Protection Act 1990 to provide advice on nature conservation, landscape and recreational matters throughout Wales and in Welsh waters out to 12 nautical miles of the coast. Our comments are made in the context of CCW's role as consultant body under the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004.

As you are aware CCW have contributed to the SEA process as members of the steering group and contributors to stakeholder workshops. We also provided comments at the SEA scoping stage. CCW places great importance on engaging with the SEA process and welcomes the structured and open way in which participation has been managed and commends DECC on the comprehensive and rigorous approach it has adopted in carrying out this assessment. In general, CCW considers that the ER represents a comprehensive synthesis of the environmental issues associated with a range of energy generation methods.

CCW agrees with the overall conclusion of the SEA: that alternative 3 to the draft plan or programme should be the preferred option, with the area offered restricted spatially through the exclusion of certain areas together with mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea.

CCW recognises the importance of the recommendations of the SEA in identifying and addressing the environmental implications of delivering the plan/programme. The recommendations are based on the assessment of potential effects within the SEA and comprehensively highlight important issues associated with the delivery of the plan/programme. In general, we agree with the recommendations made by the ER, although in our comments below we have a made a number of suggestions to help prioritise and strengthen them. In implementing the plan/programme, or any part of it, DECC could also be clear about how each of these recommendations will be taken forward.

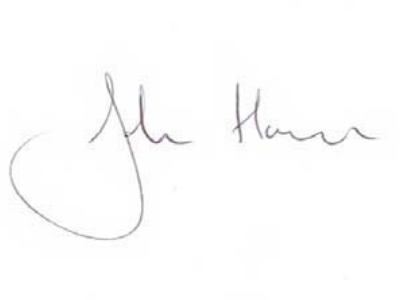
In commenting on the ER, CCW would highlight in particular:

- that a wide range of important matters have been identified in the ER recommendations and that will need to be addressed in implementing the plan(s)/programme(s)
- the importance of the research and information gathering carried out under the SEA
- the need to take early account of the environment in planning for grid and associated infrastructure
- that although the SEA draws on the experience of the Severn Tidal Power Feasibility Study (STP FS) in identifying the potential effects of tidal range technologies, the need to better understand effects that are generic to this type of technology could be more clearly identified in the conclusions and recommendations
- the growing importance of understanding the relationship between Marine Spatial Planning and sectoral planning and assessment processes such as the SEA.
- agreement with the key recommendation that the bulk of offshore wind farm generation capacity should be located well away from the coast, generally outside 12 nautical miles.

We have elaborated on these issues in our general comments on the ER in annex 1 to this letter followed by more detailed comments in annex 2.

I hope that you find these comments useful in finalising the SEA. If you would like to discuss any of the points we have raised please contact Andrew Hill (a.hill@ccw.gov.uk) in the first instance.

Yours sincerely



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Annex 1. General comments on the Offshore Energy SEA Environmental Report

APPROACH TO THE OESEA

Minimising environmental and project consenting risk at the project level

The ER describes the draft plan/programme as 'broad ranging and covers the majority of energy related activities in the UK marine environment'. It is therefore not possible to clearly define many of the activities that are likely to result from the plan/programme and the ER necessarily defers assessment of the effects of some activities to the project level. CCW believes that the ability to consider environmental effects above the level of the individual project can help to reduce environmental and consenting risk. Whilst not influencing the conclusions of the current SEA, CCW would recommend that higher level processes designed to support the implementation of the plan/programme (e.g. the Offshore Development Information Statement for grid) should address environmental issues at an early stage.

Defining assessment of plans/programmes under the Habitats Directive

In adopting the plan/programme it would be helpful to clarify the nature of, and responsibility for, any subsequent assessment of licensing/leasing that will be required under the Habitats Directive.

OFFSHORE WIND

Cumulative effects

The scale of offshore wind farm (OWF) development that is built, consented or anticipated as part of the plan/programme (eg Round 3 and potential future development rounds as anticipated on page 15 on the ER) is now considerable. Development will also take place as part of other plans/programmes for renewable energy, notably in Scotland and Northern Ireland which are not specifically part of the plan/programme that this SEA will assess. Significant oil and gas infrastructure and development activity also exists in UK waters. There is therefore considerable scope for the effects of these plans/programmes to act in combination. The ER recognises that significant constructed, consented or planned development is concentrated in particular areas, including off the North Wales coast in Liverpool Bay. The capacity of certain areas to accommodate further development would therefore benefit from further assessment before decisions about individual developments are made. We recommend that subsequent licensing/leasing rounds should therefore be sufficiently flexible to allow for relocation of individual project proposals on the basis of strategic and iterative assessments similar to those undertaken following the zonal approach adopted for Round 3.

The ER states that an assessment of the cumulative effects of OWF development on birds cannot be conducted because of a lack of information (p207) and we recognise the difficulty of undertaking such an assessment at this scale. There is considerable scope for adverse effects, including on birds that are features of European Sites. For example, the ER refers to a study (Kaiser *et al* 2006) which suggests that additional development in Liverpool Bay may, under certain circumstances, have a significant effect on common scoter that is a feature of Liverpool Bay SPA. There is therefore considerable uncertainty about the capacity of areas such as Liverpool Bay to accommodate further development. In the absence of more detailed assessment of the cumulative effects on birds, the recommendation that OWF be largely located

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beyond 12 nm, which we strongly support, and the flexibility to adjust the final position of OWF's are important ways of reducing environmental and consenting risk.

In relation to the management of noisy activities, we strongly support the recommendation that regulatory controls are based on cumulative dose rates and would urge that the relevant licensing authorities develop a clearly defined mechanism for coordinating licensing activity accordingly. The ER draws the conclusion that "*it seems improbable (given the spatial ranges discussed above) that injurious or severe behavioural levels of effect will coincide.*" However, there is little evidence to justify this conclusion. Indicative spatial ranges of effect (Southall et al 2007), the size of Round 3 offshore windfarms and temporal overlap of development suggest that significant in combination effects are possible and mitigation of the effects of noise will be required. Without a mechanism for coordinating the control of noisy activities, CCW considers that there is a serious risk of significant disturbance to marine mammals that are strictly protected under the Habitat Directive and other mechanisms.

Furthermore, the assessment only considers the noise generated by pile driving. Many projects within Round 3 and beyond may not use pile driving but may employ gravity, drilling, pin and pile foundation technologies. The ER should therefore include a recommendation to investigate sound levels of these alternatives and to highlight those methods that reduce risk to marine mammals and other sensitive organisms.

Assessment of the effects of grid and other onshore infrastructure

The 2010 Offshore Development Information Statement (ODIS) prepared by National Grid identifies the need for major upgrades to grid transmission infrastructure beyond those required simply to connect OWF to onshore connection points. The ER recognises the potential for impact but defers assessment to the project level. CCW considers that assessment at a strategic level would help to minimise the overall impact and to reduce planning and consenting risk for developers. Further iterations of the ODIS should, therefore, take account of the environmental implications to inform planning for grid infrastructure and reduce environmental and consenting risk.

Similarly, any planning for onshore facilities such as port developments and extensions should also take account of environmental factors at an early stage to reduce environmental and consenting risk at the project level.

WAVE, TIDAL STREAM & TIDAL RANGE

Improving the evidence base

Although larger scale wave and tidal stream and tidal range developments are not envisaged within the 3-5 year timescale of the SEA, this SEA and the ongoing SEA process has an important role to play in identifying and addressing issues relating to these technologies as they develop. These considerations are unlikely to influence the overall conclusion of this SEA but the ER is an important opportunity to clarify more specifically the research that is required to support consenting of both demonstrator projects and larger scale arrays. In relation to tidal range, it would be helpful if the ER could more clearly identify the conclusions drawn from the recent feasibility study that examined a range of technologies and locations within the Severn.

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In particular, CCW believes there is a need to:

- maximise the learning from deployed demonstrator scale projects and begin to identify and address the issues associated with larger scale wave & tidal stream arrays
- support the assessment of wave and tidal stream technologies (and offshore wind) by improving the baseline data that characterises inshore marine mammal and bird populations, and by developing ways assessing the risks of collision and disturbance to mobile marine species
- draw on the STP FS to more comprehensively identify research to improve understanding about key generic impacts of tidal range technologies
- develop a strategic programme of environmental research to support the assessment of wave and tidal technologies similar to that established for early OWF development under the COWRIE programme.

We welcome the recommendation that for the deployment of single and small arrays of wave and tidal stream devices, appropriately focussed surveys of animal activity and behaviour should be undertaken to inform commercial scale deployment risk assessments and consenting. This would also support the deployment of small scale demonstrator projects, the assessment of which can also be challenging and should not be underestimated, particularly in sensitive areas. We have made suggestions for research that is likely to be needed (see Annex 3 and our comments on the recommendations).

The development of the wave and tidal sector in the next 3 to 5 years and beyond is highly dependent on the successful deployment of demonstration devices. In many cases, balancing the uncertainty of impacts with the requirements of environmental legislation means that deployments may only be possible with an associated agreed programme of mitigation including 'early warning' monitoring and adaptive management (i.e. following a 'deploy and monitor approach'). The ER might usefully recommend that guidance be produced to assist the development of a 'deploy and monitor' approaches and mitigation techniques for early deployments.

Understanding the effects of tidal range technologies

CCW agrees that the issues associated with tidal range deployment vary widely from location to location and that site specific assessment of the suitability of sites to accommodate tidal range technologies is critical. However, the STP FS concluded that tidal range technologies have the potential to have a number of impacts on the environment that are likely to be generic to tidal range projects. The assessment of the significance of potential sources of effect of the chosen plan/programme alternative (section 5.17) also highlights a number of potentially negative effects associated with tidal range developments. CCW therefore believes that the recommendations should reflect the fact that more work is needed to better understand the implications of the issues that are likely to be generic to tidal range projects (e.g. on fish migration, flooding, habitat loss and coastal processes).

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SPATIAL CONSIDERATIONS

Relationship between sectoral planning and assessment and marine planning.

Marine plans are now under development and some are likely to be in place by the time the next SEA of offshore energy is undertaken. The current SEA should include a recommendation to examine the relationship between planning for offshore energy and marine plans and, in particular, consider how the evidence gathered as part of the SEA can contribute to the evaluation that will be needed to formulate marine plans.

Balancing the effects of activities from different sectors

We agree that, in broad terms, the scale of effects of offshore renewables (including OWF) is significantly smaller than those of fisheries (p153), although the effects of other renewable activities are effectively permanent and effects from technologies such as tidal barrages and tidal stream arrays have yet to be fully understood. Furthermore, CCW believes that there is considerable potential for effects from both these activities to act in combination and that the relative impacts and benefits of these activities should be considered through the emerging system of marine spatial planning.

Key spatial constraints

We welcome the spatial approach to assessment that has been undertaken and consider it to be robust whilst noting the many underlying assumptions that need to be considered alongside the mapped outputs. We are concerned that certain 'other' potential constraints not categorised as 'hard' constraints may be under-represented by this analysis. Mobile species are difficult to capture in spatial assessment but, as features of European sites and as these species that are strictly protected under the Habitats Directive, they can represent a serious development constraint. Attempts to map sensitivity indices have been undertaken elsewhere (e.g. as part of the Marine Renewable Energy Strategic Framework[1,2]) and, as recognised by the ER (p352), this work should be further developed to support the spatial assessment of risk to the environment and project consenting. This is important for planning wave and tidal deployments of both demonstrator devices and commercial array scales.

In addition, the difficulties of analysing cumulative effects (notably in relation to birds) means that these have not been not been incorporated into the spatial analysis. Cumulative effects upon the environment is a significant issue for project consenting and methods will need to be developed to allow for this to be taken into account in planning strategically for offshore energy and other activities.

RECOMMENDATIONS

In responding to the ER, government should be more specific about who should have overall responsibility for the implementation of the recommendations. The response should, as far as possible, also identify who and by when the recommendations should be delivered. In doing so, it may be helpful to explicitly 'map'

[1] Marine Renewable Energy Strategic Framework. Approach to Sustainable Development. Welsh Assembly Government. 2011.
[2] Smith K, Briggs J, Hamer J, Hill A & Walker P (2011). Natural heritage evidence to support strategic planning of marine renewable energy. Countryside Council for Wales Policy Research Report No. 11/3

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the recommendations onto existing initiatives already underway and that could help to deliver the work that is needed.

In general we agree with the recommendations made in the ER. Each of the recommendations currently described are important to sustainable development of offshore energy. We have highlighted those recommendations we consider to be of greatest importance and also suggested a number of additions or amendments that CCW believes should also be addressed.

Spatial Considerations

- The value, from an natural heritage and project consenting perspective, of locating the bulk of offshore wind farm generation capacity in areas beyond 12 nautical miles (Recommendation 4) and the recognition that sensitivities near the coast will require careful consideration if further extensions to Rounds 1 & 2 projects and new leases in coastal waters are planned (Recommendation 6)
- The promotion of coexistence between different uses to minimise conflicts and to reduce land take from the sea (Recommendation 5).

Managing environmental risk

- The need for coordination of control of noisy activities has been recommended. In developing the plan/programme, DECC should be clearer about the mechanisms and, critically timescales, required to ensure that such coordination is in place prior to consenting decisions being taken.
- CCW believes that the ER should recommend that planning for increased grid and ancillary infrastructure should take account of the risks to the environment at an early stage.
- CCW considers that the capacity of certain areas (e.g. Liverpool Bay) to accommodate further development would benefit from further assessment before decisions about individual developments are made.
- CCW agrees that the issues associated with tidal range deployment vary widely from location to location and that site specific assessment is critical. But this study and the STP FS identified a number of impacts that are likely to be generic to all tidal range projects. CCW believes that the recommendations should identify these generic impacts more clearly and recommend that more work is needed to better understand the implications of these issues (e.g. on fish migration, flooding, habitat loss and coastal processes).
- Incorporating assessments of seascape effects in future energy related SEA's (Recommendation 11) is particularly important. It should be noted that work is underway to develop seascape character assessment guidance for the UK which goes beyond what is already available in Wales and Scotland. This study is due to be completed shortly and would provide a suitable basis for the further assessment of seascape sensitivity to offshore development.

Improving the marine management information base

- There is a need for a systematic and coordinated approach to developing marine mammal baseline data that also takes account of the need for finer scale resolution data on inshore marine mammal

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populations. The recommendations should refer to the Joint Cetacean Protocol as a mechanism for collating data that will ensure the most robust and powerful analysis of cetacean distribution and abundance.

- We strongly support the need for coordinated research into the effects of wave, tidal stream (and tidal range) technologies. Recommendations (18 & 19) for further research should, however, be more specific about the research that is needed and a mechanism for providing coordination. CCW has provided a list of suggestions at Annex 3 (see also our comments on improving the evidence base for wave, tidal stream and tidal range above).
- The SEA should highlight the importance of learning as much as possible from demonstrator wave and tidal stream projects that are deployed. In particular, CCW believes the SEA research programme should explore ways of supporting additional monitoring and research through these projects and the dissemination of the information obtained from such studies.
- The list of research (Recommendation 20) should specifically identify the need for work to judge the scale and significance of marine mammal ship strike impacts that seem likely to be caused by ducted propellers. This would be needed in advance of the development of mitigation requirement suggested in Recommendation 25.
- The research identified in Recommendation 20g, should include work to better understand the sensitivity of seals and cephalopods to noise (linked to Recommendation 25).
- Recommendation 20 should include research to improve understanding of the distribution of Biodiversity Action Plan species and habitats so that these can be more effectively included in future mapping of constraints to development.
- Better modelling and mapping (temporally and spatially) of construction noise from offshore windfarm development (including from piled and non-piled pylons and vessel movements) is required. This could in part be associated with work at demonstration scale projects for OWF (and wave and tidal stream).
- The ER recognises that a range of different turbine foundation types are likely to be used in the construction of Round 3 OWF's (sect 5.4.2.1, p128) and that newer foundation types are expected to have larger impacts over greater areas (Sect 5.4.3, p151). The potential for effects of new and larger foundation types (for OWF and wave and tidal technologies) on the seabed and on coastal processes should be investigated.

Best practice/mitigation

- We welcome Recommendation 21 that highlights the need to minimise scour protection and promote alternatives.
- The review of FEPA monitoring carried out by CEFAS on behalf of the MMO made a series of recommendations aimed at improving survey and monitoring design, standardisation and sharing of data, and the rigor and power of analysis. The SEA recommendations should highlight these as good practice.
- The ER might usefully recommend that guidance be produced to assist in the development of 'deploy and monitor' approaches and mitigation techniques for early wave and tidal stream deployments.

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- The ER makes reference to the IALA recommendation on the marking of man-made offshore structures and suggests that this should be followed by all wave and tidal deployments. In our experience there is some uncertainty about the status of this recommendation and there is a risk of confusion when considering this guidance alongside advice on minimising visual effects. Further work might be undertaken to provide some best practice guidelines on marking of wave and tidal structures that integrates health & safety concerns with the need to minimise seascape and landscape impacts.
- The recommendations should identify the need for guidance to minimise the likelihood of the introduction of invasive and non native species and for that guidance to be adhered to as good practice.

Clarification of statutory process

- There is a need for guidance on the consenting and assessment (under EIA in particular) for CCS.

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Annex 2.

Detailed comments

4.4 Relevant existing environmental problems

Discussion about damage to seabed habitats focuses exclusively on fishing impacts. This is the major impact, but closer to the coast there is also the major impact of other coastal development and resulting loss and degradation of habitat.

Maerl is referred to, incorrectly, as a species listed on Annex II of the Habitats Directive.

5.1 Assessment Approach & methodology

A distinction has been drawn between effects that are significant at a population or species level and effects on individuals. In cases where development activities risk injury or killing of species that receive strict protection under the Habitats Directive there is a need to recognise the potential effects on individual animals and that these will need to be addressed at the project level.

5.3. Noise

Effects of noise from CO_2 and gas storage activities are expected to be similar to hydrocarbon exploration and production (p99). This should be verified through targeted and effective monitoring programmes.

The conclusion that *"In the case of piscivorous species such as divers and auks, indirect effects through acoustic disturbance of prey species could be postulated, although such effects are likely to be local and not significant at a population scale.*" (p103) is premature, especially given the scale of current and future projects. Displacement of prey through the cumulative effect of noisy activities has the potential to effect bird and marine mammal populations and this should be assessed.

It's clear from the evaluation on p106-107 that more research needs to be done on the modelling of sound propagation from pile-driving and other foundation installation methods, seismic survey, operational noise etc, and development of suitable models

The JNCC guidelines for seismic survey referred to were published in August 2010, not October 2009 (p108).

We do not believe that there is sufficient evidence to justify the conclusion (p122) that "*it seems improbable (given the spatial ranges discussed above) that injurious or severe behavioural levels of effect will coincide.*" Indicative spatial ranges of effect (Southall *et al* 2007), the size of Round 3 OWF's and temporal overlap of development suggest that significant in combination effects are possible and that these will require mitigation.

Notably, the use of retrospective analysis of cumulative noise doses to establish limits for present-day activities (p126) will require careful management of good quality noise data. There is a need for coordinated arrangements for gathering such information and ensuring that this informs licensing decisions made by individual regulators.

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5.4. Physical Effects

We do not agree with the suggestion that *"although the amount of cabling required to support the expanding development of OWF sites will increase significantly, the potential effects are temporary and localised"*. (p132). The ER itself recognises the substantial impact of the landfall part of the cabling route and the Offshore Development Information Statement indicates the possibility of significant new grid infrastructure in parts of north west and west Wales. Significant parts of intertidal and subtidal areas in west Wales are designated as SAC or SSSI and this may have implications for grid connection plans.

The potential for the introduction of marine invasive and non-native species (INNS) to be facilitated by the additional hard surface structures has been overlooked. Mitigation of these effects and the risks of introduction from vessel cleaning and ballast water discharge will need to be addressed. The recommendations should identify the need for guidance to minimise the likelihood of the introduction of invasive and non native species and for that guidance to be adhered to as good practice. In addition to mitigating the effects of introduced and non-natives through adherence to ballast water guidance, there is also a need to mitigate against introductions from construction vessel fouling potentially by cleaning vessels before they are brought into the construction area.

The table in section 5.4.1 and discussion in section 5.4.2.2 excludes the potential for 'changes to sedimentation regime and associated physical effects' from offshore wind farm development. We consider that there is significant potential for such an effect pathway to exist, particularly where gravity based foundations are deployed.

The statement 'The broadscale distribution of habitats of conservation importance is relatively well mapped' is misleading (p153). The distribution of some habitats such as those identified by the Biodiversity Action Plan are not well described, even at a broad scale, and may well be present in areas that are chosen as otherwise suitable for development.

The table of potentially significant effects (p166) correctly identifies behavioural disturbance and barriers to foraging but should also refer to temporary or permanent destruction of feeding areas such as sand banks.

5.6 Physical presence

This section makes several references to the potential use of sensitivity indices for assessing risk to mobile species. We agree that sensitivity indices could provide a valuable tool for incorporating mobile species into spatial assessments of environmental risk. Indices might also provide a means of addressing cumulative impacts issues within assessments. Such indices can take into account life history traits, and factors relating to the resilience and recoverability of species'. Sensitivity indices can also consider the conservation importance of individual species, as defined by environmental legislation, including the incorporation of protected site considerations. We would highlight recent work undertaken by CCW (see[1] above) to develop Sensitivity and Vulnerability Indices for diving seabirds and marine mammals which have been incorporated into the Welsh Assembly Government's Marine Renewable Energy Strategic Framework, as the basis for a methodology which could be developed and expanded.

The ER makes reference to the IALA recommendation on the marking of man-made offshore structures and suggests that this should be followed by all wave and tidal deployments (Section 5.6.2.3.**)**. However,

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in our experience there has been some confusion within the industry about the status of this recommendation and so the ER might usefully recommend that further work be undertaken to provide some best practice guidelines on marking of wave and tidal structures, particularly by integrating health & safety issues with seascape and landscape impacts.

5.15. Overall Spatial Considerations

Section 5.15.1 (p325) describes the assessment of the implications of activities for Natura 2000 sites. This section should be clear that, although designation of an area as an N2k site does not automatically preclude development and that the implications will require assessment, projects would not be permitted unless significant adverse effects on the integrity of the site can be eliminated or, having discounted any alternatives, there are overriding reasons of public interest for the project to proceed.

This section (p327) also refers to the need for offshore energy installations to be subject to 'HRA' in Scotland and Northern Ireland; 'HRA' having been previously defined as 'Habitats Regulations Assessment/Appraisal'. Habitats Regulations Assessment/Appraisal is the term conventionally applied to the overall assessment of the implications of an activity for N2k sites throughout the UK, not just in Scotland and Northern Ireland.

Appendix 3a.

The timetable for MCZ consultation (p8) is out of date. Consultation is now expected in October / November 2011.

'*When the Tide Goes Out*' CCW 2007 is a better review of the biodiversity and conservation of the intertidal of Wales than the papers cited in this section (p21).

The description of JNCC work to identify SPA's in offshore waters is misleading (p36). The statement: *"Using the extensive European Seabirds at Sea database the report identifies a total of 6,013 hot spots as meeting the 5% threshold and 2,201 seabird hotspots at the 1% threshold"* implies that population thresholds are being used, which is not the case, the thresholds referred to relate to the top 1% and 5% from the Getis Ord * statistical package.

Existing SPA colonies with proposed colony extensions (p38) shows Carmarthen Bay SPA but not Liverpool Bay SPA.

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Annex 3. CCW recommendations for research into the environmental effects of wave and tidal stream technologies

This paper describes the Countryside Council for Wales' (CCW) view on priority areas for research to support the assessment of wave and tidal stream technologies.

The information and understanding gaps relating to the environmental impact of wave and tidal stream can be divided into two main areas;

1. Developing environmental baselines (to inform environmental assessment processes).
2. Impacts research (associated with device deployments)

Key research and further work required in these two priority areas are detailed below. It should be noted that although primarily aimed at the wave and tidal stream sector, much of the work described by this paper will also be applicable to offshore wind, as many of the issues discussed are generic to the marine renewable energy industry.

1. IMPROVING BASELINE INFORMATION

A strong baseline of relevant environmental information is essential to inform Environmental Impact Assessment and strategic planning processes. Baseline information about the marine environment is often poor because of the difficulties of surveying the marine environment. Information about mobile species (marine mammals, seabirds and fish) is particularly deficient, and this is of particular relevance to understanding the effects of wave and tidal stream technologies.

Environmental baselines need to be sufficiently robust and described at an appropriate scale to characterise the resources that may be affected by these technologies. The geographical areas around Wales likely to be of interest to wave and tidal developers are reasonably well defined at a regional scale within the Atlas of UK Marine Renewable Energy Resources (ABPmer, 2008). Key environmental information is poor for some of these areas. This is a particular issue for tidal stream technologies, which are likely to be deployed in geographically restricted areas of energy resource, which are also a distinct and limited ecological resource.

The specific research priorities relating to developing environmental baselines are detailed below. A short rationale is provided for each.

a. Improved definition of size, range and connectivity of mammal populations

The six key species of most concern in Welsh waters are bottlenose dolphin, common short-beaked dolphin, Risso's dolphin, harbour porpoise, minke whale and grey seal.

The nature conservation significance of impacts on marine mammals are defined according to whether they affect the long term viability (or the conservation status) of populations. This requires an understanding of the size and range of the population on which impacts are likely to exert an influence. Our understanding of the range of marine mammal populations and individuals within a population is limited, particularly for those species that are difficult to track as individuals. Several species have populations that are trans-boundary and wide-ranging. In the US, under such circumstances, estimations

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of population are based on the number found in US waters not the whole biological population. A similar approach might be taken in the UK.

Research to spatially define mammal populations, such that management units can be determined would lead to a better ability to assess the likely impacts of marine renewable devices at a realistic, biological population level. In Wales this issue is particularly pertinent for harbour porpoise, common dolphin, Risso's dolphin and minke whale. Population estimates for bottlenose dolphin and grey seal are better defined in Welsh waters.

Research to better understand the connectivity and key migrations and movements (including routes and timing) of all of the marine mammal species which occur in Welsh waters is required. Some information has been gathered for the Welsh population of bottlenose dolphin, through the use of photo ID (Pesante *et al*, 2008), though there remain questions about the degree to which these animals utilise areas outside of Welsh waters, such as the Isle of Man. In addition, some information on grey seal movements has been gathered through a limited amount of tagging work (e.g. Hammond *et al*, 2005; Gordon *et al*, 2011). Further research is required into the connectivity of all Welsh marine mammal populations, in order to help to assess the likely disturbance, displacement, barrier and collision effects of marine renewable devices.

This research is also of relevance to the offshore wind sector, since the scale at which offshore wind farms are being built under Round 3 (and any subsequent leasing rounds) around the UK's coast means that the potential for cumulative and in-combination impacts is much more likely.

b. Improved productivity rate estimates for marine mammal species and populations

Potential Biological Removal (PBR) may represent a useful tool for quantifying impacts of marine renewable devices and arrays on mammal populations and in some cases, setting thresholds for acceptable impacts. PBR was developed by fisheries scientists at the National Oceanic and Atmospheric Administration (NOAA) as means of managing the effects of human activities on marine mammal populations and allows effects to be quantified with limited data. Specifically it estimates the number of animals that can be removed from a population without preventing the population from reaching or maintaining itself at an optimum level. The formula used to calculate PBR levels includes an estimate of the net productivity rate of the marine mammal population in question.

In the case of most marine mammal species present in Welsh waters, productivity rate estimates are crude, or are even default values taken from other, better studied, populations. Research to better define productivity rates for the main marine mammal species occurring in Welsh waters would greatly improve the potential for using PBR to quantify impacts of marine renewables.

c. Improving estimates of local density site fidelity of mammals

Marine mammal sightings rates are available for Welsh waters (e.g. SCAN II and CCW marine mammal database) which provide a useful characterisation of marine mammal presence in Welsh waters at a regional scale. However, they do not provide information at a resolution sufficient to characterise the importance of areas of high tidal energy resource for marine mammals. Neither do we have a clear idea of the level of site fidelity, or reliance on particular areas of tidal resource by individuals and populations. This information is required to inform assessments of the anticipated risk of encounters or collisions between devices and mammals and likely disturbance and displacement effects.

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d. Understanding functional use of areas of high tidal energy by marine mammals

There is some evidence to suggest that areas of high tidal stream energy are important feeding and nursery areas for marine mammals (e.g. Pierpoint, 2008; Shucksmith *et al*, 2009). However, much of this evidence is anecdotal and additional research on the functional importance of these areas to marine mammals is needed.

e. Diving behaviour and depth distribution of marine mammals in high tidal energy areas

Understanding the degree to which underwater tidal turbines might pose a collision or barrier risk to marine mammals requires a better understanding of the dive profile and depth distribution of the various species. This includes the dive profiles of animals feeding within, or transiting through areas of high tidal stream. A better understanding of the dive profile of marine mammals would also help inform the development of possible mitigation to minimise effects (for example, deeper installations might be better than shallow).

Some work has been undertaken on harbour porpoise in Denmark (Teilman *et al*, 2007), but this type of data are needed for all species, with a focus on area of tidal resource, since they may behave differently in these areas. Gordon *et al* (2011) also undertook some initial trials of harbour porpoise activity in areas of high tidal energy using a vertical hydrophone array deployed from a drifting vessel off N. Anglesey, and suggested this approach might be a viable method to characterise the diving behaviour of marine mammals in such areas.

Further research on swimming orientation of mammals in relation to tidal flow is also required since this is likely to affect encounter and collision risk (encounter rates are likely to be higher if mammals are swimming perpendicular to devices, i.e. directly with or against tide). The use of accelerometer tags might be a useful means of gathering this information.

f. Estimates of sightings rates of seals at sea

There is little existing data relating to sightings rates of seals at sea, with uneven effort across Welsh waters, since historically surveys have been targeted at species other than seals. Tagging data and at sea data collected by Satellite Relay Data Loggers (SRDL) has increased knowledge of movements of seals from breeding and non-breeding haul-outs (e.g. Hammond *et al*, 2005) but a better understanding of density at sea or the location of functionally important at sea areas is required.

g. Hearing in seals

Currently, little is understood anatomically about hearing in seals. Southall *et al* (2007) reported that most pinnipeds are treated as one functional hearing group, despite the data reviewed suggesting differences in the functional hearing range among otarids, phocids and odobenids, especially underwater. There is no broad anatomical background data on pinnipeds or an understanding of how underwater sound arrives at the inner ear.

To estimate the possible effects of noise on seals, it would ideally be necessary to gather data on their hearing capacities (e.g. audiograms) and Temporary Threshold Shift (TTS) values. However, given the practical and ethical issues surrounding the gathering of such data, an approach using computational acoustic models, based on anatomical data might be preferable.

This research would also be of use to the offshore wind sector, since noise impacts on marine mammals during construction (e.g. from pile driving and other foundation installation methods) is one of the key impacts of concern and current understanding of potential impacts on seals is low.

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h. Improved definition of size, range and connectivity of seabird populations

The nature conservation significance of impacts on seabirds are defined according to their effect on the long term viability (or the conservation status) of populations. This requires an understanding of the size and range of the population upon which the impacts are likely to exert an influence. In 2004 the results of the third complete census of the entire breeding seabird population of Britain and Ireland ('Seabird 2000') were published (Mitchell *et al*, 2004). This information is now over ten years old and in urgent need of updating.

Our understanding of the range of seabird populations and individuals within a population is improving, particularly following recent work to determine foraging radii for species (RSPB and Birdlife International, 2010). However, the connectivity of birds between colonies is less well understood, particularly for those species that are difficult to track as individuals.

Research to better define seabird populations and understand the connectivity between populations (both in and out of breeding seasons), such that management units can be determined would lead to a better ability to assess the likely impacts of marine renewable devices on seabirds at a realistic, biological population level. This information would help improve our understanding of the connectivity of seabird species to protected sites and inform Likely Significant Effect judgements in relation to Special Areas of Protection (SPA) and Sites of Special Scientific Interest (SSSI).

This information would also be of use to the offshore wind sector, given the number and scale of developments, cumulative and in-combination displacement and barrier effects on SPA populations and other sensitive species are a concern.

i. Improving estimates of local sea bird density and fidelity of seabirds

Diving seabird sightings rates are available that provide a useful characterisation of diving seabird presence in Welsh waters at a regional scale. However, they do not provide information at a resolution sufficient to characterise the importance of areas of high tidal and wave energy resource for seabirds. Neither do we have a clear idea of the level of fidelity to these areas, or reliance on particular areas of energy resource by individuals and populations. This information is required (covering breeding and non-breeding seasons, to inform assessments of the anticipated risk of encounters between devices and seabirds and likely disturbance and displacement effects.

j. Functional use and behaviour of seabirds in areas of high tidal stream and wave energy

Research is required to better understand the functional importance areas of high tidal and wave energy resource in breeding and non-breeding seasons.

Understanding the degree to which underwater tidal turbines might pose a collision or barrier threat to diving seabirds requires a better understanding of the dive profile and depth distribution of the various species. This includes the dive profiles of animals feeding within, or transiting through areas of high tidal stream.

k. Sensory ecology of mobile marine species

Sensory ecology investigates the information that underlies an animal's interactions with its environment. Research on the sensory ecology of mobile species (predominantly diving seabirds and marine mammals) is needed to better understand the likely level, and consequences of, interactions with marine renewable devices. Some work has been undertaken to assess why flying birds collide with prominent structures which intrude into the open airspace, such as power lines, communication masts and wind turbines

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(Martin, 2011). Whilst this research may help inform the likely interactions between birds and emergent marine renewable devices, work is needed to better understand underwater sensory perception and the potential for mitigation measures to be developed.

l. Characterisation of fish communities associated with areas of high marine energy

Very little is known about the species and communities of fish associated with areas of high energy resource (particularly tidal stream). Further work is required to characterise the fish populations and communities associated with these areas, in order to determine the likely impact of marine renewable energy device deployments on fish and their predators.

m. Determining the functional importance of areas of high marine energy for fish species

Very little is known about the functional importance of areas of high energy resource for fish species and populations, for example as essential habitats, or feeding and breeding areas. Research is required to better understand such issues to not only inform assessments of the likely impacts of developments in these areas on fish, but also on predators such as diving seabirds and marine mammals.

n. Seascape Character Assessment

Detailed spatial representation of seascapes through a character-based assessment is needed, and widespread consensus on the need for this is building across the UK and across agencies and NGOs with an interest in cultural aspects of the environment. This baseline (which would build on existing work done to date) could then be used as the context in which to consider cultural sensitivities to particular types of renewables development.

2. IMPACTS RESEARCH

Impacts of marine renewable energy devices, particularly collision prediction, can only be researched by monitoring the effects of devices that have been deployed in association with validated and intelligent modelling based on data informed by such monitoring.

The specific research priorities relating to each of these key areas are detailed below. A short rationale is provided for each.

a. Monitoring the behaviour of marine mammals and diving birds around operating marine renewable devices – quantifying avoidance and evasion

Models have been developed to assess likely levels of encounter or collision risk for tidal stream devices in relation to mobile species. Whilst useful as a planning tool, these models are not currently based on any robust information about behavioural responses of mammals to devices. Limited information is available from the SeaGen device in Strangford Lough, Northern Ireland, but the device necessarily operates with a 'shut-down clause' requiring that it is stopped when mammals are in the vicinity. Direct observations are required to gather information on the behaviour of mammals and diving birds around operating devices. This should include observations of avoidance and evasion behaviour and the attraction of inquisitive species (e.g. bottlenose dolphin and minke whale). Such observation would greatly increase understanding about the real level of risk of collisions, as well as helping to refine and validate encounter risk models.

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b. Establishing suitable techniques for monitoring underwater behaviour of mobile species

Adaptive management approaches to the deployment of marine renewable devices is reliant on the ability to detect and discriminate between animals in the immediate vicinity of devices. Although development of these technologies is advancing rapidly further work to improve the resolution of observations made by these devices is likely to be needed.

c. Establishing suitable techniques to monitor mobile species collisions

Validation of collision risk assessments for mobile species is reliant on the ability of technologies to firstly detect that a collision has occurred and secondly be able to determine what collided with the device (e.g. a species of marine mammal or diving seabird or marine debris). The efficacy of existing underwater detection and collision detection methods has yet to be demonstrated but this information may be required as a condition to consent for deployments, to ensure that thresholds for collision are not breached.

d. Effects of noise from underwater devices on fish / benthos / birds

Underwater sound and the potential impacts on marine life has received increased attention in recent years, with measures to assess underwater sound having been included within the European Marine Strategy Framework Directive (MSFD). As part of the proposed requirements of this Directive Member States may have to report on the occurrence and distribution of activities within their jurisdictions that generate loud, low and mid frequency impulsive sounds that exceed levels capable of causing significant impact to marine animals. However, very little is known about specific levels of sound that are deemed capable of causing a 'significant impact' to other marine animals, particularly fish, benthos and birds. Research is therefore needed which focuses on the likely impacts of noise on these taxonomic groups, which will help in the assessment of the likely impacts of offshore energy technologies, including wet renewables and offshore wind, and in reporting under the MFSD.

e. Modelling to predict the impacts of arrays of devices

Research is needed which focuses on 'scaling up' the effects of individual devices to predict the likely effects of arrays of devices on environmental receptors. Some of this information can be determined through monitoring of multiple-device demonstration deployments. However there may also be qualitative differences between the known impacts of relatively small-scale devices and the likely impacts of commercial-scale deployments. In particular, effects on hydrology, sediment regimes and coastal processes may be significant and, noting the recently published work demonstrating boat-generated turbulence as a potential source of zooplankton mortality (Bickel *et al*, 2011), impacts on plankton communities may also need to be addressed.

f. Modelling to predict the cumulative impacts of multiple arrays of devices

Research is needed which focuses on assessing the cumulative effects of multiple arrays of devices on environmental receptors. This could particularly be an issue for environmental receptors sensitive to changes in energy regime and mobile species.

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12 May 2011

Offshore Energy Strategic Environmental Assessment: Future Leasing/Licensing for Offshore Renewable Energy, Offshore Oil & Gas, Hydrocarbon Gas and Carbon Dioxide Storage and Associated Infrastructure.

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. Our interests include nuclear, renewables, coal and gas-fired electricity generation, combined heat and power. We have over five million electricity and gas customer accounts in the UK, including both residential and business users.

EDF Energy welcomes the opportunity to respond to the consultation and believes that the report provides a comprehensive summary of potential environmental impacts from the key offshore energy activities and we believe that it is accurate and well evidenced. However, we are concerned that some of the detail is overly prescriptive on various environmental issues. This increases the risk of unnecessary delays and time consuming detailed assessments when project developers begin to design a project.

The 2011 OESEA report, in comparison to the 2007 SEA Offshore Wind Energy Generation: Phase 1 Proposals does not present conclusions in the form of spatial mapping. The mapping presented in the 2007 report was extremely helpful in identifying potential areas for development. EDF Energy feels that this provided a good starting point for Environmental Impact Assessment (EIA) and it is unfortunate that this current SEA does not draw such conclusions.

EDF Energy agrees with the principle of designation of offshore European Conservation (Natura 2000) sites under the Habitats Directive and the boundaries of some of the coastal and marine sites that are in the process of being extended. We also agree with the principle that the Marine Strategy Framework Directive through the Marine and Coastal Access Act 2009 will introduce further requirements for identification and designation of Marine Conservation Zones (or Marine Protected Areas under the Marine (Scotland) Act 2010). However, we hold reservations with regard to the detailed assessments and level of stakeholder engagement in certain cases.

EDF Energy believes there to be a delicate balance between socio-economic issues and the conservation objectives of the Marine Strategy Framework Directive. These will therefore require careful consideration in relation to development of offshore wind farms and other marine renewables sites, oil and gas /gas storage (including carbon dioxide storage) infrastructure to avoid compromising good environmental status.

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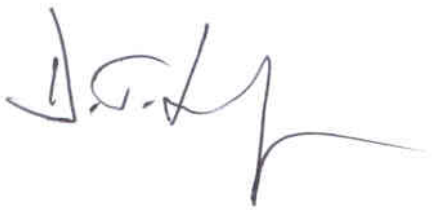
Should you wish to discuss any of the issues raised in our response or have any queries please contact my colleague Ravi Baga on 020 7752 2143, or myself.

Yours sincerely,



Denis Linford
Corporate Policy and Regulation Director

ENGLISH HERITAGE

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Your ref: OESEA2 Consultation

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11th May 2011

Dear Sir/Madam

UK Offshore Energy Strategic Environmental Assessment 2: Environmental Report
Future Leasing/Licensing for offshore energy: oil and gas, hydrocarbon gas storage, carbon dioxide storage and offshore renewables including wind, wave, tidal stream and tidal range

Thank you for the invitation to respond to the consultation on scoping exercise for the Environmental Report of the UK Offshore Energy SEA (UKOESEA2) as notified by your letter of 14th February 2011. Please consider this as our corporate response. For your information we provided a response to the first phase of this SEA exercise in our correspondence to you dated 21st April 2009 and a response to the Scoping Report (our letter to you dated 15th April 2010).

Introduction

English Heritage is the UK Government's statutory adviser on all aspects of cultural heritage including the English area of the UK Territorial Sea, as provided for under the National Heritage Act 2002. English Heritage is an Executive Non-Departmental Public Body sponsored by the Department for Culture, Media and Sport (DCMS) and we report to Parliament through the Secretary of State for DCMS. However, for activities that occur beyond the 12 nautical mile limit of the English area of the UK Territorial Sea any advice that we do offer is given informally and without prejudice.

In the delivery of our duties we work in partnership with central government departments, local authorities, voluntary bodies and the private sector within the framework of our published Conservation Principles which can be summarised as follows:

- the historic environment is a shared resource;
- everyone should be able to participate in sustaining the historic environment;
- understanding the significance of places is vital;
- significant places should be managed to sustain their values;
- decisions about change must be reasonable, transparent and consistent; and
- documenting and learning from decisions is essential.

Our responsibility under the Protection of Wrecks Act 1973, within the English area of the UK Territorial Sea, is to consider applications and recommendations for designation, re-designation and de-designation of shipwreck sites. On the basis of our advice the Secretary of State (DCMS) is responsible for designating restricted areas around sites which are, or may be, shipwrecks (and associated contents) of historic, archaeological or artistic importance. The Secretary of State is also responsible for the issuing of licences to authorise certain activities in restricted areas that otherwise constitute a criminal offence. At the end of the reporting year in March 2011 there were 46 sites designated within the English area of the UK Territorial Sea.

The Marine Historic Environment

The number of protected historic shipwrecks is very small (ranging from possible prehistoric seafaring craft with associated cargos through to prototype submarines) and they are only one aspect of English Heritage's interests in promoting the understanding, management and public enjoyment of the historic environment. It is therefore important for us to describe the marine historic environment as also comprising submerged and often buried prehistoric landscape areas and elements, together with archaeological sites and remains of coastal activities (e.g. fish traps) dating from all eras of history. However, we consider it essential to ensure the management and use of the full range of the historic environment, is conducted in a manner that best serves the public understanding and enjoyment of the whole, and not just of the designated and protected sites.

Comments in response to the SEA Environmental Report

1) General comment

We appreciate the link the report provides in clarifying and supporting the role of the *High Level Marine Objectives* (published 2009), by the UK Government and Devolved Administrations and how these objectives state a commitment to an "effective, integrated and strategic management of human activities in the marine environment…" Consequently, we value how these objectives are reflected within the UK Marine Policy Statement (published March 2011) and should therefore inform this SEA exercise.

2) Landscape/Seascape

We offer the comment that the sections of the report directed at landscape/seascape (e.g. Table 3.1 – SEA Topics, Objectives and Indicators) should pay particular attention to an interpretation of seascape which is not specifically focused on visual assessment methodologies. We therefore recommend that this approach is qualified, in reference to the definition of 'landscape' in the

Council of Europe European Landscape Convention (ELC), so that the concept of landscape 'character' is adopted to fully support action to implement ELC within the UK. We also noted in section 5.8.6 the statement: "…in keeping with the European Landscape Convention, all landscapes should be considered in seascape assessment"; this is an important matter which the report also identifies how: "England's seascape presently lacks a comprehensive characterisation or high level analysis with regards to the sensitivity or capacity of particular seascapes to offshore development". We therefore offer our Historic Seascapes Characterisation methodology as a mechanism to support action to address this matter.

3) Cultural Heritage

In further reference to Table 3.1 we noted the following: "Activities avoid adverse effects on the character, quality and integrity of the historic and/or cultural landscape, including those sites which are designated or registered, and areas of potential importance." In regard to this statement we consider it useful to refer to the UK Marine Policy Statement which clearly identifies that decision making should take account of designated cultural heritage sites or of sites that are of particular social significance and that such sites are finite and often irreplaceable. It is also an important matter to recognise that only a minority of sites at sea are afforded any form of statutory designation and that non-designated sites should be considered subject to the same policy principles as applied to designated heritage assets.

Yours faithfully,

Christopher Pater
Marine Planning Unit

cc Duncan McCallum (Policy Director, English Heritage)
Ian Oxley (Head of Maritime Archaeology, English Heritage)
Annabel Houghton (DCMS – Sector Policy Adviser, Historic Environment)

Offshore Energy SEA2 Consultation
The Department of Energy and Climate Change
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11th May 2011

Dear Sir/Madam

Re: Offshore Energy Strategic Environmental Assessment 2 Consultation

We welcome the opportunity to respond to the Department of Energy and Climate Change consultation on the Environmental Report for the second Offshore Energy Strategic Environmental Assessment (SEA). We agree with the overall approach used for the SEA and are pleased to see that many of the points we raised at the scoping stage have been taken on board. However, we have a few additional recommendations and comments below and in Appendix 1 to help ensure the SEA process achieves the objective of creating a sustainable outcome for the development of offshore energy projects.

We recommend that:

1. **Cumulative impacts are fully considered**
   The OESEA2 could be considered within a wider policy context. Links can be made to the National Policy Statements, Marine Policy Statement and their Appraisals of Sustainability, emerging Marine Plans and Shoreline Management Plans. Cumulative impacts could be considered in the light of all these potential future developments. Particular regard could be made to the potential cumulative effects of clusters of licensed activities, and related impacts of tidal, wave and wind energy installations, oil and gas exploration or offshore carbon repositories, as well as associated onshore ancillary development.

2. **Effects from onshore development are assessed and fully considered**
   The environmental effects of both offshore activities and related on-shore development could be assessed and the impacts fully considered, such as grid connections, cables and other supporting infrastructure. Assessment of the potential for shoreline impacts of offshore and related onshore development is important, including the risks to shoreline species and habitats, water quality, flood and coastal erosion risk management systems and sustainable access to water based recreation. For instance, ancillary development which is either onshore or which crosses the coast from marine to terrestrial locations, may have an effect on sedimentary processes closer to shore, and could therefore cause or exacerbate flood or coastal erosion risks. Ancillary development could also have impacts on the coast during installation, operation and decommissioning stages and post decommissioning if structures are left in place.

3. **Effective mitigation measures are implemented**
   The preferred option of restricting the area offered for leasing and licensing temporally and spatially is likely to require a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea. The impacts of proposals regarding precautions, areas to be withheld, and operational controls could be fully considered. We support informed decisions being made based on sound data and evidence to result in the best environmental outcome. This includes taking a precautionary approach when assessing the potential effects of electromagnetic fields on migrating fish.

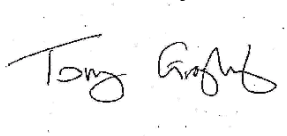
4. Significant environmental effects are effectively monitored

We are pleased to see proposals to monitor emissions, the effects of offshore energy activities and the SEA objectives. Monitoring of both negative and positive environmental effects is important in tracking SEA performance over time and in identifying any remedial action which needs to be taken to reduce any negative impacts. The environmental effects of offshore, onshore, and across the shore infrastructure could be included within a comprehensive monitoring strategy, including monitoring sedimentary processes to assess the impacts on coastal flooding and erosion.

Any research, including that arising from the recommendations of the SEA, could be incorporated into the delivery timetable of offshore and onshore facilities.

Please contact my colleague, Sophie Goodall, Senior Environmental Assessment Advisor, on 01903 832147, if you require any clarification or information on this response.

Yours faithfully



Tony Grayling
Head of Climate Change and Communities

Appendix 1

Specific comments on the OESEA2 Environmental Report

Section 5.2 Potential sources of significant effects

We suggest that Box 5.1 on the sources of potentially significant effects is expanded to include the accidental effects of damage and disruptions to flood defences during construction and operation in near shore areas, where there is potential to damage or disrupt defences.

Section 5.17 Consideration of alternatives

5.17.2 Biodiversity, habitats, flora and fauna (p359)
We question whether "EMF effects on fish" will have a "neutral" effect on alternatives 2 and 3 (p361). Offshore wind farms require sub-sea power cables, which generate an electromagnetic current. It is thought that Salmonid fish use the earth's magnetic field to migrate. The impact of EMF (Electromagnetic Field) could potentially be negative if an offshore wind farm is sited near where salmon and/ or sea trout stocks from a number of rivers normally congregate or pass through during migration. EMFs could also have an effect on other migratory species such as eel. It is thought that the earth's magnetic field is more important for fish migration further away from the shore; olfaction is thought to be more important closer to the shore, although more research is needed to confirm this. We consider that currently not enough is known about the potential impact on migratory Salmonids to be able to conclude that EMF will have a "neutral effect". We recommend that the "EMF effects on fish" should show "Alternatives 2 and 3" as "potential negative impact on topic".

The assessment appears to focus on designated habitats and species, however biodiversity also includes non-designated habitats and species. Impacts could arise from both offshore development and associated onshore infrastructure. We recommend that the three alternatives be assessed for the extent to which they would have an effect on ecosystems, not just designated sites and protected species. This would link up with Defra and WAGs activities on an ecosystem services approach.

5.17.3 Geology and sediments (p363)
We welcome reference to consideration of the impacts on sedimentary processes. However, we suggest that table 5.17.3 on geology and soils be expanded to consider the impacts (including cumulative impacts) of offshore and associated onshore development on flood and coastal erosion risk. Any loss of salt marsh habitat or change in sedimentation regimes could result in additional pressure being placed on flood defence infrastructure.

5.17.5 Water environment (p368)
We recommend that table 5.17.5 on the water environment be expanded to include an objective on assessing and managing coastal erosion and flood risk. We recommend that the impacts of flood risk to, and resulting from, proposals for offshore development, and associated onshore ancillary infrastructure, are fully considered. For example, booster stations for CO2 transportation could be resilient to flooding and wherever possible areas at risk from flooding could be avoided altogether. We recommend that consideration is given to how critical these facilities are and whether they need to remain operational during times of flood events. Also the consequences (to human health/environment) of facilities not working during a flood event.

We recommend that a detailed flood and coastal erosion risk assessment is carried out in estuaries and embayments. This could include the implications that offshore and related onshore development will have on flood and coastal erosion risk management activities, including defences.

5.17.6 Air Quality (p371)
The text on page 371 states that that there is a "Low risk of occurrence of major spills". It could be considered whether this still the case following the 2010 Gulf Coast BP oil spill.

The National Emissions Ceiling Directive (NECD) sets upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia). The Indicators under air quality in Table 3.1 only relate to regional and UK levels. The plan/programme could also contribute to the achievement of air quality targets for those emissions outlined in the National Emissions Ceiling Directive, as well as the UK Air Quality Strategy.

5.17.7 Climatic factors (p373)
Alternatives 2 and 3 are recorded as having a "potential minor positive impact" on "reduction in net greenhouse gas emissions". We suggest the report is clarified to specify that this is only correct for oil/ gas exploration where Carbon Capture and Storage (CCS) is viable and not where the technology is not yet available.

While maximisation of domestic fossil fuel reserves is important for maintaining a secure supply of energy, it is unclear how this is a "solution for low carbon energy production" as stated under Alternative 2 on page 374. We suggest it is made clear that maximisation of domestic fossil fuel reserves will contribute to security of supply, but not necessarily low carbon energy production.

4.17.9 Other users and material assets (p378)
We recommend that section 5.17.9 includes the potential impacts of onshore ancillary works.

We recommend that revisions to the Waste Framework Directive (2008), which are being implemented in England and Wales through the Waste (England and Wales) Regulations 2011, are taken into account within the SEA. The objectives of the Waste Framework Directive include protecting human health and the environment, which includes the flora and fauna of the sea. If any waste is brought back to land, then the SEA could recommend that the plan specifies that this is dealt with in line with the Waste Hierarchy as set out under the Directive, rather than "*disposed* of appropriately" (p378). The Hierarchy requires first prevention, then preparing for reuse, then recycling, then recovery for use (in e.g. energy production) and finally disposal. We recommend that the three alternatives be reassessed to establish the degree to which they would enable the management of waste from offshore and onshore facilities in line with the Waste Framework Directive.

Section 6 Recommendations and monitoring (p381-386)

We support the conclusion of the SEA that "alternative 3 to the draft plan/ programme is the preferred option, with the area offered restricted spatially through the exclusion of certain areas together with a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea". We have the following specific comments to make:

Spatial consideration 1 (p381): We support the recommendation on making developers aware of the potential implications of proposing development in SACs and SPAs and the likelihood of mitigation measures being required. However as stated above, non-designated sites also have ecological value, so impacts on the wider ecosystem could also be assessed and mitigated for where necessary. For example, EMF effects on fish, as mentioned above.

Spatial consideration 3 (p382): We consider that offshore and associated onshore developments, individually or cumulatively, could avoid causing adverse impacts to existing infrastructure, including flood and coastal erosion risk management assets. We suggest that recommendation 3f is expanded to include this.

Managing environmental risk: We suggest that monitoring of sedimentary processes could also be undertaken to establish the baseline and measure the impacts of offshore and associated inshore development, particularly the impacts on flooding and coastal erosion, where infrastructure crosses the coast.

Managing environmental risk 14 (p384): We agree that research is needed on the environmental implications of the accidental releases of dense phase of supercritical CO_2. There may be adverse

impacts on protected habitats and species resulting from accidental releases of CO_2. In addition, there may be onshore infrastructure required to facilitate the storage of CO_2 (such as onshore pipelines or storage facilities). The cumulative and knock-on effects of onshore facilities required to facilitate the transport of dense phase or supercritical CO_2 could be assessed.

The timing of any research (and recommendations arising) into CO_2 accidental releases may impact on the timetable for the delivery of the required onshore and offshore infrastructure. The SEA could recommend that a plan should be made for undertaking the required research. This will ensure that any recommendations arising from the research can be incorporated into the timetable for the delivery of onshore and offshore facilities.

Improving the marine management information base 20 (k) (p385): We agree that further research needs to be considered in the context of the Defra review of Round 1 and 2 of wind farm monitoring. If offshore wind farms are to be sited before this research is complete, then a precautionary approach could be taken. For example with regards to the effects of EMF on fish, sub-sea power cables could be buried or insulated in order to protect migratory fish from EMF affects arising from these.

6.2 Monitoring: We suggest that a further recommendation for monitoring could be included to encourage developers to share their data with regulators. The Water Framework Directive (WFD) requires ecological monitoring and status assessment of our coastal and estuarine/ transitional waters. To ensure the best possible confidence in our status assessments we aim to utilise as much suitable data as possible. Using approved standard monitoring, for example WFD standards, and sharing results, would improve our understanding of the environment and the impacts on it. We have established a WFD marine ecological monitoring programme, and this could be applied in these situations too. However, a significant amount of monitoring carried out by external organisations, for example, consultancies undertaking Environmental Impact Assessment or research projects, could also be used to improve the evidence base, and aid future decision making.

Additional plans, strategies and policies

For information, the following Welsh Assembly Government (WAG) strategies and policies are currently being developed and could be useful in informing the implementation of the plan/programme in Wales:

- Natural Environment Framework (NEF), "A Living Wales: a new framework for our environment, our countryside and our seas" (consultation document 2010). WAG have advised that all policies and plans should follow NEF principles. The NEF focuses on managing the environment as a whole, following an "ecosystem services" approach. WAG's website gives further information: http://wales.gov.uk/topics/environmentcountryside/consmanagement/nef/?lang=en

- "Sustainable Development for Welsh Seas: Our Approach to Marine Planning in Wales" is currently out for consultation. The document is available from the following link: http://wales.gov.uk/consultations/environmentandcountryside/marineplanning/?lang=en

- "Flood and Coastal Erosion Risk Management: Development of a National Strategy for Wales". Consultation on this took place in 2010. Further information can be found on WAG's website: http://wales.gov.uk/consultations/environmentandcountryside/floodstrategy/?lang=en

- "Energy Policy Statement" (2010). This sets targets that reflect Wales' sustainable energy potential. The Statement can be accessed from the following link: http://wales.gov.uk/topics/environmentcountryside/energy/renewable/policy/lowcarbonrevolution/?lang=en

Response to government consultation on the Offshore Energy Strategic Environmental Assessment

1. Summary

1.1. Greenpeace believes that if the Government is serious about tackling climate change, the UK's energy policy must reduce our reliance on fossil fuels and increase our use of cleaner energy sources.

1.2. This is not an abstract discussion about values or ideologies, but a pragmatic, rational and necessary position for the UK to adopt. Making the UK less reliant on dangerous or polluting energy sources will not only help us contribute towards the global effort to reduce greenhouse gas emissions and help us meet the UK's legally binding climate targets; it would increase our energy security and insulate the country from experiencing or partly causing occasional energy-related crises such as the oil spill in the Gulf of Mexico, the recent volatility in oil prices and the unfolding nuclear crisis at Fukushima.

1.3. Enabling sustainable energy sources, as part of a wider policy of shifting the UK on to a low carbon footing, must be central to the UK's offshore energy policy. Greenpeace believes that a commitment to shift energy policy to renewable resources should be reflected in our overall policy objectives, but also embodied in the implementation strategies and regulations.

1.4. This means being upfront about the full potential impacts of dirty energy, including any major incidents in offshore environments and putting in place the necessary frameworks to enable businesses, public bodies and communities living along our coastline to drive this energy shift forward.

1.5. The Government should therefore amend the Offshore Energy Strategic Environmental Assessment to fully account for the potential impact of a major oil spill arising from off-shore oil and gas extraction. It is particularly important for this information to be included and clearly signposted within the non-technical summary, as that section of the assessment is presumably aimed at the general public.

2. Introduction

2.1. Greenpeace welcomes the opportunity to respond to this consultation on the second iteration of the Offshore Energy Strategic Environmental Assessment. With the disaster in the Gulf of Mexico still fresh

in people's minds, we believe that the time is right for a full and frank discussion about our offshore energy strategy and the potential impact of different elements within the energy mix.

2.2. However, we feel that the consultation process itself was somewhat lacking. The Cabinet Office Code of Practice on Consultation suggests a number of useful ways in which Government departments can facilitate a meaningful and constructive conversation with the public.[i] For example, it states that consultations should be held at a time when consultees can meaningfully feed into the process, and that there should be clarity about the scope and impact of the consultation.

2.3. The Code of Practice on Consultation proposes that "The subject matter, any assumptions the Government has made, and the questions in the consultation should all be as clear as possible." It is in this respect that this consultation is particularly lacking. It is entirely unclear what is being asked of respondents – such as, the extent to which, or indeed whether, we agree with the assessments of impacts or the policies *per se*. For comparison, the initial scoping document outlined seven specific questions which the Government was seeking answers to, enabling respondents to properly structure their arguments in a constructive manner.

2.4. Further, we highlight a number of occasions where the non-technical summary, presumably intended for use by the public at large, is lacking or inconsistent with the full report.

3. Oil and gas: reduce demand to reduce extraction impacts

3.1. Greenpeace has two major concerns with the UK's policy of encouraging new fossil fuel extraction from North Sea oil reserves. Firstly, maintaining our dependence on oil undermines our ability to tackle climate change and leaves the UK exposed to oil price volatility. Secondly, as the Deepwater Horizon disaster shows, the risks associated with deep-water drilling are potentially catastrophic for the natural environment.

3.2. We do not believe that the SEA adequately recognises the full environmental impacts of current offshore energy policy, especially the risks and impacts of a spill in deep water. Neither are the climatological impacts of pursuing the UK's energy adequately represented in the non-technical summary. Each of these omissions should be remedied when the final version is published.

We cannot stop climate change until we reduce our dependence on oil

3.3. If we are serious about reducing carbon emissions and ensuring that we keep the rise in average global temperature under 2°C, we need strong policies to reduce the demand for oil. Only by reducing demand for oil can we bring UK emissions of GHGs to within acceptable levels within a realistic timeframe.

3.4. The International Energy Agency's 2009 annual report examined two energy use scenarios and their impact on the climate. The 'business as usual' scenario assumed that governments did not introduce policies to reduce energy use; oil demand was therefore forecast to increase from 86 million barrels / day in 2010 to 105 million b/d in 2030. This, the IEA found, would mean "rapidly increasing dependence on fossil fuels and … massive climatic change and irreparable damage to the planet."

3.5. The IEA's alternative scenario assumed that policies to limit greenhouse gas emissions were introduced. To meet this scenario, they forecast that fossil fuel consumption would need to peak by 2020; US oil demand in 2030, for instance, was predicted to be 30% less than it was in 2007. This, the IEA found, both achievable and necessary to prevent runaway climate change.

3.6. Their findings, we believe, emphasises the need to be clear about the global climatological impacts of using oil extracted from UK waters as well as the local environmental impacts. Unfortunately, the references in the Strategic Environmental Assessment do not convey these impacts with sufficient clarity.

References to climactic impacts of the UK's energy policy are cursory and misleading

3.7. The non-technical summary understates the impact of carbon dioxide emissions resulting from the extraction and use of oil on the global climate. It is simply untrue to state that hydro-carbon extraction in UK waters has a minimal impact on total UK GHC emissions.[ii] Even though North Sea oil production is forecast to halve by 2025, the Department for Energy and Climate Change has estimated that 40% of our oil demand would come from domestic sources.[iii]

3.8. The UK government's supply-side policies of expanding North Sea oil extraction, through regressive tax breaks for the extractors (e.g. New Field Allowances) and priority access to the sea bed, considered in conjunction with the lack of meaningful policies to reduce oil demand, will hinder progress towards climate change goals. It is highly unlikely that greenhouse gas emissions reductions as set out in the Climate Change Act 2008 can be met if oil demand remains constant over the next 14 years, as DECC is presently forecasting.

3.9. Climate change is a real, and pressing, danger which can only be averted by facing up to the implications and adopting pragmatic, sensible and necessary policies to reduce demand for fossil fuels and increase supply of renewable energy. This can only be achieved by explaining the impact of specific policies, such as the Government's offshore energy policy, so that the public is able to properly engage with these issues.

3.10. Greenpeace believes that the Governmnt's offshore energy policy is, at present, a hindrance to our meeting our legally-binding CO2 targets. This must be adequately reflected within the OESEA2 non-technical summary.

The lack of information about the risk of oil spills is alarming

3.11. Greenpeace has serious concerns about the government's policy to encourage exploration and extraction of fossil fuel resources in UK waters. As the Government response to the Energy and Climate Change Committee's inquiry into the safety of offshore drilling makes clear, "Drilling for petroleum is an intrinsically hazardous activity."

3.12. There is also no recognition in the non-technical report of the fact that some regions, such as the west of Shetland, present new risks and challenges in terms of both the technical challenges of recovering oil at depth and the hostile conditions in which oil companies must operate.

3.13. The disaster in the Gulf of Mexico shows that we cannot simply cross our fingers and hope that incidents of this scale never happen. Instead, we need to face up to the risks of offshore drilling, drive down the likelihood of accidents occurring, and then ensure that we do not allow drilling in areas, such as in deep-water locations, where the level of risk cannot be brought to within acceptable levels.

3.14. The main report acknowledges that "Oil spills are probably the issue of greatest public concern in relation to the offshore oil and gas industry".[iv] But the non-technical summary, which is intended to summarise the main report in a manner accessible to the lay public, makes no reference to the matter which most concerns its intended audience. This is a serious and alarming omission and materially jeopardises the strategic environmental assessment.

3.15. It is helpful that there are at least tacit nods to the impact an oil spill might have on geological sediment and the water environment. However, it does make the glaring omission of any reference to the risk of a spill on biodiversity, tourism and the coastal economy all the more peculiar.

3.16. We cannot have the necessary debate about the role of different energy sources within the final energy mix if the Government doesn't come clean about the potential risks each option poses. The non-technical summary of the Strategic Environmental Assessment is exactly the place where this information should be provided, and it is extremely concerning that the most relevant material is notable by its absence.

The impacts of the Gulf of Mexico oil spill are still being ascertained

3.17. Just over a year ago, eleven people died following an explosion on the Deepwater Horizon drill rig in the Gulf of Mexico. This was the biggest oil spill in US history and may be second only to the destruction of the Kuwaiti oil fields by Saddam Hussein in 1991 in terms of global oil spill events.[v] Recently, it is estimated that 4.9 million barrels of oil leaked into the Gulf as a result of the explosion.[vi]

3.18. It is still too early to quantify the full extent of the environmental, social and economic damage caused by the oil spill but it is clearly of huge consequence. The impact on fisheries, wildlife, both coastal and marine, and tourism and recreation industries in the region will likely be felt for decades to come. There are concerns that the presence of so much oil in the marine ecosystem is killing certain species while encouraging others to proliferate, with serious implications for the entire food web.[vii]

3.19. Greenpeace USA has been working closely with independent scientists to identify the probable impacts of the spill. Their research has demonstrated that the US Government and BP have actively downplayed the impact of the spill.

3.20. Carol Browner, at that time the president's special adviser on energy and climate change, said in August that "more than three-quarters of the oil is gone. The vast majority of the oil is gone." She based this statement on a report produced, in part, by the National Oceanic and Atmospheric Administration (NOAA). But NOAA administrator Jane Lubchenco has subsequently distanced her agency from the report. "I would hope that everyone would emphasize that this was an interagency report, not just a NOAA report," she said, before explaining that "It is not accurate to say that 75% of the oil is gone."

We should not be deepwater drilling until we know how to prevent a Deepwater Horizon-style disaster

3.21. The safety lessons from the Deepwater Horizon incident have not been learned yet - for the simple reason that the not all of the official investigations into the cause of the disaster have been published. What conclusions have been arrived at point to systemic, industry-wide problems which cannot be tackled overnight or by making slight changes to the regulatory regime.

3.22. BP's own investigation, the Bly report, was published in September. It identified a series of failures, both human and technological.[viii] The catalogue of errors points to a systemic failure to embed health and safety concerns into day-to-day operating procedure and mirrors the conclusions drawn by the UK's Health and Safety Executive about the safety of offshore drilling in UK waters (see below).

3.23. It must be remembered that the Bly report was not an analysis of ways to tighten the regulatory regime in order to prevent future accidents. Instead, it has been widely seen as an attempt to spread blame from BP to its contractors, as a possible precursor of BP's legal strategy.

3.24. Indeed, the OESEA2 technical summary notes that:

> "The Energy and Climate Change Committee… indicated that the BP… repor … did not contain a root-cause analysis of the events that led to the blowout of the Macondo well. The Committee urged the Government not to rely extensively on the Bly Report, given the controversy surrounding the responsibility for the incident and the design of the Macondo well, but rather to consider its conclusions in parallel with the observations of other companies involved with the incident, and with the recommendations of US agencies investigating the incident."

3.25. In March, the results of a forensic inquiry into the Blowout Preventer, the piece of equipment that should have sealed the leak almost immediately oil began gushing, found that its design was fundamentally flawed in that it was unable to perform as planned because the force of the escaping oil caused the wellhead pipe to buckle – a finding that calls into question the safety of every offshore platform currently in operation.[ix]

3.26. The January 2011 report by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling noted that "Transocean failed to adequately communicate to its crew lessons learned from an eerily similar near-miss on one of its rigs in the North Sea four months prior to the Macondo blowout… Transocean has suggested that the North Sea incident and advisory were irrelevant to what happened in the Gulf of Mexico… [But these] are largely cosmetic differences. The basic facts of both incidents are the same. Had the rig crew been adequately informed of the prior event and trained on its lessons, events at Macondo may have unfolded very differently."[x]

3.27. The Commission concluded that, although offshore drilling is inherently dangerous and even though what happened to the Deepwater Horizon could "be traced to a series of identifiable mistakes made by BP, Halliburton, and Transocean that reveal such systematic failures in risk management that they place in doubt the safety culture of the entire industry," the accident could and should have been prevented.[xi]

3.28. The UK has belatedly begun its independent review of the off-shore oil and gas regulatory regime, and announced the appointment of a number of people to the review panel in April 2011. But the review panel is unlikely to reach even initial findings for several months. Yet the UK continues to approve new deep water drilling licenses, despite not knowing properly what caused the Deepwater Horizon disaster (and therefore whether such an accident is likely to occur in British waters).

3.29. Greenpeace believes that the Government's decision to license new drilling off the coast of Shetland without properly considering the evidence from Deepwater Horizon, or waiting for its own independent review of Deepwater Horizon to produce its findings is unlawful. Greenpeace believes that

there must be an appropriate assessment under the Habitats Directive of any plan or project to drill for oil in deep water.

The oil industry has consistently ignored safety warnings about deep water drilling

3.30. The difficulty of completely stopping a blown out well at 5000ft below sea level has become startlingly clear with the multiple failed attempts made at Macondo.[xii] The ultimate solution, the drilling of relief wells, takes months. The low temperatures and high pressures present at these depths make speedy and effective mitigation very difficult[xiii].

3.31. Some of the dangers of working at these extreme depths were highlighted to the US Minerals Management Service (MMS) and other industry bodies by experts a number of times in recent years. But the warnings appear to have been dismissed. There is a clear danger that the warnings will be dismissed in the UK as well.

3.32. A presentation to the Society of Petroleum Engineers in February 2003 warned that MMS procedures for offshore blowout containment dated back to 1990 and did not consider operations in water deeper than 1500ft.[xiv] The author posed the question of whether the chances of a blowout increased with water depth and concluded that the "the odds are not in our favour".[xv]

3.33. The plans for controlling blowouts in the UK context are no better. The government recently released oil spill response plans submitted by BP setting out how they would respond to an oil spill in wells in UK waters. In this plan, BP admit that – "the oil spill consequences of a catastrophic failure of a deep sub-sea well head, either due to equipment failure or accidental damage, have never been considered in detail."[xvi]

Industry standard oil spill modeling software is unable to accurately model oil spills

3.34. DECC claims that operators are required to model 'worst case scenario' impacts of a major spill prior to receiving a license to drill. But attempts to model the impact of major spills using computer programmes have been a colossal failure, with computer software simply unable to cope with modeling the specifics of spills in deep water and lasting more than a few weeks.

3.35. OSIS 4.2 is the industry standard software for modeling offshore oil spills. Despite this, it has only been validated in sea trials lasting no more than three days, and therefore "may not provide an accurate representation of how the oil would disperse."[xvii] DECC's evidence to the ECC Committee acknowledged that OSIS "has limitations with regard to predicting long term spill and deep water predictions".[xviii]

3.36. OSIS 4.2 may be unreliable for modeling spills lasting more than three days, but it is completely unable to model spills lasting more than a fortnight or so. Chevron, which uses OSIS 4.2, admitted that the software crashed when it tried to model a 20 day spill, leading it to revise downwards its impact modeling to 14 days, because that was the extent of the software's capabilities.

3.37. Similarly, Valiant Petroleum, which has just applied for permission to drill off the coast of Shetland, found that "Modelling could not be carried out to simulate a spill which is ongoing for the full 53 day period required to drill a relief well as this is currently beyond the capabilities of the OSIS 4.2 model." Instead, it modeled spills lasting 10 days.[xix]

The industry's safety regime shows systemic disregard for accident prevention

3.38. The UK Government has commissioned a review of the offshore drilling safety regime which is due to report later this year. However, within weeks of the blowout in the Gulf of Mexico it had completed an 'emergency review', on the basis of which it has declared the regulations 'fit for purpose' and rejected calls for a moratorium.

3.39. Historically, the inspection of offshore oil rigs has been anything but comprehensive. DECC's submission to the Energy and Climate Change Committee's inquiry states that "In 2009 DECC carried out 12 drilling rig inspections of which 1 was in deep water. There is currently 1 deep water inspection planned for 2010/11." DECC inspectors have, on average, examined a total of 8 rigs per year, although they envisaged at least 16 inspections in 2010.

3.40. DECC told the ECC Committee that it had doubled the rate of deep water inspections,[xx] but only from one to two per year, and increased the number of inspectors from 6 to 9.[xxi] However, it is doubtful that this will be frequent enough to affect working practices on offshore rigs, because the frequency of companies failing inspections indicates a systemic failure to take adequate precautions to protect staff and prevent oil spills from offshore exploration and extraction.

3.41. In offshore inspection records released to the Financial Times under the Freedom of Information Act, all but one of BP's five North Sea installations inspected in 2009 were cited for failure to comply with emergency regulations on oil spills and rules on regular training for offshore operators on how to respond to an incident.[xxii] The Health and Safety Executive has issued BP with a total of 7 'notices of improvement' for a single project at Schiehallion in the West of Shetland.[xxiii]

3.42. Similarly, the other major party to the Deepwater Horizon incident has also been chastised by HSE. In April, the HSE published a letter to Transocean, which noted that "The current and proposed verification schemes for your installations operating in the United Kingdom Continental Shelf do not include an accurate list of safety-critical elements (SCEs) and do not ensure that safety-critical elements and

specified plant are suitable." Safety-critical elements are structures and equipment, like blowout preventers; a failed blow-out preventer has been identified as the cause of the Deepwater Horizon disaster.

3.43. There is a growing body of evidence to suggest that these are not isolated problems. The HSE reports annually on the offshore industry's safety record, and this year issued a stern warning over the increase in both serious accidents and spilled oil.[xxiv] It labeled the industry's performance 'not good enough'. Steve Walker, head of the offshore division, commented: 'I am particularly disappointed, and concerned, that major and significant hydrocarbon releases are up by more than a third on last year. This is a key indicator of how well the offshore industry is managing its major accident potential, and it really must up its game to identify and rectify the root causes of such events'.[xxv]

3.44. Given these clear and repeated failures by the offshore oil industry to maintain even the most basic of safety standards, and the clear and present danger of a major oil spill, we do not believe that the Government can afford to be so complacent about offshore drilling. This is even more so the case for exploratory and extraction wells in especially hostile environments, such as in the deep water off the west of Shetland.

Drilling to the west of Shetland carries particular risks which must be recognised in the SEA

3.45. There is a clear difference between conventional North Sea oil drilling and drilling off the western coast of Shetland. Firstly, the west of Shetland region is home to diverse and abundant wildlife. Any spill would be highly likely to cause harm to these delicate ecosystems. Yet there is no reference to the impact a spill would have on the wildlife or ecosystems to the west of Shetland anywhere in the non-technical summary.

3.46. For example, the seas off the west coast of Shetland is home to:

- Endangered Fin and Sei whales, vulnerable Sperm whales, as well as Killer, Humpback, Minke and Long-Finned Pilot whales.
- Several species of dolphin and porpoise and three species of seal.
- 48 species of seabird, including Fulmars, Manx Shearwater, European and Leach's Storm Petrels.[xxvi]

3.47. The area off the coast of Shetland also contains two 'special areas of conservation' (SACs) - Darwin Mounds, designated for its cold water corals, and Wyville Thompson Ridge, proposed for its stony reef species and bottle nose dolphins.[xxvii] These areas are designated SACs because of their significance to European biodiversity.

3.48. Secondly, there is a greater risk of an oil spill from deep water drilling. Malcolm Webb, Chief Executive of Oil and Gas UK, told the ECC Committee that "deep water brings some particular risks with it". The Committee noted that drilling in deep water “presents unique technical challenges related to greater water depths, higher pressures, manipulating the extra long riser pipe connecting the wellhead to the rig (over 1,500m in the case of the Deepwater Horizon), extreme temperature gradients and added costs”.

3.49. Thirdly, the extreme temperatures and conditions off Shetland would hinder clean up efforts, exacerbating the damage caused by any oil spills. Oil in cold water naturally disperses more slowly than the in the Gulf of Mexico, and microbial dispersants would be less effective. The ECC Committee concluded that “There are serious doubts about the ability of oil spill response equipment to function in the harsh environment of the open Atlantic in the West of Shetland.”

3.50. But the final word on the impact of a spill off the coast of Shetland must to go to the Secretary of State, Chris Huhne. Huhne acknowledged in parliamentary debate on 14 June 2010 that an oil spill west of Shetland “would be an absolutely enormous environmental disaster”.

4. Renewable energy: promote clean energy as alternative to fossil fuels

4.1. The impact of fossil fuel extraction and consumption far outweighs the limited and location-specific impacts of renewable energy production. However, this is not obvious from the non-technical summary, because of the relative space given over to relatively minor impacts from renewables, and the lack of any meaningful discussion of the real impacts of offshore drilling, especially in deep water.

4.2. It should be made clear within the OESEA2 report – both technical and non-technical sections – that renewable energy has significantly lower impacts than oil and gas. This means putting the relatively minor impacts arising from renewable energy – such as the noise impact of ‘piling’ – into perspective, by comparing them with fossil fuel extraction. For example, it could be argued that the impact of even a relatively minor oil spill on birdlife and biodiversity is likely to outweigh the cumulative impact of offshore wind farms.

Renewable energy companies should have priority access to the sea bed

4.3. Oil companies currently receive priority access to the sea bed under rules for The Crown Estate that owns the sea beds around Britain. Leases of offshore wind projects contain a clause which gives the Secretary of State the power to switch from offshore wind to oil and gas should new reserves be found.

4.4. This means that if an oil company and renewable energy company both require access to the same area of the UK Continental Shelf, the Secretary of State can intervene on behalf of the oil company

without offering any form of compensation to the renewable energy company. This is even the case where a renewable company has already received a licence.

4.5. Unsurprisingly, this creates huge uncertainty for investors in renewables who face having their licences revoked if oil companies want access to the same area of sea bed. It is a clear example of the institutional priority given to fossil fuels over clean energy and threatens Britain's ability to meet its 15% renewable energy commitment by 2020.

4.6. Greenpeace believes that this bias towards fossil fuel production should be reversed. We believe that the government should address this in the Energy Bill by enacting legislation that gives at the very least gives equal access to renewable energy companies, as a first step towards giving priority access to low carbon sources of energy.

5. Conclusion: the OESEA2 reports do not properly quantify the impacts of offshore energy

5.1. In our response to this draft Strategic Environmental Assessment, we have outlined a number of areas where we believe further information should be provided. Broadly, these areas are:

- The climatological impacts of the UK's energy policy, and the properly quantified GHG emissions arising from the extraction of North Sea oil and gas and of using the UK's offshore fossil fuel resources as an energy source, especially in the non-technical summary.
- The risks associated with oil and gas exploration and extraction and the impacts of an oil spill, relative to the risks and impacts arising from offshore renewable energy, especially in the non-technical summary.
- The particular risks associated with deepwater exploration and extraction off the West coast of the Shetland Isles, especially in the non-technical summary.

5.2. Greenpeace does not believe that the OESEA2, as currently drafted, is fit for purpose, and urges the Government to amend it, in line with our recommendations, prior to publication.

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[i] http://www.bis.gov.uk/files/file47158.pdf
[ii] Non-technical summary, xvii.
[iii] https://www.og.decc.gov.uk/information/bb_updates/chapters/production_projections.pdf
[iv] P 292.
[v] Journal of Petroleum Engineers, Ibid.
[vi] http://www.washingtonpost.com/wp-dyn/content/article/2010/08/02/AR2010080204695.html
[vii] Huffington Post, 14 July, 2010. *Gulf Oil Spill Altering Food Web Scientists Say, Long-Term Impact Unknown*. www.huffingtonpost.com/2010/07/14/gulf-oil-spill-altering-f_n_645607.html
[viii] BP – 'Deepwater Horizon: Accident Investigation Report', 8th September 2010

http://www.bp.com/sectiongenericarticle.do?categoryId=9034902&contentId=7064891

[ix] http://www.deepwaterinvestigation.com/external/content/document/3043/1047291/1/DNV%20Report%20EP030842%20for%20BOEMRE%20Volume%20I.pdf

[x] P 124-5

[xi] Oil Spill Commission Final Report, p. vii http://www.oilspillcommission.gov/sites/default/files/documents/FinalReportIntro.pdf

[xii] BBC News, 15 June, 2010. *Stopping the oil interactive guide*. www.bbc.co.uk/news/10317116

[xiii] http://www.boemre.gov/tarprojectcategories/deepwate.htm

[xiv] Ray Tommy Oskarsen, presentation to the Society of Petroleum Engineers and International Association of Drilling Contractors 2003 Conference, 21 February, 2003. *Recent Advances in Ultra-deepwater Drilling Calls for New Blowout Intervention Methods*. Available at: www.pe.tamu.edu/schubert/public_html/DOE_SLB%20short%20course/21.1%20Well%20Control.ppt

[xv] Ibid

[xvi] The Telegraph – 'BP Oil Spill: Deepwater oil blowout in North Sea not considered by BP', 8th September 2010 http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/7987873/BP-oil-spill-Deepwater-oil-blow-out-in-North-Sea-not-considered-by-BP.html

[xvii] Valiant Petroleum environmental statement, page 4-22. https://valiant-petroleum.box.net/shared/static/cltdlx5y5k.pdf

[xviii] Para 74

[xix] Valiant Petroleum environmental statement, page 4-22. https://valiant-petroleum.box.net/shared/static/cltdlx5y5k.pdf

[xx] DECC press release – 'UK increases North Sea rig inspections, 8th June 2010 http://www.decc.gov.uk/en/content/cms/news/pn10_067/pn10_067.aspx

[xxi] The Guardian – 'North Sea oil rigs will face tougher environmental scrutiny after BP spill', 8th June 2010 http://www.guardian.co.uk/business/2010/jun/08/huhne-environment-checks-oil-bp-deepwater

[xxii] Financial Times – 'BP cited for safety lapses in the North Sea', 15th September 2010 http://www.ft.com/cms/s/0/e2ac5bb6-c03a-11df-b77d-00144feab49a.html#

[xxiii] http://platformlondon.org/documents/offthedeepend.pdf page 10

[xxiv] HSE press release – 'Offshore warned over not good enough safety statistics', 24th August 2010 http://www.hse.gov.uk/press/2010/hse-offshorestats.htm

[xxv] Ibid

[xxvi] Joint Nature and Conservation Committee – 'The distribution of seabirds and marine mammals in the Atlantic Frontier, North and West of Scotland', 2000, P5 http://www.jncc.gov.uk/pdf/part1.pdf

[xxvii] Joint Nature and Conservation - Marina Natura 2000, September 2005, P63 http://www.jncc.gov.uk/PDF/comm05P10.pdf

HISTORIC SCOTLAND

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Our ref: AMN/23/480 AS

12 May 2011

Dear Sirs

Environmental Assessment of Plans and Programmes Regulations 2004
DECC – UK Offshore Energy
Environmental Report

Thank you for consulting Historic Scotland on the environmental report for the Department for Energy and Climate Change's UK Offshore Energy Place which was received by the Scottish Government's SEA Gateway on 15 February 2011. I have reviewed the Environmental Report on behalf of Historic Scotland and should make clear that this response is in the context of the SEA Regulations and our role as a Consultation Authority.

I welcome that the comments we provided on the Scoping Report on 8 April 2010 have been taken into account during the preparation of the Environmental Report and I note the limitations in scope of the OESEA2 in relation to the Scottish Renewable Energy Zone and territorial waters. It is clear that a great amount of effort has gone into the preparation of the assessment and I am content to agree with its findings in relation to our historic environment interests. Furthermore, I note that as no strategic level controls have been identified for the historic environment, the onus of specific impact identification and mitigation is handed down to lower level assessments. I am content to agree with this approach.

None of the comments in this letter should be taken as constituting legal interpretation of the requirements of the above Regulations. They are intended rather as helpful advice, as part of Historic Scotland's commitment to capacity building in SEA.

Please do not hesitate to contact me on 0131 668 8960 should you wish to discuss this response.

Yours sincerely

Andrew Stevenson
Senior Development Assessment Officer

Isle of Man
Government
Reiltys Ellan Vannin

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Director of Planning & Building Control
Michael Gallagher MRTPI

Date: 12th May 2011

Dear Sir / Madam,

RE: UK Offshore Energy SEA2 Environmental Report Consultation

Thank you for providing the Isle of Man Government with the opportunity to review and comment on the above document. We found it a useful and interesting consultation document and await the associated outcomes. We would comment as follows.

The document provides the reader with a robust and comprehensive overview of what will be undertaken as part of this project. The Isle of Man Government is satisfied from the information in this document that all international environmental standards and best practice will be adhered to when undertaking and analysing the data obtained within the identified area, and will ensure appropriate mitigation measures are in place to address any concerns identified throughout the Environmental Impact Assessments process. You may already be aware that the Island is outside the EU so is not covered by most European directives. It is expected that the relevant European environmental safeguards and best practice are to be followed.

It is noted that the cumulative effects will be thoroughly investigated. However, of particular concern would be the habitats and species found within Isle of Man waters (particularly those protected under Manx law or identified as threatened or declining by the OSPAR Convention) which may be affected by the proposed developments. Any marine developments within or adjacent to the Isle of Man territorial waters could potentially impact on commercial fisheries in Manx waters so it would be appreciated if updates were provided on any progress being made by the Company Fishing Liaison Officer.

Further information regarding the location and details of Isle of Man conservation sites and protected species (in Manx legislation) within the proposed area can be provided. It is important to be aware that these are at a stage where there could be frequent changes. The Isle of Man is also signed up via the UK to the OSPAR Convention, the Convention on Migratory Species, ASCOBANS and other international conventions.

It is appropriate to emphasise the international importance of the Irish Sea for basking sharks (IUCN red listed, OSPAR priority species). The area to the south west of the Isle of Man is of particular Manx interest but the species ranges widely throughout the waters of the British Isles. Detailed information now exists on the distribution of basking sharks in Manx waters and beyond. In 2009 74% of all British Isles public sightings of basking sharks were reported from the Isle of Man (Marine Conservation Society 2009).

We hope that you will ensure that the use of the proposed site by basking sharks is fully assessed. Recent tagging work by Manx Basking Shark Watch may give additional insight which will assist with this. Your attention is drawn to additional research into cetaceans that has been carried out since 2005 by Manx Whale and Dolphin Watch which has highlighted the importance of Manx waters for Risso's dolphins and other cetaceans.

We would also appreciate if acknowledgement is given to our shipping navigation routes and established infrastructure within the Irish Sea Zone.

Should you require any further information or clarification on any of the above, please do not hesitate to contact me at the address above, by telephone 01624 686301 or by email emma.rowan@gov.im.

Yours sincerely,

Emma Rowan
Marine Spatial Planning Project Officer

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Date: 11th May 2011

UK OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT ENVIRONMENTAL REPORT CONSULTATION

Dear Sirs,

Many thanks for your invitation to comment on the UK Offshore Energy Strategic Environmental Assessment (OESEA2) Environmental Report.

The Statutory Nature Conservation Bodies (SNCBs)[1] have worked together closely to consider the OESEA2 and have agreed this letter to be a joint response. Please note that in addition to being a part of this joint response additional comments may be provided by the SNCBs on an individual basis.

As you are aware, all of the SNCBs have contributed to the SEA process at the SEA scoping stage and as contributors to stakeholder workshops. The SNCBs place great importance on engaging with the SEA process and welcome the structured and open way in which participation has been managed and commends DECC on the comprehensive and rigorous approach it has adopted in carrying out this assessment.

In summary, the SNCBs agree that the OESEA2 Environmental Report that has been undertaken accounts for the potential impacts of energy production at a strategic level through a detailed assessment of the issues and identification of the 27 recommendations. We also support the overall conclusions of the assessment and the recommendations that have been made. We note that the geographical scope of the Plan and associated OESEA2 does not include Scottish territorial waters for marine renewables, and our comments reflect this. With regard to the recommendation that the bulk of new offshore wind capacity should be located well away from the coast, generally outside 12 nautical miles, this is supported for English and Welsh waters.

In commenting on the Environmental Report, the SNCBs highlight in particular:

[1] Countryside Council for Wales (CCW), Joint Nature Conservation Committee (JNCC), Natural England (NE) and Scottish Natural Heritage (SNH)

- The need for, and potential benefits to the process of, more clearly defining the plans/programmes that are under assessment;
- The need for recognition of the limitations of the SEA process that has been adopted leaving identification of and solutions to consenting risks at the project level, and instead to identify in greater detail the options that are available to manage project consenting risk in a strategic manner;
- The importance of the research and information gathering carried out under the SEA process in identifying and addressing issues in advance and addressing them through research to support planning and consenting;
- That a wide range of important matters have been identified in the Environmental Report recommendations and that these will need to be addressed in implementing the plan(s)/programme(s);
- the need to take early account of the environment in planning for grid and associated infrastructure;
- The growing importance of understanding the relationship between Marine Planning and sectoral planning and assessment processes such as the SEA.

We have elaborated on these issues in our general comments provided below in Annex 1 to this letter. We have also included some specific comments in Annex 2 to this letter.

Should you require any clarification over our comments then please contact me in the first instance: ollie.payne@jncc.gov.uk or 01224 – 266582; or alternatively Finlay Bennet: finlay.bennet@jncc.gov.uk or 01224 – 266553.

Yours faithfully

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Ollie Payne

Marine Protected Areas Stakeholder Liaison Officer

Joint Nature Conservation Committee

(cc: Mareike Moeller-Holtkamp – SNH;

Andrew Hill – CCW;

Victoria Copley - NE;

Finlay Bennet - JNCC;)

Annex 1 – Joint SNCB general comments on the UK OESEA Environmental Report

The context and background information provided as a basis for assessment are comprehensive, the data robust, and knowledge gaps about offshore renewable industries, in particular those for wave and tidal, are acknowledged.

We agree that the OESEA2 that has been undertaken accounts for the potential impacts of energy production at a strategic level and overall we support the conclusions of the assessment and the recommendations that have been made. However, it is not clear whether there is any intention for DECC to undertake a Habitats Regulation Appraisal (HRA) in support of the OESEA2. We ask for DECC to clarify whether there is a requirement for one to be undertaken as our recommendation is that one should accompany the OESEA2.

In order to provide structure to our response, we have split our comments into topics which refer to themes occurring through the Environmental Report. The Recommendations section of this Annex provides our overall comments. Annex 2 provides specific comments on sections of the ER, where appropriate.

Deferring assessment to the project level

The ER understandably defers assessment of the effects of some activities to the level of individual projects because of the lack of detail about activities that may emerge from the plan/programme. We suggest that the ER recommends that processes that are established to support the implementation of the plan/programme (e.g. for grid, ports etc) should explore environmental issues at an early stage. There are potential opportunities to consider HRA issues early on and at a strategic level.

Defining assessment of plans/programmes under the Habitats Directive

Because the plan/programme is less well defined, it is less clear whether these activities will be promoted within a single combined plan or programme or whether they will be brought forward individually within separate plans and programmes. In adopting the plan/programme it would be helpful to clarify the nature of, and responsibility for, any subsequent assessment of plans that will be required under the Habitats Directive.

Offshore Wind – Cumulative Effects

The scale of offshore wind farm development that is built, consented or anticipated as part of the plan/programme[2] is considerable. Development is also likely to take place as part of other plans/programmes for renewable energy, notably in Scotland and Northern Ireland, which are not part of the plan/programme that this SEA assesses. There is therefore considerable scope for the effects of these plans/programmes to act in combination.

The OESEA2 recognises that significant constructed, consented or planned development is concentrated in particular areas, including for example in Liverpool Bay and Greater Wash areas. The capacity of certain areas to accommodate further development would benefit from further assessment before decisions about individual developments are made. At a strategic level it

[2] E.g. Round 3 and potential future development rounds as stated on page 15 on the Environmental Report

would be possible to focus resources on the collection of evidence that would help address uncertainties that could act as a consenting risk for projects e.g. population models, avoidance rates and evidence of displacement impacts. Subsequent leasing rounds should also be sufficiently flexible to allow for relocation of individual project proposals on the basis of strategic and iterative assessments of the environmental implications.

The Environmental Report states that an assessment of the cumulative effects of offshore wind farm development on birds cannot be conducted because of lack of information[3]. There is considerable scope for adverse effects, including on birds that are features of European Sites. For example evidence[4] suggests additional development in Liverpool Bay may, under certain circumstances, have a significant effect on common scoter that are a feature of Liverpool Bay SPA. There is therefore considerable uncertainty about the capacity of areas, such as Liverpool Bay, to accommodate further development. In the absence of more detailed assessment of the cumulative effects on birds, the recommendation that offshore wind farms be largely located beyond 12nm is an important way of reducing environmental and consenting risk. However, as outlined above we believe that further strategic assessment is needed.

There is also a risk that certain marine mammal populations could be exposed to the cumulative effects of disturbance caused by the construction of several windfarms and undertaking of seismic surveys in their natural range. This is in relation not only to concurrent activities exposing the same population but those consecutive activities which over the course of a certain period may add up to elicit a significant effect. The OESEA2 falls short of adequately assessing whether the draft plan/programme being considered carries a significant risk of negative impacts to marine mammal populations occurring in UK waters (more specific comments are provided in the next section).

Offshore Wind – Noise

The Environmental Report should include a clearer steer on how to progress areas of research and monitoring to allow for a better understanding of the potential impacts on populations of marine mammals and how to manage that risk.

The assessment only considers effects of pile driving. Indeed, large monopile driving, so far the most common method of foundation placement for offshore windfarms in UK waters, represents the worst case scenario in terms of noise impacts to cetaceans and in most instances will require a European Protected Species (EPS) licence to allow it to take place. However, the Environment Report should recognise that many projects within Round 3 and beyond may not be predominantly using pile driving in contrast to Rounds 1 and 2 and other installation methods may be favoured. There are several alternative foundation methods, for example, suction caissons, gravity bases, floating, tripod, tetrapod and drilled concrete monopiles. The Environmental Report should include recommendations for a study to be undertaken that would investigate sound levels of these alternatives and their feasibility in economic and geological terms. Some of the methods are likely to produce sound with lower associated risk to marine mammals and other sensitive organisms. Such a study would help with the risk assessment and with the exploration of alternatives to noisy foundation methods; key requirements of the EPS licence application process for offshore wind farm construction.

[3] P207

[4] Kaiser *et al* '*Distribution and behaviour of Common Scoter Melanitta nigra relative to prey resources and environmental parameters'* 2006

Impact on Favourable Conservation Status (FCS) as a result of several 'disturbances' to some marine mammal populations cannot at the moment be discounted (and not only for coastal bottlenose dolphin populations) without a detailed assessment that takes into account the accumulation of the disturbance effects and also the effects of other anthropogenic pressures (by-catch). The biological significance of the effect of disturbance on marine mammals is difficult to quantify. The consequences at the population level require an understanding of the causal mechanisms that link effects on individuals to those on populations (see PCAD framework[5]), and these are not well understood. Although there is evidence that certain species, e.g. harbour porpoises, actively avoid an area where pile driving is occurring, there are several questions left unanswered. For example, the spatial and temporal characteristics of the displacement and what modulates these are not clear. We also don't know what the displacement means in energetic terms for an animal (e.g. more time spent searching for food and less energy available for breeding), nor what it means for a population to temporarily have a reduced available habitat. Given the uncertainties highlighted above it may be appropriate to use a modelling approach. This would model the effects of disturbance caused by the windfarms already constructed together with those planned to be constructed using piling or other noisy foundation methods. Modelling of the disturbance effect is an emerging field, and there are likely to be a number of approaches that could be explored further. If nothing is done soon, then the SNCBs will need to rely on a more qualitative and precautionary approach to their advice to regulators than might actually be needed.

If the result of the suggested assessment points towards a risk of impact on FCS above a certain piling/noise dose threshold, then the regulator might need to develop a management procedure for establishing the doses of disturbance that could affect the FCS of certain populations and/or control the amount of noise allowed. Such noise dose allowance approach could have links with one of the Marine Strategy Framework Directive indicators being progressed for noise in the marine environment as the OESEA2 rightly has identified[6]. We therefore strongly support the recommendation that regulatory controls are based on cumulative dose rates and urge that clarity is given over what the suitable mechanism[7] is for coordinating licensing activity accordingly. We note that a similar recommendation was made in the previous SEA, that the recommendation would benefit from having a timescale attached and that given the needs of projects already in the planning system it would seem appropriate to address this issue in the next 12 months.

Assessment of the effects of grid infrastructure and other onshore facilities

The 2010 Offshore Development Information Statement (ODIS) prepared by National Grid identifies the need for major upgrades to grid transmission infrastructure beyond those required simply to connect offshore wind farms to onshore connection points. The OESEA2 recognises the potential for impact but defers assessment to the project level. The SNCBs consider that assessment at a strategic level is possible and necessary to minimise the overall impact and to reduce planning and consenting risk for developers. The ODIS describes a range of alternative options for upgrading grid infrastructure to accommodate Round 3 offshore wind farm

[5] NRC 2005 *Marine Mammal Populations and Ocean Noise: Determining when noise causes biologically significant effects*, National Academies Press, Washington, D.C.

[6] *Distribution in time and place of loud, low and mid frequency impulsive sounds* - Proportion of days and their distribution within a calendar year over areas of a determined surface, as well as their spatial distribution, in which anthropogenic sound sources exceed levels that are likely to entail significant impact on marine animals measured as Sound Exposure Level (in dB re 1µPa 2 .s) or as peak sound pressure level (in dB re 1µPa peak) at one metre, measured over the frequency band 10 Hz to 10 kHz.

[7] The Environmental Report seems to suggest to us that this is deferred to the Task Group, but we seek confirmation that this is the case.

development that can and ought to be considered at a more strategic level. Further iterations of the ODIS should take account of the environmental implications to inform planning for grid infrastructure and reduce environmental and consenting risk.

Similarly, any planning for assessment of the onshore facilities such as port developments and extensions should also take account of environmental factors to facilitate assessments at the project level decisions.

Wave, tidal stream & tidal range

Although larger scale wave and tidal stream and tidal range developments are not envisaged within the 3-5 year timescale of the OESEA2, this OESEA2 and the ongoing SEA process has an important role to play in identifying and addressing issues relating to these technologies as they develop. These considerations should not influence the overall conclusion of this OESEA2 but it would be helpful if the Environmental Report could more specifically describe the research that is required. We believe there is a need to

- Maximise the learning from deployed demonstrator scale and consented commercial projects and begin to identify and address the issues associated with larger scale arrays (wave & tidal stream);
- Draw on the lessons from the Severn Tidal Power Feasibility (tidal range) and from ongoing research being progressed by the Crown Estate, pertinent to the Pentland Firth and Orkney Waters leasing round;
- Improve the baseline data for inshore marine mammal populations (all technologies, including Offshore Wind);
- Assess the combined effects (through collision and disturbance) of deployments on populations of mobile species (all technologies, including Offshore Wind).

The Environmental Report recommends that for the deployment of single devices and small arrays, appropriately focussed surveys of animal activity and behaviour should be undertaken to inform commercial scale deployment risk assessments and consenting. We welcome this recommendation.

Spatial Considerations

We welcome the spatial approach to assessment that has been undertaken and consider it to be robust whilst noting the many underlying assumptions that need to also be considered alongside the mapped outputs. We are however concerned that certain 'other' potential constraints not categorised as 'hard' constraints may be under-represented by this analysis. Mobile species are difficult to capture in spatial assessment but, as features of European sites and as species that are strictly protected under the Habitats Directive, they can represent a serious development constraint. Attempts to map these constraints have been made elsewhere and, as recognised by the Environmental Report[8], this work should be further developed to support the spatial assessment of risk to the environment and project consenting. This is particularly important for planning wave and tidal deployments of both demonstrator devices and commercial array scales.

In addition, the difficulties of analysing cumulative effects (notably in relation to birds) means that these have not been not been incorporated into the spatial analysis. Cumulative effects upon the environment is a significant issue for project consenting and methods will need to be developed that allow for this to be taken into account in planning strategically for offshore energy and other activities.

[8] P352

Marine Planning

Marine plans are now at different stages of development within each administration in the UK and it is likely that some will be adopted by the time the next OESEA2 is undertaken. Therefore we suggest that the current OESEA2 should include a recommendation to examine the relationship between planning for offshore energy and marine plans and, in particular, consider how the evidence gathered as part of the OESEA2 can contribute to the evaluation that will be needed to formulate marine plans.

We agree that, in very general terms, the scale of effects of offshore renewables (including offshore wind farms) is significantly smaller than those of fisheries, although the effects of other renewable activities such as tidal barrages, tidal stream arrays have yet to be fully understood. The SNCBs believe that there is considerable potential for effects from both these activities to act in combination and that the relative impacts and benefits of these activities should be considered through the emerging system of Marine Planning.

Overview of the Draft Plan/Programme & Relationship to Other Initiatives

Annex 3 of the Environmental Report lists other initiatives (plans and programmes) that need to be considered in preparing the OESEA2, and includes both the baseline for the first OESEA as well as updates for this report where relevant. We believe that both the Marine Conservation Zone (MCZ) Project's Features of Conservation Importance (FOCI) and Scotland's Priority Marine Features (PMFs), along with other marine protection measures should be considered in the Post-Adoption statement as part of addressing implications of existing environmental issues for the OESEA2.

It is also unclear whether emerging plans from the devolved administrations - such as the recently published Blue Seas – Green Energy Scottish Territorial Waters Wind Plan[9], the Demonstration rounds and the Survey, Deploy and Monitor Policy for marine renewables in Scotland[10] have been taken into account, given their relevance in a cumulative impacts context.

Further consideration requires to be given to these plans and the emerging sites, research issues and how these might be reflected in the recommendations contained in this OESEA2.

Recommendations

In general we agree with the recommendations made by the current report. Each of the recommendations currently described are important to sustainable development of offshore energy. Responsibility for delivering on these recommendations does not lie solely with Government but, in responding to the Environmental Report, DECC should be more specific about how, who and when the recommendations should be delivered. In doing so, it may be helpful to explicitly 'map' the recommendations onto existing initiatives already underway and that could help to deliver the work that is needed.

Furthermore, we note that the aim of the OESEA2 outlined in section 1.1 is to "*Consider the implications of DECC's plan/programme to enable further licensing/leasing for offshore energy*". Whilst it is acknowledged that the report provides a comprehensive literature review and valuable

[9] Available from http://www.scotland.gov.uk/Publications/2011/03/18141232/0

[10] Available from http://www.scotland.gov.uk/Topics/marine/Licensing/marine/SDMPolicy

indication of the potential likely risks of further development in UK territorial and offshore waters (excluding Northern Irish and Scottish territorial waters) we feel that Chapter 6 could be more explicit in its recommendations for future leasing rounds. It could have been informative to include the risks involved, for example, in a 4th leasing round for offshore wind farm projects. In the absence of this risk assessment we recommend that such a review is conducted to ensure the long term sustainable development of offshore energy.

More specific comments on the recommendations, including suggested additions or amendments are provided below.

- **Spatial Considerations**

  Recommendation 1

  We endorse this recommendation but emphasise the importance of both highlighting requirements of the Habitats Regulations with respect to new designated sites and new leased areas. We are committed to early provision to industry of information on the progress of new site selection and designation) and also the importance of embedding the HRA process alongside the Environmental Impact Assessment (EIA) process at as early a stage as possible in project development.

  We would also suggest rewording of the third sentence as follows, so as to help ensure implementation at the key stages of site allocation. *"It is recommended that developers are made fully aware, at the leasing stage by The Crown Estate, and at the onset of Licensing, by the Regulator that SAC/SPA designation may (…)*".

  Furthermore, it should be noted that whilst the Natura 2000 initiative for SPAs may include the identification of extensions for existing SPAs (i.e. sites would extend from breeding colonies, and hence be relatively close to shore), the process of identification is not limited to extensions. Marine SPAs may be identified in further offshore areas (including beyond 12nm), for both breeding and non-breeding birds, as stated this does not necessarily preclude development.

  Recommendation 3

  There is enormous value, from a natural heritage and project consenting perspective, of locating the bulk of offshore wind farm generation capacity to areas beyond 12nm. However it should be noted that although the OESEA2 does not cover offshore windfarm development in Scottish territorial waters, DECC should be aware that this general recommendation about distance of offshore wind developments to the shore does not necessarily fit with the views of all of the devolved administrations.

  Recommendation 4

  As highlighted earlier, we support this recommendation that the bulk of offshore wind farm generation capacity should be located well away from the coast, generally outside 12nm. Also as recognised in the OESEA2, the ornithological sensitivity of coastal waters (within 12nm) is not homogenous – nor are the waters outside 12nm. To fully inform the location of new development areas the current information base regarding the abundance, distribution and use of UK waters by marine birds should be robustly assessed and built upon.

  Recommendation 5

  We support the promotion of coexistence between different uses to minimise conflicts and, in particular to reduce land take from the sea. We see the most appropriate means to

coordinate leasing and licensing of multiple energy technologies is through Marine Planning, and therefore we encourage the active development of such plans. In the interim, it is essential that the appropriate planning/licensing authority is actively and equally involved with The Crown Estate (and DECC as appropriate) in the coordination of leasing and licensing decisions.

Recommendation 6

We note the recognition of sensitivities requiring careful consideration if planning further extensions to Rounds 1 & 2 projects and new leases in coastal waters and therefore agree with Recommendation 6. However, it is also our view that a lack of understanding on key issues could act as a significant constraint on development. Examples include those identified by Recommendation 16, e.g. the lack of population models for a number of bird species, but especially those whose populations are declining at Special Protection Area (SPA) colonies and where the birds from those colonies may interact with project proposals. There is also a lack of evidence to inform potentially influential parameters for any population model e.g. density dependence. Collision risk models are another example where the important parameter of avoidance rate is informed by very little or no evidence in many cases.

Recommendation 7

We agree with the recommendation to exclude the areas mentioned here from oil and gas licensing.

- **Managing environmental risk**

As commented earlier, we believe that the Environmental Report should recommend that processes that are established to support the implementation of the plan/programme (e.g. for grid, ports etc) should explore environmental issues at an early stage.

Recommendation 8

Although we agree with the principle, we suggest the Post-Adoption Statement be more specific in terms of mechanisms for achieving the suggested outcomes.

Recommendation 9

This recommendation should be more explicit in how the precautionary approach is to work and/or what information is required from potential developers. DECC should note the likely future significance of both FOCI in English waters and Welsh offshore waters through the MCZ Project, and PMFs for Scottish waters.

Furthermore please refer to our comments to Recommendation 2 which emphasise the importance of highlighting new designated sites and new leased areas with respect to the requirements of the Habitats Regulations.

Recommendation 10

The need for coordination of control of noisy activities has been recommended. In developing the plan/programme it would be essential that Government is clearer about the mechanisms and, critically, timescales to deliver such coordination to inform consenting decisions; Furthermore, an assessment of the risk of negative impacts to marine mammal populations arising from cumulative effects of disturbance should be undertaken and would link in with such a noise management strategy.

Recommendation 11

Incorporating assessments of seascape effects in future energy related SEAs is of particular importance. It should be noted that work is underway to develop seascape character assessment guidance for England, Scotland and Wales. This study is due to be completed shortly and would provide a suitable basis for the further assessment of seascape sensitivity to offshore development;

Recommendation 12

We agree that site specific assessments of tidal range deployments should be undertaken prior to decisions about leasing tidal range projects.

Recommendation 13

Assuming that they encompass all UK waters, we recommend that the periodic reviews referred to include, specifically, locations leased for wave and tidal energy extraction, given the inherently challenging working conditions which exist there. The Post-Adoption Statement should also highlight the need for ongoing reviews for location of tugs to deal with pollution and oil risk contingency plans in response to the changing accident risk profile.

Recommendation 14

We agree with this recommendation; however there is no timescale identified as to how and when the Health and Safety Executive may provide further guidance on carbon storage and transport.

- **Improving the marine management information base**

As mentioned earlier, the Environmental Report recognises that a range of different turbine foundation types are likely to be used in the construction of Round 3 windfarms[11] and that newer foundation types are expected to have larger impacts over greater areas[12]. The potential for effects of new and larger foundation types on the seabed and on coastal processes should be investigated.

Recommendation 15

The SNCBs have not seen the analysis of the 3 representative areas for which data has been collected and would be interested to understand the strengths and weaknesses of the approach taken. Furthermore, this recommendation does not provide a clear timescale in which this study may report or how the findings may be considered. This could be made clearer.

Recommendation 16

A considerable amount of activity is proposed in this recommendation. It may be better if further clarity is provided on each individual aspect. Furthermore reference should be made to the work of Strategic Ornithological Support Services (SOSS) and/or The Crown Estate's Enabling Action funds.

[11] Section 5.4.2.1, p128

[12] Section 5.4.3, p151

We fully support the recommendation to develop a UK-specific species sensitivity index for birds. Ideally this should assess the sensitivity to all marine developments, (wind, wave, tidal, oil, gas, aggregate extraction etc), however, the ability to develop a reliable sensitivity index is limited by the evidence base of the impacts from these industries (see point 18). Furthermore, to develop an understanding of the vulnerability of species to impacts, any sensitivity index must be supported by robust abundance and distribution data of the species in question. A full program of collation and analysis of existing data to inform the development of a survey program to collect new data on seabird distribution and abundance would be of huge benefit.

There is an opportunity to use power analysis as a tool to help inform a number of applications including the Offshore Vulnerability Index, a Species Sensitivity Index, models that makes use of abundance and distribution parameters and marine planning policies (for new marine plans). Statistical power analysis is likely to give us the best available measures of abundance and distribution for bird and cetacean species in areas where there is considerable uncertainty about their current status (especially the case beyond 12nm). The results of such an analysis can be used to prioritise future survey methods and their geographical scope. It can also be interpreted, possibly in combination with other data such as colony information, tracking surveys or bathymetric data, to build a more coherent picture of those areas in the marine environment where projects might be at risk of not obtaining consent. An example of an application that adopts an approach using power analysis is JNCC's seabirds and oil project proposal that could be used as a basis for updating the Oil Spill Vulnerability Index. As with any statistical approach, power analysis has its strengths and weaknesses and a clear understanding of how it will inform specific applications is required.

Recommendation 17

All environmental information should be collected and analysed to an agreed standard, and made publicly available.

Recommendation 18 and 19

We strongly support the need for coordinated research into the effects of wave, tidal stream (and tidal range) technologies. As highlighted earlier extensive research programmes, focusing on wave and tidal energy, are presently being taken forward by the devolved administrations in Scotland and Wales. It is important that future research programmes commended or instigated by DECC take full cognisance of these, so as to avoid duplication of effort and ensure such research is targeted appropriately. There is also a need to be more specific about the research that is needed.

It is extremely important to note that there is a corresponding lack of empirical data on impacts from offshore wind, particularly for the key species in the offshore environment (i.e. pelagic species) and at the size and scale of the currently proposed and future developments.

Recommendation 20

There is a need for a coordinated approach to developing marine mammal baseline data that also takes account of the need for finer scale resolution data on inshore marine mammal populations. The Environmental Report should support initiatives such as the Joint Cetacean Protocol, which by promoting the standardisation of cetacean data collection and reporting, and enabling data integration between different monitoring programmes (including baseline

data collected as part of environmental impact assessments) will allow a more realistic picture of cetacean abundance and distribution in UK waters.

On research gap 20e, we advise that instead of trying to better understand of the ecology of most marine mammal species and, in particular important areas for breeding, foraging and resting, it will be more useful to improve our knowledge of the effects of disturbance caused by noisy activities considered in the current OESEA2 both on individuals and on populations. Cetacean populations are usually fairly dispersed throughout the year, and only certain species/populations seem to form predictable breeding or feeding aggregations in particular areas, but in UK waters the existing evidence suggests that most cetacean populations are wide-ranging, and their distribution and abundance will vary considerably in time and space and be influenced by both natural and anthropogenic factors. For many species it is therefore inadequate and inefficient to try and identify and protect specific areas whose importance might vary considerably from year to year. On research gap 20g we should be seeking data on both the spatial and temporal scales of effects.

The list of research should specifically identify the need for work to judge the scale and significance of marine mammal ship strike impacts that seem likely to be caused by ducted propeller technology, as well as include work to better understand the sensitivity of seals to noise.

Please note that UKSeaMap is missing from the resources for benthic information that are mentioned.

- **Best practice/mitigation**

We feel that this section should also include a recommendation to explore alternatives to noisy foundation methods and engineering solutions to minimise noise propagation.

Recommendation 21

Recommendation 21 to highlight the need to minimise scour protection and promote alternatives is welcomed by the SNCBs as we raise this as a concern on a regular basis at individual project level. We suggest working with the industry to provide a best practise note on what seems suitable for development in a variety of situations, rather than the case-by-case approach that is being practised now;

Recommendation 22

It is not clear what is meant by the need for flexibility to siting, consenting processes and mitigation for marine renewable energy developments in practice, and would ask for clarification in the Post-Adoption Statement. We suggest this recommendation is reworded to take account of the emerging industry, but also the unknown issues that need to be addressed.

Recommendation 23

This recommendation could be clarified to provide details of the emerging guidance that is being prepared, as well as the register of all activities to ensure cumulative effects on European Protected Species are being monitored.

It may also be helpful to have consistent guidance across the UK on how to make judgements in the HRA process at the likely significant effect stage, and in relation to how to interpret the Waddenzee judgement's requirement to achieve certainty beyond reasonable scientific doubt, especially for plans and projects in the marine environment where the

existing evidence baseline is often low and it is not always practical to remove all scientific uncertainty. Currently, different competent authorities and the nature conservation bodies can have slightly different approaches to these issues which can introduce inconsistency and risk for all concerned.

Recommendation 25

This recommendation, linked to our comments on Recommendation 20, needs to be strengthened and further clarity provided on how it might be taken forward, as well as clarifying what mitigation measures may be required. Please refer to the joint SNCB letter on the issues of seal injuries caused by vessels with the propeller types identified in the Sea Mammal Research Unit's report.

Recommendation 26

We agree with this recommendation.

- **Clarification of statutory process**

There is a need for guidance on the consenting and assessment (under EIA in particular) for carbon capture and storage. To ensure this is progressed, we believe it is important for DECC to identify how and in what timescale guidance may be agreed and implemented.

- **Monitoring**

Care needs to be taken that the three aspects of monitoring (emissions, effects and SEA objectives monitoring) are not totally separated out, as the effects monitoring will help to inform further iterations of the Plan and subsequent OESEAs.

We note that the recommendations section did not suggest further research/monitoring into the potential for 'stepping-stones' effects for invasive species through the colonisation of offshore infrastructure. Due to the large increase in offshore infrastructure that will occur within the UK Continental Shelf (UKCS) for numerous industries it would seem valuable for work to be conducted on this topic.

It should be noted that the monitoring of offshore wind farms under FEPA conditions, has not to our knowledge produced a body of empirical evidence by which to assess the impacts to the ornithological and marine mammal features at a site – for example, little or no information collected on collisions with turbines/avoidance rate, and on the magnitude of mammal displacement during construction. The monitoring regimes seem unlikely to produce data adequate to assess displacement effects during and post construction. Ornithological and marine mammal monitoring must be improved to gather much needed data on potential impacts from offshore wind.

Annex 2 – Joint SNCB specific comments on the UK OESEA Environmental Report

This annex contains comments on specific sections of the UK OESEA2 Environmental Report. Some of these comments are jointly agreed, others are suggested by individual SNCBs.

Section 3.5 SEA Objectives

SEA Topic – Biodiversity, habitats, flora and fauna: Reference is made to the Conservation (Natural Habitats &c) Regulations 1994 but no reference is made to either the Conservation of Habitats & Species Regulations 2010 which are the correct regulations in England and Wales, or to the equivalent Scottish Regulations. Furthermore no reference is made to requirements under the Marine Strategy Framework Directive, but reference is made to good ecological status under the Water Framework Directive.

Objective - Avoids significant impact to conservation sites, including draft, possible, candidate and designated Natura 2000 sites, along with consideration of future Marine Conservation Zones and Marine Protected Areas: Sentence requires amending as MCZs will be part of the MPA network so need to separate. Also there is a minor error in the description of Natura 2000 sites – missing classified as SPAs aren't designated. Recommend the following amendment: "*Avoids significant impact to conservation sites, including draft, possible, candidate, designated and classified Natura 2000 sites, along with consideration of future Marine Protected Areas*."

SEA Topic – Geology & Soils: Indicator - No physical damage to designated marine and coastal geological conservation sites (e.g. GCRs and MCZs): Please amend as geological features may also be protected in Scottish Marine Protected Areas, and therefore not just MCZs.

Section 3.7 Assessment Methodology

"*The assessment considers the implications of the draft plan for relevant existing environmental problems including, especially, those relating to any areas of particular environmental importance, such as areas designated under the Habitats & Species and Birds Directives*."

Please amend sentence to: "*....such as areas designated under the Habitats and Birds Directives*"

Section 4 Overview of Environmental Baseline

Chapter 4 (p75) highlights that for marine mammals there is little systematic data collection/ recording. In this regard it is worth noting that the Joint Cetacean Protocol which is being co-ordinated by JNCC provides a mechanism to collate a variety of data in order to then apply statistical techniques (power analysis) that will enable the best available measures of cetacean abundance and distribution to be derived. Similar techniques could be applied to seabirds, and would be most useful in the offshore area where relatively little is known about their abundance and distribution.

Please note that Section 4.2.2 on Regional Seas does not capture the full range of draft, possible and candidate Special Areas of Conservation (SACs) although some have been mentioned. For example, Regional Sea 4 and 5 is missing Wight-Barfleur draft SAC (dSAC), Regional Sea 6 is missing Pisces Reef dSAC and Regional Sea 11 is missing Hatton Bank dSAC.

Section 5.3 Noise

Although this section is very well-researched, it rejects the notion that *"either regional or local prohibitions on the activities under consideration by this SEA are justified by acoustic disturbance considerations"*. Given that "*it is likely that multiple sources (including simultaneous surveys and pile-driving) will occur at the same time, and that both activities may extend throughout much of the year, and be audible to marine mammals over much of the coastal Regional Seas*", we cannot concur that *"it seems improbable (…) that injurious or severe behavioural levels of effect will coincide.*" We have not seen the evidence to justify such a conclusion, or indeed that cumulative effects of successive noisy activities in an area will need to be considered, so would ask that the Post-Adoption Statement be amended accordingly.

There is very little evidence to support or refute the suggestion that *'It is therefore considered unlikely that offshore seismic noise will result in significant injury or behavioural disturbance to seabirds'*. While we agree that the very few studies that have been done do not show an effect, they tend to have taken place well away from breeding seabird colonies, and therefore there is still reason to treat these situations with caution.

We assume that the quoted <50 m threshold for injury or severe behavioural disturbance to marine mammals from seismic/piling noise refers only to impacts from a single impulse. This however is not explicitly stated, and it should be clarified that this does not include cumulative effects for activities where multiple noise pulses are released.

Another useful quantitative indicator of a disturbance response of harbour porpoise to pile-driving is that coming from studies in Horns Rev II[13] where the furthest distance to a piling event where a reduction in porpoise detections was recorded had an associated Sound Exposure Level of around 144 dB re:1µPa^2-s (M-weighted).

P. 121 states *'These precautionary considerations, although necessary and justified for regulatory purposes, should be viewed in the context of a lack of observed effect of seismic surveys and offshore construction activity worldwide over the last fifty years, during which there has been no conclusive evidence of significant effect on marine mammal populations.'* We are not aware that any studies have been carried out that could provide conclusive evidence either way.

Similarly, *'the spatial scales over which injury and severe behavioural effects are likely to result do not support significant groups of animals'* seems quite a broad statement in the context. Although this may be true at any one point in time for a particular survey, seismic operations are mobile as are groups of animals, thus increasing the potential scope for overlap. It may be worth noting here that, under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) Section 39(2), the disturbance of any dolphin, porpoise or whale is an offence in Scottish Territorial Waters.

We also do not agree that *'On the basis of the available data, it is therefore not considered that either regional or local prohibitions on the activities under consideration by this SEA are justified by acoustic disturbance considerations.'* SNH point out that in their response to the first OESEA, they highlighted that there may be areas within Scottish territorial waters in which the prohibition of seismic exploration activity is warranted because of the risk to important marine wildlife. It should also be noted, especially at project-level, that The Conservation (Natural Habitats, &c.)

[13] Brandt et al, Effects of pile driving on the distribution patterns of harbour porpoises in the North Sea (2009)

Regulations 1994 (as amended in Scotland) describe an additional offence[14] in relation to cetaceans and may result in different conclusions drawn about activities considered as 'reckless'.

The OESEA2 report identified key areas of importance to marine mammals. We agree with those identified and highlight the fact that they cover a large fraction of UK waters, reflecting the wide-ranging distribution of most marine mammal species. There are indeed very few areas in UK waters that could be considered as non-important to marine mammals.

The Southall et al 2007 criteria for injury are given as zero-peak and not as peak to peak as stated in the SEA report.

Marine mammals in the Annex II of the Habitats Directive are the following: grey seal, harbour seal, harbour porpoise and bottlenose dolphins. All cetaceans are in Annex IV. And additionally, seals are in Annex V.

Research undertaken on the Egmond aan Zee offshore windfarm provides another reference for the effects of pile driving on seals[15]. The research fitted seals with satellite-relayed data loggers and results indicated an effect from pile driving. During the construction period seals did not approach within 40 km of the wind-farm area. Before and after construction seals were recorded within the windfarm area.

Please replace reference '*JNCC (2008). The deliberate disturbance of marine European protected species. Report, 84pp*.' with '*JNCC, NE and CCW (October 2010).The protection of marine European Protected Species from injury and disturbance. Draft Guidance for the marine area in England and Wales and the UK offshore marine area. 78pp*.'

Section 5.6 Physical presence – ecological implications

Chapter 5.6 summarises an extensive review of relevant literature to determine potential effects to ecological receptors from pressures associated with offshore energy development. The report therefore is an important scoping tool when identifying potential impacts from future developments and it is expected to provide a good source of references to inform future project-specific EIAs for advisors, regulators and operators. To ensure the conclusions summarised in the OESEA2 is not misrepresented we would recommend returning to the primary reference source to inform impact assessments. Furthermore, many of the studies used to inform the OESEA2 do not specifically assess the impacts associated with offshore energy development. Therefore, the uncertainty associated with the information from scientific publications when applied to future projects should be fully understood and clearly presented.

In addition, we disagree that NRC's 2007 study on bird mortality through U.S. terrestrial wind farms and the experience of wider turbine avoidance at Nysted windfarm allows broad *"extension to major UK offshore wind farm development".* We strongly question that the latter is "unlikely to result in cumulative impacts of concern for biogeographic populations of such species", because displacement and the exponentially increasing energetic cost incurred cumulatively through barriers to migrant birds has not been taken into account.

As highlighted in our overall comments in Annex I, we appreciate that it is difficult at present to conduct an accurate cumulative impact assessment of the offshore wind and wet marine renewable elements of the draft plan/programme in relation to birds. However, given the unique

[14] As compared to the Conservation of Habitats and Species Regulations 2010 in England and Wales

[15] Available from http://www.ices.dk/reports/ACOM/2010/WGMME/wgmme_final_2010.pdf

opportunity that a national energy development plan presents for the early consideration and protection of the UK's natural heritage assets, it is not clear why an analysis based on the existing strategic development zones has not been attempted.

Similarly, we think that by dismissing any cumulative impacts of the "*likely demonstrator scale of this development over the lifetime of the SEA (3-5 years)"*, an important opportunity to manage expectations about the larger marine arrays that are to follow has been missed.

Section 5.6.2.5 Electromagnetic Fields (EMF)

The assessment of electromagnetic fields (EMF) presents thorough summary of species reported to detect EMF and where possible values at which each species exhibit a response. This chapter would benefit from clear presentation of the EMF from cable routes associated with offshore energy development. It is difficult to consider the levels reported for each species in the context of future developments. Users of this report should ensure this issue is addressed when referencing the document.

Section 5.6.6 Summary of findings and recommendations

Tidal range, tidal stream and wave devices are regarded as having 'insignificant' environmental implications due to the demonstrator-scale of projects over the lifespan of the current OESEA. However, it is acknowledged in the report that devices that harness tidal and wave energy are only suitable in a narrow range of conditions around the UK. Since these locations exist in areas of high tidal currents or ranges and highly exposed areas of coastline the area of similar habitat is likely to be restricted by these conditions. Therefore a demonstrator scale project may have a greater impact on specific habitats than similar demonstrator projects for offshore wind devices which can be deployed over a wider area and over a wider range of habitats. It is recommended that further assessment of the impacts of these devices are carried out during project specific levels and not based upon knowledge of impacts in relation the installation and operation of demonstrator projects using different technology.

Section 5.8 Landscape/Seascape

SNH recognise that the OESEA2 recommends renewable energy development to be located beyond 12nm, however according to the recently published Blue Seas – Green Energy Scottish Territorial Waters Wind Plan it is likely there will continue to be developments sited within 12nm of Scottish waters for the short and medium. In addition, please note areas for wet renewables are predominately in areas within 12nm, we therefore request that further consideration is given to the effects on seascape and landscape as well as amenity, particularly visual impacts. As such SNH continue to provide advice on the need for further consideration to be given to landscape /seascape and visual impacts.

Although SNH welcome the summary of landscape/seascape assessment for the Scottish coast for offshore wind, the cumulative impacts of wet renewables are of concern, as with offshore wind. Both should be assessed in relation to impacts with onshore renewable developments and in combination with other marine developments, for example aquaculture, oil and gas infrastructure. There is a need to be aware of cross-boundary issues in relation to strategic cumulative assessments.

SNH's 'Cumulative Effect of Windfarms' (2005, under review)[16] stresses that *'the whole of a region, straddling more than one planning authority, or that of a natural heritage management unit such as a National Park or Firth Partnership area"* needs to be considered[17]. This is especially relevant for marine renewables, where national borders and administrative boundaries frequently cut through coastal areas and firths. Offshore developments have the potential to visually, and therefore cumulatively, link a much wider area of on-shore developments than is currently experienced due to on-shore renewables alone.

New installations should respect their surroundings, so that the visual patterns and scale of wind and marine renewables relate to the design and balance of existing development. For example, where developments are situated across an outer firth or estuary, consideration should be given to their grouping and mass, taking into account their visual scale within the surrounding seascape/landscape and their backdrop. It is also essential to look at the cumulative design of developments as seen from key views that are assessed as having a high sensitivity.

Substantial sections of coastline are sensitive in being undeveloped and isolated in character, and consequently of very significant environmental, cultural and economic value. *'The special characteristics of the isolated coast should be protected, and there is a presumption against development in these areas'*, as recognised in Scottish Planning Policy (SPP) 2010. Of 40 National Scenic Areas (covering 12.7% of Scotland), 27 include coastal landscapes and seascapes where experience of the sea is an essential quality. *It should be noted that the following pieces of work will shortly be available:-*

- *Landscape Character Assessment Guidance for England, Scotland and Wales*. Consultation expected late May 2011,
- *Seascape Character Assessment Guidance for Great Britain.* Consultation expected late May 2011,
- Seascape Character Assessment Around the English Coast Phase 1 trial (Marine Plan Areas 3 and 4 and the western section of Area 6) has also been completed

One of the landscape indicators listed for monitoring is "*tranquillity based on Campaign to Protect Rural England (CRPE) and CCW national mapping projects",* which does not cover Scottish non-designated landscapes. SPP 2010 acknowledges that our diverse coastline retains many isolated sections of the coast and uninhabited islands, as well as remote coast, lying beyond modern day development, infrastructure and roads. Some of these areas best harbour the sense of 'wildness', as well as being remote and scenic. The western and northern coastal waters offer high quality sailing, with active outdoor pursuits such as walking, climbing, fishing, sailing, canoeing, or wildlife watching – indeed, any recreation or pastime which draws people into the remoter and more challenging areas of land or coast.

SNH recommend that the Post-Adoption Statement refer to their interim guidance note 'Assessing The Impacts On Wild Land' (February 2007)[18]. This guidance draws on the 'Wildness in Scotland's Countryside SNH Policy Statement 02/03'[19]. The map at Annex 1 of this statement shows where the main areas of wild land in Scotland are likely to be found, and is intended to assist the development of plans and strategies. Accordingly, an indicator such as "Incidence of

[16] Available from http://www.snh.gov.uk/docs/A305440.pdf

[17] Quote from Paragraph 23

[18] Available from http://www.snh.gov.uk/docs/B464997.pdf

[19] Available from http://www.snh.gov.uk/docs/A150654.pdf

man-made features proposed, managed or stimulated by the plan which affect wild land search areas in Scotland" should be added to the table.

Section 5.9 Marine Discharges

Given that the nature and use of antifouling materials is considered as a potential effect in the context of renewables structures, it would seem relevant to consider this in the context of oil and gas structures as well.

Section 5.14 Ancillary Development

We do not agree with the conclusion that the impacts of ancillary development in the coastal environment are generally well understood. Existing planning procedures and regulatory controls, including project-specific EIA and HRA, should be shaped by the OESEA2 conclusions, rather than treated as independent mechanisms for managing potentially significant environmental effects. The Environmental Report states that a high degree of coordination and cooperation for devolved energy development matters is required for ancillary developments that take place in offshore waters traversing territorial waters. We echo this statement, and would stress the continued need for close communication between the different administrations and The Crown Estate to maintain transparency and consistency in marine spatial planning. This is particularly true for proposals for an offshore grid network, as well as interconnecting and onshore infrastructure and port facilities.

Furthermore, as highlighted in Annex I of our response, we believe that a consideration of both interconnecting and onshore infrastructure is pertinent to the assessment.

Section 5.17.2 Biodiversity, Habitats, Flora and Fauna

This section states that '*Offshore wind farm developments may displace birds from migratory routes but this is unlikely to be significant'*. However no evidence is provided in support of this statement. Also, oil spill risk is considered to be of minor negative impact however if a spill did occur then the impact could potentially be very significant. The assumptions made in this section are purely based on risk - the process through which this risk has been defined should be clearly outlined to the reader.

Appendix 3a.2.2

Damage to seabed is discussed, yet only mentions damage from fisheries which doesn't reflect the impact all industries have on the seabed within the UKCS.

Appendix 3a.8 Marine and other mammals

When discussing key areas of importance for marine mammals, the OESEA2 report makes reference to findings in the following report '*Clark J, Dolman SJ & Hoyt E (2010). Towards Marine Protected Areas for cetaceans in Scotland, England and Wales: a scientific review identifying*

critical habitat with key recommendations, Whale and Dolphin Conservation Society, Chippenham, UK, 178pp'. We advise some caution when referring to this report since some of the conclusions were based on statistical methods that are likely to be insufficiently robust to detect areas of importance (e.g. for harbour porpoises). In addition, this report does not acknowledge that the distribution of most cetacean species seen in UK waters is intrinsically linked to prey availability and therefore variable. In addition, odontocetes in general breed and feed throughout their range and have long periods when the calf is dependent upon the mother, which can be for over one year. The term 'critical habitat' therefore might not easily apply to UK species.

Furthermore the comments regarding the Paxman and Thomas 2010 publication are inaccurate. Currently it states:

"*An analysis of data from the southern Irish Sea assesses how useful Joint Cetacean Protocol (data, gathered and integrated from around Europe, may be in detecting changes in the abundance and distribution of cetacean species in UK waters (Thomas 2009, Paxton & Thomas 2010 (In Prep). The study showed that there was a limit to the power of analysis using this data (it is estimated to be able to detect a 15-30% annual decline in abundance), although there is scope for further development of methods of analysis.*"

The 15-30% relates only to the work of Thomas 2009. In contrast, Paxman & Thomas (2010)[20] found that for harbour porpoises, bottlenose dolphins and common dolphins, trends of the order of 0.3-2.2% decline in abundance over a 6 year period could be detected with 80% power. For other species the declines that were detectable were much larger due to CVs.

[20] Available from http://www.creem.st-and.ac.uk/len/papers/PaxtonJNCC2010.pdf

MAREN Projects Comments on the DECC – Offshore Energy Strategic Energy Report

May 2011

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Type	Other Interest Group	**x**			
Are you happy for your details to be published in the summary of responses?		**Y**	**x**	**N**	

About the MAREN Project

MAREN is an international research collaboration modelling resource potential, environmental impact, climate change resource impact for case study sites around the Welsh coast – tidal barrage, tidal impoundment, tidal stream, wave and offshore wind – www.marenproject.eu . It has been co-financed with the support of the European Union ERDF – Atlantic Area Programme.

This project aims to provide high quality research results to support this innovative marine renewable energy industry, at a stage before major development decisions are taken. This multidisciplinary project will bring together experts from a wide range of backgrounds, adding diversity to the marine renewable energy sector and providing answers to fundamental questions regarding the provision of marine renewable energy.

MAREN Project Partners and Research Areas

- Cardiff University Hydro-Environmental Research Centre - Tidal Barrages & Impoundments
- National University of Ireland, Galway – Tidal Stream
- IHC - University of Cantabria, Spain - Offshore Wind
- Centec, Instituto Superior Tecnico, Portugal – Wave
- Ifremer, France – La Rance Barrage
- Other partners – Policy makers, private sector, & public sectors.

Comments on the report

Main data availability comment

- You note- "There is little data on the impacts of potential commercial arrays of wave and tidal stream technologies on the physical environment and habitats. Similarly, there is little information on the interaction of birds, marine mammals and fish with wave and tidal devices." – This is something that both the MAREN Project (www.marenproject.eu) and the LCRI Marine Project (www.lcrimarine.org) can assist you with.
- Modelling work conducted by research institutes can facilitate the assessment process by looking at the environmental impact of marine renewable technologies on a range of environmental features – from water quality to water velocity at a range of scales. The MAREN project is working with high resolution models for wave, wind, tidal steam and tidal barrage that can evaluate; the true current resource potential, the future resource potential (considering climate change) and the environmental impact at a 50m x 50m resolution. This is for sites across the Atlantic. Please contact us if you are interested in any of our outputs or being involved in looking at specific sites. Specifically Cardiff University – Hydro-environmental Resource Centre – lead MAREN partner - could help you with the following
    - HYDRODYNAMIC DATA for the whole of the Welsh coast – can be used for current situation and for future Climate Change Scenarios – this is very useful to understand the marine energy potential of the Welsh coast into the future.
    - WATER QUALITY DATA- For the whole of the Welsh coast. This is linked to the hydrodynamic model, and gives present and scenario projections.
    - SEDIMENT LOAD – Work in progress – looking to model the amount of sediment contained in the water column around the Welsh Coast.
    - HIGH RESOLUTION CASE STUDIES – 50m x 50m resolution hydrodynamic and water quality data for key sites of marine renewable energy potential. Completed and work in progress sites include: Cardiff –Western Barrage, Severn Tidal Stream, Bridgewater, Rhyl Tidal Impoundments, Others are in the planning stages for Ramsey Sound, Llanelli and others
- The MAREN Project partners are from across the Atlantic Area with expertise in different energy technologies. The project could provide information on:

  HIGH RESOLUTION ENERGY RESOURCE POTENTIAL: Climate Change Scenarios have been used to downscale and model the resource potential across the Atlantic area including the Welsh Coast.

  CARBON DIOXIDE REDUCTION POTENTIAL: Studies looking at key marine energy sites to evaluate the total reduction potential of each device type, taking into consideration a life-cycle analysis

  WAVE ENERGY STUDIES – Case study investigation for Welsh Wave sites in high resolution.
- The above fits into your water quality and climatic factor aspects of your strategy.
- Marine renewable energy needs to be safeguarded against the extreme application of the precautionary principle through the effective use of data & capabilities that are already available or underway. Working in partnership with those research institutes that are capable of analysis and projection through future scenario modelling is therefore essential.

Other Comments

- A separate SEA process is supported for the Severn Estuary as long as there is a coordinated integration between the two.
- Presumably the WAG's "SUSTAINABLE DEVELOPMENT FOR WELSH SEAS: OUR APPROACH TO MARINE PLANNING IN WALES" Consultation will feed into the DECC process? The MAREN project has commented on the WAG SEA consultation and the comments for this hold for this process. Please find attached to the same email our full response to this.
- MAREN supports an SEA process over the alternatives offered.
- MAREN supports a licensing process which protects the natural environment that is joined up in its approach; considering future economic, social and environmental changes.

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Dear Kevin

Marine Conservation Society's response to DECC's Offshore Energy Strategic Environmental Assessment 2

Thank you for consulting the Marine Conservation Society (MCS) on DECC's Energy SEA. MCS is pleased to see DECC continue to recognise their obligations to undertake a Strategic Environmental Assessment (SEA) under the SEA Directive and as usual the assessment is fairly comprehensive in most aspects as is the information provided in the environmental reports. We are pleased to see that DECC recognises the various environmental impacts to a greater or lesser extent of the various marine energy developments.

We are also pleased to see that DECC has chosen not to proceed with it's Plan as proposed but rather has chosen 'alternative 3' "To restrict the areas offered for leasing and licensing temporally or spatially". However, we are still concerned that while DECC provides acknowledgement that the plan must be restricted spatially, it provides inadequate detail in it's recommendations of how the licensing will be spatially restricted and hence it is not clear to MCS that this constitutes a modification to it's plan for marine energy and that it has not hence integrated environmental considerations into the preparation of the plan to ensure a high level of protection of the environment. As such MCS considers Government has failed to fully meet the legal obligations under the SEA Directive because:

The Directive's objective as stated in Article 1 is *"to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment."*

Thus the purpose of SEA is very much to ensure that environmental considerations are integrated into strategic decision-making, in recognition that traditionally that has not been done sufficiently.

In addition we believe that the Energy Plan must be modified to exclude tidal range proposals, not just spatially, but completely. The SEA makes clear that tidal range developments (generally tidal barrages) lead to the destruction and modification of whole estuaries, bays and inlets permanently. Infact the SEA states effects may be detectable over the whole continental shelf.

KEY RECOMMENDATIONS

MCS welcomes the conclusion of the SEA that DECC should "restrict the areas offered for leasing and licensing temporally or spatially".

However, we do not believe the SEA recommendations make clear how the areas offered will be restricted temporally or spatially. These need to be much clearer if DECC is to fulfil it's SEA Directive obligations "to provide for a high level of protection of the environment". We recommend the SEA is modified to make much clearer recommendations, along the lines of their recommendations to prevent economic impacts:

It is recommended that leasing/licensing and any subsequent consenting of activities must ensure the minimisation of ~~disruption, economic loss and safety risks to other users~~ impacts on marine habitats and species and UK seas as a whole. In particular, developments, individually or cumulatively, should avoid:

- blocks within or adjacent to Special Areas of Conservation (SAC) or Special Protection Areas (SPA) (whether designated, candidate or proposed) and also sites of importance for Annex I habitats or Annex II species but which do not qualify. Sublittoral sandbanks are the only SACs where energy developments are less likely to have an adverse affect, and co-location may be possible, unless it is also important for marine mammals e.g. seals. MCS welcome DECC's acknowledgement of the importance of SACs and SPAs in its first spatial recommendation, but believe it needs to offer clearer guidance

- Sites that may be designated as MPAs (or MCZs) to meet the UK Marine Act and Marine (Scotland) Act should also be avoided, as should sites of importance for Annex I habitats or Annex II species but which do not qualify to be designated.

- Adverse affects on habitats and certainly wholesale habitat destruction. As such tidal barrages should not be included part of the Energy Plan due to the habitat destruction caused by these developments.

- (MCS support DECC's recommendation on seascape but believe it should be made clearer still). No blocks within within 12 nautical miles of the coast (20km) will be licensed.

- All deepwaters from oil exploration and production, ie below 200m. MCS supports DECCs recommendation for "The areas to the the west of the Hebrides (covered in SEA 7) blocks west of 14 degrees west should continue to be withheld from oil and

gas licensing for the present. This recommendation also applies to the deepest parts of the Southwest Approaches". However, we believe this should be extended all deepwaters below 200m and hence also include the area to the West of the Shetlands and the "white zone" to the south-east of the Faroes.

- The Deepwater Horizon disaster in the Gulf of Mexico made it apparent that there are technological problems in preventing an ecological catastrophe in the event of a blowout in deepwater, not least since divers cannot reach a wellhead below 200m and unmanned ROVs proved unsuccessful in capping the wellhead for months in the Gulf of Mexico. Deepwater Horizon confirms that the deeper the water the higher the risk. The wildlife to the west of Shetland is too important to take such risks, with cetacean regularly occurring in the area ranging from white-beaked dolphin, Atlantic whitesided dolphin, Risso's dolphin to long-finned pilot whale, killer whale, sperm whale, Sowerby's beaked whale, humpback whale and Sei whale. As such, until technology improves sufficiently to reduce the risk of blowouts, and just as importantly allow for the capping of the wellhead swiftly in deepwater should a blowout occur, MCS calls on the UK Government to introduce a moratorium on deepwater drilling. (See Marine Conservation Society Evidence to the Energy & Climate Change, Select Committee Inquiry into UK Deepwater Drilling – implications of the Gulf of Mexico oil spill)

- MCS support the following conclusion of the Noise section of the SEA (p. 48) that reports the MASTS workshop conclusions that engineering solutions are required either to develop alternatives to piling (e.g. through Carbon Trust technology accelerator foundation/structures) or to decrease propagation of noise through water and/or sediments.

CONCLUSION

If DECC is to meet its legal requirements under the SEA Directive it must make clear how it will spatially restrict the areas offered for licensing and hence how it will ensure that the objective of the Directive as stated in Article 1 is *"to provide for a high level of protection of the environment"* is met. DECC should also omit tidal barrages from it's marine energy plan, as these developments are unsustainable in any location.

Marine Conservation Society **May 2011**
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CONSULTATION ON THE UK OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT

INTRODUCTION

DECC has opened a Consultation on the UK Offshore Energy Strategic environmental Assessment and has invited comments.

The NFFO is the representative body for fishermen in England, Wales and Northern Ireland. Our member vessels range from 40 metre stern trawlers operating at North Norway and Greenland to small, under 10metre vessels, beach launched and with limited range. The Federation holds seats on the EC Advisory Committee for Fisheries and Aquaculture, and the North Sea, North West Waters, Pelagic and Long Distance regional advisory councils. The NFFO is also a member of Europeche, the European trade federation for the fishing industry.

The NFFO is therefore concerned to make sure that its members' interests are properly taken into consideration on the occasions when the marine environment is under discussion or consideration. The impact of Offshore Energy Policy on the industry is considerable, and has the potential to dramatically alter people's livelihoods The NFFO therefore wishes to draw attention to the following comments.

COMMENTS

Firstly – to accentuate the positive developments – the NFFO is pleased to note that Alternative 3 has been recommended since it both recognises the requirements of the Governments Energy Policy but also seeks to set temporal and spatial restrictions on development. The fishing industry is pleased to note that important fishing grounds should not be consented for development, but experience to date with Round 3 (particularly for the Dogger Bank) has not been very positive.

Secondly, there appears to be greater appreciation of the importance of siting decisions and the degree to which alterations in boundaries can alter the impact of developments. In this context, however, it is not clear at this stage how stakeholder inputs into siting and mitigation decisions are to be made. Although mention is made of a consideration of economic and

social factors, there is no mention of a process through which they are to be taken into account.

It was reassuring to find, OESEA2 page 385, that many of the gaps in the information available have been identified and marked for research – particularly a), b), h), j), and k). It cannot be too highly stressed that the existing body of information is inadequate and often too coarsely grained and with too low a confidence level. There was, however, a major omission which will be discussed below.

Lastly, on the positive side, there were a number of mentions of co-location, whereby, for example, a windfarm and an MCZ could be located together. Although the noises are positive, in most instances this will come too late to be of practical use since the designation of MCZs is continuing its headlong pace and the process is now nearly over.

There remain, however, a number of areas where the concerns expressed by the NFFO in the past have not been addressed.

The issue of displacement is generally brushed aside with the remark that there will be sufficient mitigation from other factors (such as Reefs) to render the impact negligible. The NFFO disputes this interpretation. Displacement is a major issue in the Southern North Sea and is becoming increasingly so elsewhere.

The SEA notes that there is a potential issue with MCZs but fails to take them into account and the cumulative impact that they will have when combined with windfarms with large footprints. The impact on Inshore fishermen is already considerable and will only increase. It is unfortunate that no provision has been made for additional research into this area.

Furthermore, the role assigned to Reefs in mitigating the impact of windfarms would appear to be grossly over optimistic. The spillover effects are not quantified and in addition the lack of a planned network is likely to minimise any positive effects that they may have. They do not justify ignoring the displacement issue.

To conclude, the NFFO would take issue with the statement, page xiii, *The SEA concludes that physical disturbance associated with activities resulting from the proposed draft plan will be negligible in scale relative to natural disturbance and the effects of demersal fishing.* It should be borne in mind that since 2000, the demersal fleet has halved in size and the level of its activities has been reduced by a comparable amount further diminishing its footprint.

SUMMARY

The NFFO response is thus:

On the positive side:

- The adoption of Alternative 3 - a licensing plan with temporal and spatial restrictions – is to be welcomed;
- The evidence of greater consideration of stakeholder interests in the siting decision process is to be welcomed although it is not totally clear how it is to be achieved;

- The emphasis on improving information is a very positive development; and,
- The positive remarks about colocation are appreciated although they may have been made too late to be effective.

On the negative side:

- There is no proper consideration of the displacement issue which is too important ot be simply brushed aside;
- The cumulative impacts of MCZs are seriously underestimated;
- The benefits of Reefs ore overstated: and,
- The footprint of the demersal fleet is overestimated.

The NFFO hopes that DECC will be able to take these concerns into consideration.

09/05/2011

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EUROPARC Atlantic Isles

Conservation without frontiers

OESEA2 Consultation response on behalf of Europarc Atlantic Isles

A MANIFESTO FOR COASTS AND SEASCAPES

The OESEA2 public consultation coincides with advent of the new marine planning system following the publication of the UK Marine Policy statement in March of this year.

In this context, we would like to bring your attention to the attached Manifesto for Coasts and Seascapes. This has been drawn up by a group of NGOs and addressed to the UK Government, the devolved administrations, marine planning authorities, national agencies and coastal local authorities, and distributed in the run up to Easter.

The Manifesto stems from work undertaken by Europarc Atlantic Isles, the National Trust and the National Association for AONBs following a focussed Workshop last May. This culminated in the report 'Coastal Protected Landscapes and Marine Planning'(PDF copy attached and available at http://www.europarc-ai.org/eai-publications)

The seascapes and coastal landscapes of the UK are amongst the finest in the world. It is well known that people care greatly for our coasts and seascapes and see them as part of their national heritage. Access to and use of them is increasingly recognised as being hugely important to the nation's health and well being; as is the fundamental contribution seascapes make to the economy and culture of our coastal communities. Seascapes are more than just a view.

Our collective desire to publish this Manifesto has been born out of concern about how the new marine planning system, and in this context how the OESEA2 report, addresses:

- The concept and relevance of "Seascapes", there being no statutory basis for identifying and protecting them; and
- The significance of and the role our coastal protected landscapes play in the coordinated management of the extensive lengths of our coast and adjacent inshore waters that are designated as AONB or National Park and defined as Heritage Coast

The promoters of the Manifesto welcome the fact that there is reference to seascapes in the OESEA2 report, although as detailed above we would assert that seascapes are about very much more than just the view. In addition we remain concerned that seascapes are not seen as a key resource in the emerging agenda for the marine environment. This is evidenced in the OESEA2 report itself by the acknowledgement that there is currently no adequate seascape character assessment programme in place for UK waters. The promoters of the manifesto share the view that there is no established means for defining the significance of the character of our seascapes nor a means for identifying and ultimately designating those seascapes that are of national importance.

We understand that new draft guidance will shortly be published on seascape character assessment by Natural England (NE) and Countryside Council for Wales (CCW). We would welcome the opportunity to work with DECC and these agencies to secure better recognition for seascapes through a thorough programme of seascape characterisation leading to identification of those seascapes that are of national importance and seeing some form of designation put in place to protect them for future generations.

The Department of Energy and Climate Change (DECC) Strategic Environmental Assessment draft plan/programme is an important catalyst to enable seascapes to be properly recognised in relation to future renewable leasing for offshore wind, wave and tidal devices and licensing/leasing for seaward oil and gas rounds, hydrocarbon and carbon dioxide gas storage.

The Manifesto for Coasts and Seascapes sets out a number of key actions that DECC can play an active part in delivering by:

1. Working with NE, CCW and SNH to undertake a seascape character assessment for each UK marine plan area, using the methodology currently developing as the basis for securing their long term sustainability through the marine planning process.

2. Playing an active part in the development of an objective approach that recognises and secures the conservation of nationally important seascapes as an integral dimension of the marine planning process thereby ensuring the long term future of their special qualities.

Additional printed copies of the manifesto can be made available on request and a pdf copy is available on the Europarc Atlantic Isles website - (http://www.europarc-ai.org/eai-publications)

The promoters of the manifesto for coasts and seascapes would pleased to discuss issues arising from this consultation response with officials at DECC

Yours Sincerely

Phil Dyke
Chairman, Europarc Atlantic Isles Coastal & Marine Working Group
Coast and Marine Adviser, The National Trust
phil.dyke@nationaltrust.org.uk

EUROPARC Atlantic Isles – is a section of the EUROPARC Federation, working with protected areas and their partners in England, Iceland, Ireland, Northern Ireland, Scotland and Wales. It gives everyone working for and with these special places a chance to be part of a wider European and international picture, and to work together to look after Europe's precious natural heritage

Irene Thomson
Offshore Environmental Policy Unit
OESEA2 Consultation
The Department of Energy and Climate Change
4th Floor Atholl House
86-88 Guild Street
Aberdeen
AB11 6AR

12 May 2011

Our Ref: SEA 02-10

Your Ref: OESEA2 Consultation

Dear Irene

RE: DECC Offshore Energy Strategic Environmental Assessment Programme – Consultation on the Environmental Report for Offshore Energy SEA2

Thank you for your letter received 14 February 2011 regarding the above consultation.

The Department of the Environment (DOE) welcomes the opportunity to comment on this Environmental Report as the SEA Consultation Body for Northern Ireland. The Northern Ireland Environment Agency (NIEA) leads this function and its response to your consultation on the **Environmental Report** is set out below.

General

Please note, in reference to section 1.4.1, that the Department of the Environment for Northern Ireland (DOENI) is the consultation body in Northern Ireland. The Northern Ireland Environment Agency (NIEA) leads this function within DOENI. NIEA was previously known as the Environment and Heritage Service (EHS).

Biodiversity, habitats, flora and fauna (Section 5)

We welcome the level and scope of detail that is included in the Environmental Report in relation to biodiversity, habitats, flora and fauna. The extensive baseline data and consideration of up-to date scientific literature has enabled a comprehensive consideration and assessment of biodiversity interests in the Environmental Report. The information collated should prove to be a useful resource for other future marine plans and projects.

Recommendations and Monitoring (Section 6)

We note 'the conclusion of the SEA that alternative 3 to the draft plan/programme is the preferred option, with the area offered restricted spatially through the exclusion of certain areas together with a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea'.

We are unclear about which areas are those to be excluded from areas offered.
Under the spatial consideration section of 6.1 the only areas that are definitively proposed to be excluded from oil and gas licensing are the blocks west of 14 degrees (area to west of the Hebrides).

There are, however, other areas which particular developments should aim to avoid (6.1 spatial considerations paragraph 3).

- Are these areas or the areas identified in the spatial constraints mapping (5.15.2) also intended to be exclusion areas?

We note that the areas that development should avoid (6.1 spatial considerations paragraph 3) and the 'hard' constraints in Table 5.39 are all socio or economic constraints. The only environmental 'other' constraints are Natura 2000 sites.

- With the exception of blocks west of 14 degree will there be any other areas excluded from areas offered due to environmental constraints?
- Will any of the additional environmental constraints identified in Appendix 1 be considered as 'areas to avoid/hard constraints' in the future?

We acknowledge that Section 6 includes recommendations about managing environmental risks and best practice / mitigation. We note that there are many additional mitigation/best practice measures relating to specific topic areas identified throughout the Environmental Report, for example, controls and mitigation relating to landscape issues in section 5.8.4. or that the deployment of single devices and small wave and tidal stream arrays should undertake appropriate surveys of animal activity and behaviour to inform commercial scale projects. We would welcome a compilation of these best practice / mitigation measures as we consider they would be a very useful resource.

Appendix 3

Please note in relation to Appendix 3 and 3j. that two additional possible inshore Special Areas of Conservation in Northern Ireland were published for public consultation during January 2011:

The Maidens possible Inshore Special Area of Conservation.
http://applications.doeni.gov.uk/publications/document.asp?docid=17566
http://applications.doeni.gov.uk/publications/document.asp?docid=17567
http://applications.doeni.gov.uk/publications/document.asp?docid=17568

Skerries and Causeway possible Inshore Special Area of Conservation.
http://applications.doeni.gov.uk/publications/document.asp?docid=17573
http://applications.doeni.gov.uk/publications/document.asp?docid=17574
http://applications.doeni.gov.uk/publications/document.asp?docid=17575

Air (Appendix 3e)

Please note that the most recent information on air quality in Northern Ireland (including air quality management areas) can be found at: www.airqualityni.co.uk

Cultural Heritage (**Appendix 3i)**

We have a number of detailed points relating to the appendices as follows:

P553 – the sentence "*In Northern Ireland megalithic Tombs are highly concentrated in the north*" is not accurate. Tombs are found throughout Northern Ireland, with concentrations, for example, in Tyrone.

P554 – Cuchendun should read Cushendun

P557 – the statement "*Numerous Neolithic farm sites also occupy the Co. Antrim and Co. Down coasts*" needs to be clarified. While there is ample evidence for Neolithic activity around the coasts, we do not consider that the evidence to date reflects numerous farm sites.

P562 – the first paragraph relating to Northern Ireland is a bit confused. The second sentence would be more accurate if it read:
"*The order not only provides protection for sites in territorial waters, but also restricts archaeological excavation and searching for archaeological objects, including using a detecting device, to those licensed to do so (Art. 29). In cases where the objects are incidentally discovered, they must then be delivered or reported to the relevant authority within 14 days (Art. 42)*."

You may also wish to consider adding a sentence to the penultimate paragraph regarding wrecks: "*Wrecks and intertidal/submerged archaeological features within territorial waters adjacent to the coast of Northern Ireland can be protected by scheduling under the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995*."

Conservation (Appendix 3j)

P589 – it may be worth considering adding the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995 to the narrative linked to the Scheduled Monuments heading.

Other Potentially Relevant Initiatives (Appendix 4)

P30 – similar to the point made above re wrecks. Wrecks and intertidal/submerged archaeological features within territorial waters adjacent to the coast of Northern Ireland

can be protected by scheduling under the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995.

Please contact my colleague Siobhan Conlon, SEA Coordinator, telephone 02890 569442, if you require clarification or any further information on this response.

Yours sincerely

Pat Corker
Principal Policy Manager

UK OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT (OESEA2)

Consultation comments from

The Royal Society for the Protection of Birds

12 May 2011

OESEA2 Environmental report

General

The Environmental Report (ER) and associated Appendices constitute a huge amount of work and a vast amount of information (research and scientific literature) on the UK's marine area. We welcome the overviews of many of the key potential impacts. The spatial element of the assessment, in the form of maps etc, is also welcome and useful. However, it is difficult to discern where and how specific pieces of information have been used, including in the assessment undertaken, in reaching conclusions or recommendations.

For example, there are lengthy literature reviews given for each type of impact which includes a 'Summary & Recommendations' section. However we are concerned that in most cases these do not contain any recommendations as such but rather they suggest that there are no significant impacts "*at the strategic level*". Furthermore, it often rather too easily dismisses the potential impacts on marine wildlife.

This lack of clarity between the evidence base and how the conclusions and recommendations are reached and subsequently how the ER informs decision making is a long running concern for the RSPB, and one which we have articulated in our response to previous offshore energy (oil and gas and/or offshore wind) SEAs.

Alternatives

As with previous SEAs (whether OESAE1 or SEAs1-8), the RSPB continues to be extremely concerned that the alternatives considered are not sufficiently detailed, realistic or spatial – see our comments below.

Absence of real alternatives to Option 3, and failure to further specify Option 3

The ODPM's Guide to SEA[1] provides guidance on developing alternatives (see pp:28-73). This guide suggests a 'hierarchy of alternatives' (see Guide pg.69), referring to obviation of need, different modes/types of development, location and timing. It is clear this is a guide to developing alternatives (e.g. see Guide Table 15, pg.70). It is not simply a list of considerations for comment.

The ER does discuss alternatives in relation to the ODPM hierarchy of alternatives (see pp:14-15). Regarding location, for example, it says:

[1] ODPM (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*. http://www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguidesea.pdf

"*The presence of exploitable wind, wave and tidal resources and commercial hydrocarbon resources/gas (including carbon dioxide) storage capacity is variously a function of location, geological history and existing sensitivities and uses which dictate the areas of potential interest*."

However, the alternatives should instead consider different location-specific plans, e.g. different sizes of coastal buffers, complete exclusion of development in Natura 2000 areas, greater or lesser weighting to various 'soft' constraints, etc. The result being that there should be alternatives within Option 3 "*To restrict the areas offered for leasing and licensing temporally or spatially*". As we have said many times, Option 2 "*To proceed with a leasing and licensing programme*" is not a real alternative given the existence of known "*hard*" constraints.

Failure to further specify spatial constraints and thereby reduce environmental impacts
While on the one hand, the ER contains plenty of information and assessments are carried out which could have refined the plan in spatial terms, but this is not done rather The Crown Estates' offshore wind leasing zones are simply followed. On the other hand, The Crown Estates' leasing zones are not considered, and hence assessed, as a distinct spatial alternative.

Impacts on Seabirds
Again, as we have highlighted previously, we are concerned that assumptions are being made that impacts on seabirds are insignificant either at odds with the evidence presented in the ER or in the absence of definitive evidence. In the latter case, there is no attempt to apply the precautionary principle.

Collision risk with Offshore Wind Farms (5.6.2.2)
We are of the opinion that the ER can honestly assume that that the maximum predicted bird collisions at offshore wind farms to date are in the order of a few tens per year per development (see pg.179, 1st para). Table 5.9 (pg.178) clearly shows that for several species at specific offshore wind farms the number of predicted collisions is far in excess of tens of collisions (e.g. gannet and sandwich terns at Dudgeon Shoal; lesser black backed gulls at Walney; and many species at Lincs). In addition, this table does not include Race Bank and Docking Shoal, which are predicted to have sandwich tern collisions in the several hundreds.

Failure to apply sensitivity mapping for birds (6.1 Recommendations)
While huge effort has been put into literature review work, we are disappointed that the next stage in the process, using this information to assess the impacts of developments on seabirds is still only at the recommendation stage. For example, producing a Species Sensitivity Index (SSI) and sensitivity mapping for birds with respect to offshore wind farms, as done for German offshore wind development (see pg.384, para 16) is recommended, but not actually done. While a cumulative impacts assessment for birds is also referred to but not carried out.

Noise impacts (5.3)
With respect to underwater noise from pile driving turbine foundations while the ER appears to include good coverage of the research carried out to date on marine mammals,

we can not comment on the conclusion that cumulative noise impacts (injury or behavioural effects) on marine mammals will not be significant or that it is improbable that noise impacts will coincide marine mammals. However, the ER does not adequately deal with the potential significant effects of pile driving on fish species (i.e. prey species for birds). For example, there is some evidence of potentially significant impacts on fish, and with the likely simultaneous and prolonged extent of turbine pile driving for R3, the potential for cumulative effects could be quite high. The ER does mention generic mitigation for noise impacts, but it was not clear that such generic mitigation was considered obligatory. And while a task group is recommended to further consider the issue and potential impacts, this is not 'mitigation'.

Cumulative impacts (5.16)
While we obviously broadly welcome the recommendation that a precautionary approach is taken to siting in areas known to be of importance to birds (and marine mammals), we believe that this is a weak recommendation.

Tidal range/barrages (5.4 & 5.6.6)
Physical disturbance (5.4)
The ER concludes physical disturbance on a strategic scale is likely to be remote. On the whole we agree with this assessment with regards to offshore wind, wave and 'other' tidal schemes, however , we do not agree with respect to tidal range schemes.

The ER effectively avoids making recommendations on anything related to tidal range schemes, instead concluding that because the exact level of impact is dependent on several variables (e.g. scheme location, operation and design, plus estuary specificity, etc), detailed site specific survey work and assessment is necessary at the project stage. In our opinion this is an inadequate conclusion for an SEA, as site specific survey work and assessment always needs to be done at the project stage anyway (i.e. through EIA). It is not appropriate to simply leave consideration of tidal range schemes to the project level simply because it is too difficult to assess such schemes at the strategic level.

Accidental events (5.13), related to Oil & Gas Activities
The ER concludes that the potential for significant effect from oil and gas activities is largely related to the noise generated from seismic surveys associated with oil and gas. However, we believe that this underplays the risk of oil pollution, especially from accidentally events as we had recently from the Deepwater horizon. While it may be argued that the likelihood of the event happening is low, the impacts from any such pollution could be very serious, potentially even catastrophic, and the costs of clean up very high, and as such, accidental events must not be discounted so easily.

We are particularly concerned that the impacts on seabirds are dismissed so easily (5.13.2.3; 5.13.3; & 5.16). While there is seasonal vulnerability related to concentrations at certain times of the year, it must be noted that the UK is important for both breeding seabird populations and over-wintering populations of seabirds, seaducks and divers, and the result is that there will be vulnerable populations throughout the year. Consideration will also need to be given to the species involved, its conservation status and the other pressures on seabirds at that time. Finally, just because we have been luck enough in the past that oil spills have either

occurred when the sensitive seabirds are not around or have affected a population that has been able to recover reasonably quickly, does not mean that we can dismiss the impact as insignificant. The first responsibility of the sector and the regulator is to prevent damage in the first place.

Furthermore, despite their inclusion in this section (pg.314) of the ER, the conclusions of the report from the Parliamentary Energy & Climate Change Committee (published in January 2011) on the implications of the Deepwater Horizon blow out event for UK deepwater drilling activities are ignored. Pertinent conclusions of the ECC Committee which we urge greater consideration of in the conclusions of the ER include:

- the offshore oil and gas industry is responding to disasters, rather than anticipating worst-case scenarios and planning for high-consequence, low probability events.
- the drilling-licence process [requires] companies to consider their responses to high-consequences, low-probability events. The Government should not automatically accept claims that companies have mitigated away the risk of such worst-case scenarios.
- There are serious doubts about the ability of oil spill response equipment to function in the harsh environment of the open Atlantic in the West of Shetland. The Government should ensure that any capping, containment and cleanup systems are designed to take full account of the harsh and challenging environment West of Shetland

Dismissal of transboundary impacts (5.16.12)
The SEA Directive requires consultation with environmental authorities in other countries where <u>significant</u> environmental impacts may be experienced. Development of Dogger Bank would be likely to have some significant effects on German and Dutch waters, but the ER suggests these are 'not significant' (see pg.356, s.5.16.12); consequently it is unclear whether consultations with other countries have taken place and if they have what the outcomes are.

> "*The scale and consequences of environmental effects in adjacent state territories due to activities resulting from adoption of the draft plan/programme will be less than those in UK waters and are considered unlikely to be significant*."

However, we question the assumption in the ER that transboundary issues are not significant, as there are many discussions taking place under various forums regarding the wider Dogger Bank with respect to not only wind farms built also nature conservation protection (under the EU Birds and Habitats Directives) and fisheries. These multinational discussions have not reached any decisive conclusions to date on how the wider Dogger Bank should be managed sustainably.

Data (6.1)
While the references to the importance of data collection in the future is a positive ('Improving the marine management information base'), it does not include the more ambitious types of information and data-related issues which the RSPB has been raising to date, e.g. systematic data collection to fill data gaps and update old data (e.g. seabirds at sea, a stable data repository, etc).

More detailed comments:

Page/section	Comments
pg.32, Box 2.1	The following text within this table is not clear: "*SW England 0.5km² for generating 30MW* *Wales 5km² for an array generating 30MW*" The disparity between the two area-related figures required to generate 30MW is not helped by the lack of information on the expected generation capacity for an individual device in SW England. There is reference to the fact that devices are unlikely to have a generating capacity above 1MW, so it is unclear how 0.5km² can be a large enough area to generate 30MW. We wonder if this is a typo? It is also worth noting that the Welsh Assembly Government energy policy statement, *A low Carbon Revolution* (March 2010) sets an extremely high target for wave and tidal stream renewables, with a combined generation target of 4GW within Welsh territorial seas by 2025. It is clear that the OESEA2 does not predict such a high capacity within Welsh waters, which represents a policy conflict between DECC and WAG.
pg.180, Wave & Tidal stream	We welcome the reference to the Marine Renewable Energy Strategic Framework (MRESF), and the associated research into collision risk with diving birds in Welsh waters.
pg.202, Table 5.15 - SPAs & associated waterfowl species potentially vulnerable to tidal range devices	This table fails to capture the potential 'far field effects' of tidal range devices to SPAs that share features with those listed. I.e. birds that are known to 'stop off' at a number of estuarine SPAs during their migration, and are therefore part of an SPA assemblage feature on a number of sites. There are also some breeding waterbird SPAs in Scotland and Northern Europe that may be impacted, as these species rely on estuaries further south for passage and wintering. These far field effects are detailed within the Severn Tidal Power SEA, but are equally relevant for other tidal power feasibility studies in UK estuaries, and should be included here.
pg.202, Table 5.15	Carmarthen Bay SPA (scoter) has been included within this table as vulnerable to a tidal range device, but Liverpool Bay SPA has been excluded. It would be presumed that there would be large scale geomorphological change associated with a Mersey tidal range device (e.g. barrage), which may impact subtidal habitat that supports the SPA features. Why then is this site not included within the table?
pg.316, 5.14 Ancillary development (e.g. port development)	We consider that this section provides scant consideration of the impacts of port development related to the R3 offshore wind plan. For example it lacks consideration of the in-combination effects with offshore wind, wave, tidal, etc.

Our ref: PCS/112291
Your ref: SEA00024UK/er

If telephoning ask for:
Neil Deasley

12th May 2011

OESEA2 Consultation
Department for Energy and Climate Change
4th Floor Atholl House
86-88 Guild Street
Aberdeen
AB11 6AR

By email only to: sea.gateway@scotland.gsi.gov.uk

Dear Sirs,

Environmental Assessment of Plans and Programmes Regulations 2004
UK offshore energy Environmental Report Consultation

Thank you for your Environmental Report consultation submitted under the above Regulations in respect of the UK OESEA2.This was received by SEPA via the Scottish Government SEA Gateway on 15th February 2011.

We have used our scoping consultation response of 15th April 2010 to consider the adequacy of the Environmental Report. Further, we have focused our comments on the recommendations (where they relate to issues affecting Scotland) set out in Chapter 6 of the Environmental Report as we consider that these are the most important going forward.

As the OESEA2 is finalised, DECC as Responsible Authority, will require to take account of the findings of the Environmental Report and of views expressed upon it during this consultation period. As soon as reasonably practical after the adoption of the plan, the Responsible Authority should publish a statement setting out how this has occurred. We normally expect this to be in the form of an "SEA Statement" similar to that advocated in the Scottish Government SEA templates and toolkit which is available at www.scotland.gov.uk/Publications/2006/09/13104943/13. A copy of the SEA statement should be sent to the Consultation Authorities via the Scottish Government SEA Gateway on publication.

If you have any queries relating to this letter, please contact me by telephone on 01786 452431 or by e-mail to neil.deasley@sepa.org.uk.

Yours sincerely

Neil Deasley
Principal Policy Officer
Planning Service

Annex 1

General Comments

As we understand, the OESEA2 relates to Scotland only in relation to oil and gas exploration and production, hydrocarbon gas importation and storage and carbon dioxide transportation and storage. Accordingly, our comments are restricted to coverage of these issues in the SEA.

Generally, we welcome the very comprehensive nature of the assessment and are content that the strategic level effects of offshore energy production have been fully considered and, where appropriate, recommendations for mitigation made. Accordingly we are broadly content with the assessment and have only limited comments to make.

We particularly welcome the comprehensive nature of the recommendations that are set out in chapter 6. These form a clear basis for delivery of mitigation measures to address the environmental effects identified. While we welcome these, we also consider that there is a risk that they are not put into place as the offshore energy plan is implemented. To address this, we feel that a clear framework should be put into place that identifies how measures should be implemented, who is responsible for implementing them and when. This will ensure that measures are brought forward comprehensively and at the right stage in decision making.

Scoping Report Comments

A number of issues were raised in our scoping consultation response of 15th April 2010 and we are pleased to note that many of these have been taken forward and included in the Environmental Report.

In particular, we welcome the inclusion of section 5.14 to cover the potential effects of ancillary on shore development resulting from offshore energy development. With respect to port and manufacturing facilities, you should be aware of the National Renewables Infrastructure Plan[1] for Scotland and its associated SEA, which considers the need for offshore renewable energy port and manufacturing facilities in a Scottish context.

Scottish Government National Marine Plan Pre Consultation Draft

You will be aware that since publication of the UKOESEA2, the Scottish Government has published a pre-consultation draft of its National Marine Plan[2]. This draft sets out:

- Policies for the sustainable development of Scotland's seas;
- Policies on Nature Conservation Marine Protected Areas (MPAs) and other relevant conservation sites;
- Economic, social and marine ecosystem objectives and further objectives for the mitigation of and adaptation to climate change;
- The condition of the Scottish marine area (or region) including a summary of the significant pressures and human impacts on the relevant area.

[1] www.hie.co.uk/highlands-and-islands/key-sectors/energy/n-rip.html
[2] www.scotland.gov.uk/Publications/2011/03/21114728/0

- Information relating to the policies appropriate to the plan.

The pre-consultation draft National Marine Plan covers both inshore waters (out to 12 nautical miles) and offshore waters (12 to 200 nautical miles). The National Marine Plan will also apply to the exercise of reserved functions (as well as devolved).

Chapter 9 of the pre-consultation draft sets out the Scottish Government's approach to development in the marine area. This covers many of the issues considered in the UK OESEA2.

A sustainability appraisal of the National Marine Plan is being conducted. As part of publication of the pre-consultation draft, an interim Sustainability Appraisal Report has also been published[3].

Clearly, there is significant interaction in the policies/recommendations set out in OESEA2 and the merging National Marine Plan and we would recommend that the post adoption statement clearly sets out how these two processes will interact.

Comments on Recommendations

We welcome the identification of a comprehensive set of recommendations which are aimed at addressing potential effects highlighted by the assessment. These essentially form the mitigation measures to be undertaken as the programme is implemented. As noted above, to ensure that these recommendations are taken forward fully and timeously, we would recommend that further clarity is provided on who is responsible for their delivery, how they should be delivered and when. Some explanation of how these sit with previous recommendations from earlier OESEA would also be helpful. This information should be provided in the post adoption statement.

Specific comments on the recommendations are provided below. Please note, we have only referred to those recommendations that cover those elements of OESEA2 relevant to Scotland (ie not renewable energy) and which cover SEPA's main areas of interest (air, water, soil, human health and climatic factors):

Spatial Consideration 5 – We support this recommendation aimed at promoting coexistence of multiple energy technologies to minimise conflicts and the land take. The marine planning process (see reference earlier to the National Marine Plan for Scotland) offers a suitable approach for this. Further detail about how the co-ordination process will operate and the roles of the key players would be useful in order to ensure that this recommendation is implemented effectively.

Spatial Consideration 7 – We support this approach.

Managing Environmental Risk 13 – We support this recommendation and would also suggest that further detail is provided in the post adoption statement about the frequency of reviews to consider the changing risk profile and potentially some detail about the factors to be considered in reviews as they are brought forward.

Managing Environmental Risk 14 – We support this approach and consider that this synthesis of ongoing research should be frequent to ensure that any emerging guidance is put into place in time to effectively inform decision making.

[3] www.scotland.gov.uk/Resource/Doc/345728/0115074.pdf

Improving the Marine Management Information Base 20 – This recommendation is comprehensive and is specifically designed to address data gaps/enhancement opportunities identified in the SEA.

Best practice / mitigation Recommendations – We support the identification of measures to promote use of best practice in developments arising from the offshore energy plan. As noted in comments above, it would be useful if further detail was provided in the post adoption statement to establish the way in which these best practice measures will actually be implemented – who is responsible for them, when should they apply and how will they be enforced etc.

SCOTTISHPOWER RENEWABLES

OESEA2 Consultation
The Department of Energy and Climate Change
4th Floor Atholl House
86-88 Guild Street
Aberdeen
AB11 6AR

13th May 2011

By email to oesea2011@decc.gsi.gov.uk

Dear Sir or Madam

UK OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT 2

ScottishPower Renewables (SPR) is an energy company with a remit for developing and operating renewables assets and supplying electricity to our customers. A key element of our ambitious renewable energy programme going into the future is the development of world-leading offshore wind, wave and tidal renewable power generation projects in the UK. We therefore welcome the opportunity to respond to this consultation.

We welcome the opportunity presented by this SEA for further rounds of licensing/leasing for offshore renewables and have the following comments on the OE SEA 2 Non-Technical Summary:

- Page ii – Although no target generation capacities set for wave and tidal stream, there are targets in Scotland and Northern Ireland.

- Page v – Is there a reason not to have a socio-economic chapter in the Environmental Report?

- Page x – This section should be updated to mention the Crown Estate's Round 1 leasing in the Pentland Firth and Orkney Waters.

- Page x- In relation to the UK's wave energy resource, the only commercial wave leases are in the Pentland Firth and Orkney Waters R1 strategic area. References to the "Western Isles" should perhaps be changed to "western coastlines" of Scotland?

- Page x – The overview section on 'main sources of effect and controls' groups together wind, wave and tidal stream development. For point 2, this means that references to foundations are common. However, not all wave and tidal technologies will need such foundations, making their installation more benign.

- Page xii – Paragraph 4 should recognise that there are mitigation measures in place, including marine mammal protocols.

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www.scottishpowerrenewables.com

- Page xii- Paragraph 4 should acknowledge that not all offshore wind and other renewables devices will require pile driven foundations.

- Page xii/xiii – The section on European Protected Species should mention EPS licensing.

- Page xiii- The section on noise should acknowledge that the draft GES indicator being developed by Defra has the potential to limit many key activities carried out as a necessary part of the construction of offshore wind farms and tidal devices, including piling events and technical surveys, and could potentially lead to significant impacts on costs and programme. SPR would like to see a commitment from the UK Government that renewable energy projects should be sited, constructed and operated to minimise noise, according to the principle of Best Available Technique, an established and accepted principle widely used in other areas of environmental management. There should also be the inclusion of a temporal baseline which does not give an unrealistic starting point from which activity in the immediate future will be measured and constrained, and a suitable spatial scale that accommodates the geographic spread of construction activities which are currently planned.

- Page xxi- The section on cumulative effects should make clear the distinction between cumulative and in-combination effects.

- Page xxiii – The final section could mention the opening up of tidal demonstration areas in England and Wales.

I hope the above is helpful, but please let me know if you would like to discuss further.
Yours faithfully

Mandy Gloyer
Policy Manager

The Crown Estate, 16 New Burlington Place

London, W1S 2HX

Consultation on UK Offshore Energy Strategic Environmental Assessment 2

Response from The Crown Estate

May, 2011

Summary

- The Crown Estate welcomes the publication of the consultation and is grateful for the opportunity to provide these comments.

- The Crown Estate is committed to working with Government and all stakeholders to help ensure that the aspirations of the UK for offshore renewable energy are met.

- There is excellent potential within UK waters for wind and marine renewable energy deployment to help mitigate the effects of climate change and assist in the security of UK energy supply.

- One of the greatest challenges to the delivery of offshore renewable energy is business confidence, which in turn leads to the necessary level of investment required to plan and construct offshore wind farms, associated infrastructure and the supply chain. Ensuring that the strategic planning framework is established in a clear, robust and timely fashion is an important driver of confidence in the development of offshore renewables. In this respect it is important that the plan for UK Offshore Energy does not restrict the development of offshore wind farms any more than is necessary to avoid significant adverse environmental effects.

- In this context the Environmental Report is broadly welcomed by The Crown Estate as an important step to ensuring that a robust strategic planning framework is in place to underpin the further development of offshore renewables and gas & carbon storage in the UK. Government's decision on the plan for UK Offshore Energy should seek to maximise the potential for the sustainable development of these strategically important energy resources and our comments are intended to inform that decision.

- The conclusion of the SEA – that 'Alternative 3' to the draft plan / programme is the preferred option is supported, although we believe that this alternative would be clearer if the following wording is adopted: "To restrict the areas offered for leasing and licensing temporally or spatially unless detailed technical and environmental investigations prove that such restriction is not warranted"

Introduction

The Crown Estate welcomes the publication of the consultation and is grateful for the opportunity to provide these comments. This response is informed by The Crown Estate's extensive experience of managing activities within the marine environment and, within its core remit, of balancing economic activity with stewardship of natural resources for future generations to use and enjoy. We are committed to working with

government departments, stakeholders and industry in helping to manage the coastal and marine environment. This response builds on our ongoing dialogue with DECC about the future leasing/ licensing for offshore renewable energy, hydrocarbon gas and carbon dioxide storage and associated infrastructure.

The Crown Estate can bring to bear a high level of knowledge and expertise on issues relating to management of the foreshore, the territorial seabed and continental shelf, and we are committed to working with Government and all stakeholders on issues which affect these areas. Our Marine Estate comprises virtually the entire UK seabed out to the 12 nautical mile territorial limit, in addition to the sovereign rights to explore and make use of the natural resources of the UK continental shelf, with the exception of oil, coal and gas. We own over half the foreshore and around half the beds of estuaries and tidal rivers in the United Kingdom. Our expertise includes marine resource management (e.g. marine aggregate extraction, marine renewable energy installations, seabed infrastructure, aquaculture and new activities such as gas storage and carbon capture and storage) and its interplay with other marine activities such as defence, energy, navigation and marine safety. We have a strong understanding of the needs of a broad range of sea users, as commercial partners, customers and stakeholders.

Specific comments

We have restricted our comments to the recommendations of the OESEA2.

- The Crown Estate broadly welcomes Recommendation 3, which relates to the "minimisation of disruption, economic loss and safety risks to other users of the sea and the UK as a whole". However, we would make a comment on parts (a) and (b) of this recommendation, which relate to commercial navigation and port facilities. The Crown Estate is actively involved in NOREL and in working with navigational stakeholders to understand and manage the interaction between the development of current rounds of offshore wind and navigation. We fully support the necessity of minimising collision risk in interactions between offshore wind and shipping, and recognise the importance of commercial shipping to the UK economy. We are, however, concerned to ensure that the balance between the two industries is maintained, and that both sides are encouraged to work together for the benefit of the UK economy and UK climate change objectives. We consider that there is an urgent requirement to share existing information on shipping movements and to improve the existing data where gaps have been identified in order to ensure that decisions on the placement of offshore renewable energy arrays are made on the best possible evidence base. We would also encourage further constructive dialogue between the industries and relevant stakeholders. Ideally Recommendation 3 would include reference to this.
- Recommendation 25, relating to the potential for seal injuries through the use of ducted propellers, urgently requires further investigation in order to establish the nature of any link between offshore renewable energy and harm to seal populations.
- Some stakeholders may be confused by the division of capacity targets across the UK and it would be useful for Government to give clarity on this issue.

Conclusion

We trust that you will find these comments constructive. We would be very willing to provide additional information on any of the points we have raised above and be very pleased to discuss these matters with you further. We are ready to engage in further discussions on these and other points relevant to our ownership or which our expertise may be brought to bear. All of this response may be put into the public domain and there is no part of it that should be treated as confidential.

Contact:

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The Crown Estate

The diverse portfolio of The Crown Estate comprises marine, rural and urban properties across the whole of the United Kingdom valued in total at over £6 billion (2009 figures). Under the 1961 Crown Estate Act, The Crown Estate is charged with maintaining and enhancing both the value of the property and the revenue from it consistent with the requirements of good management. We are a commercial organisation guided by our core values of commercialism, integrity and stewardship.

The Crown Estate's entire revenue surplus is paid directly to HM Treasury for the benefit of UK citizens; in 2009/10 this amounted to around £210 million.

The Marine Estate

Our marine estate comprises virtually the entire UK seabed out to the 12 nautical mile territorial limit, in addition to the sovereign rights to explore and make use of the natural resources of the UK continental shelf, with the exception of oil, coal and gas. We own over half of the foreshore and around half the beds of estuaries and tidal rivers in the United Kingdom. A wide variety of businesses and organisations conduct economic and conservation activities across our marine estate, with an estimated total value of some £444 million providing almost 890,000 jobs. Over 20% of our coastal estate is leased out to conservation bodies.

The Crown Estate manages its marine assets on a commercial basis, guided by the principles of sustainable development and social responsibility. We take a consistent approach to the management of our activities around the UK, whilst retaining flexibility to take local factors into account whenever necessary. The Crown Estate can bring to bear an unparalleled level of knowledge and expertise on issues relating to management of the foreshore, the territorial seabed and continental shelf. We have a strong understanding of the needs of a broad range of sea users, as commercial partners, customers and stakeholders.

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OESEA2 Consultation
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10th May 2011

To Whom It May Concern,

Tidal Energy Limited response to OESEA2 Consultation

Tidal Energy Limited (TEL), Wales' leading tidal stream development company, was established to develop DeltaStream; a unique tidal energy electricity generation technology which has significant potential to be deployed around the coastline of Wales and England.

TEL has been operating in marine renewables for 10 years and has been granted the first tidal energy consents in Wales. These consents were granted by DECC and WAG in March 2011 to construct and operate a single DeltaStream device in Ramsey Sound Pembrokeshire, which is planned to be deployed next year. This project is a significant step in tidal stream development in Wales. TEL welcomes the OESEA2 and is very pleased that the assessment now includes marine renewable technologies to enable the industry to be developed further. The incorporation of marine renewables into this SEA will provide a significant step in the progress of the marine renewables industry in England and Wales to a commercial stage.

DeltaStream has been specifically designed with the environment in mind. It consists of a lightweight gravity based device and therefore there is no need for piling or seabed preparation. The device has a reduced rotor speed and can generate energy economically at a range of tidal flows. These benefits can be achieved as the installation of the device has been designed to keep installation simple and robust therefore keeping costs to a minimum.

DeltaStream is the first tidal stream deployment to be installed in an environmentally sensitive area (Pembrokeshire Marine SAC) which will adopt a "deploy and monitor" approach. This approach will mean that the project will be undertaking a significant level of environmental monitoring which will aid in the development of future marine renewables projects by reducing the current knowledge gap on this subject.

As identified in the OESEA2 the UK has a target of producing 15% of its energy from renewables by 2020. It is understood that the OESEA2 programme will be reviewed in 3-5years and it is unfortunate that no target has been suggested for the deployment of marine renewables in this timeframe. It is agreed that any such target would be low compared to the other technologies included in the OESEA2, given the current status of the marine technologies and difficulties in financing these projects, however there is much interest in the industry for small array projects to be developed within the timescale of this programme. For example TEL is looking to install the

DeltaStream demonstration project in Ramsey Sound in 2012 and development of an array site to be commenced later this year with a view to install the first of the array devices in 2014/2015.

TEL has been pleased with the work that the Welsh Assembly Government has carried out over the last 3 years which has fed into the Marine Renewable Energy Strategy Framework. This report is now available and should be considered as part of the OESEA2.

The development of marine renewable energy technology and projects offers a significant opportunity to develop the green economy in Wales and England. A recent study by the Carbon Trust identifies that the UK could capture just under a quarter of the global marine energy market, equivalent to up to £76 billion to the UK economy by 2050. This growing sector could also generate over 68,000 UK jobs. TEL considers that the socio-economic impacts of such employment generation is a material consideration and suggest that this should be included in the assessment.

We look forward to publication of the OESEA2 and hope it will generate significant interest and investment towards marine renewables.

Yours faithfully

Sara Thomas
Development Manager

Sustainable Energy & Industry Wales

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

OESEA2 Consultation
The Department of Energy and Climate Change
4th Floor Atholl House
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Aberdeen AB11 6AR

12 May 2011

Dear Sir/ Madam

CONSULTATION ON THE ENVIRONMENTAL REPORT FOR OFFSHORE ENERGY SEA2

Thank you for the opportunity to respond to the consultation on the Environmental Report for Offshore Energy SEA2.

The Assembly Government welcomed the DECC decision to progress with a Strategic Environmental Assessment for wave & tidal technologies, acknowledging it a significant step forward in moving us closer towards harnessing the vast potential energy from our seas and securing a renewable and low carbon energy supply for Wales and the UK.

With a relatively sheltered accessible resource, strategic port and grid access, the Assembly Government believe that marine energy will make a significant contribution to domestic and UK renewable energy targets.

The Assembly Government recently published the findings of its 3 year project, the Marine Renewable Energy Strategic Framework (MRESF). The MRESF project has investigated the potential marine energy resource areas within Welsh Territorial Waters by device type, identified the associated constraints tied to those areas and considered potential scenarios for the sustainable development of the available resource.

The MRESF is an aid to development, ensuring Wales gets the right device in the right place, providing developers with key information to inform EIAs and, by carrying out the constraints work, helping reduce the consenting risk for developers.

The findings show that even when the various environmental and technological constraints are taken into account, there is still the potential for Welsh waters to produce enough energy to power up to two million homes per year.

We are pleased to see that the collision risk reports, commissioned to fill data gaps under Stage 2 of our MRESF have been included in the SEA's assessment. All of the reports are available for download on our project specific website at http://mresf.rpsgroup.com

The MRESF acknowledges the current stages of the emerging technology and need for further research, especially gaining knowledge from 'deploy and monitor' demonstrators. We therefore strongly support the need for coordinated research into the effects of wave and tidal stream (Rec.18&19) and would like to see the OESEA list the type of research that it feels is needed.

Building on the MRESF and the marine research currently being carried out by the Wales Low Carbon Research Institute[1], the Assembly Government will soon be undertaking a Marine Energy Infrastructure Study with Halcrow Group Ltd. The aim of the study is to identify specific sites within Wales suitable for deployments – from prototype to commercial scale.

Yours sincerely

Michael Cummings
Sustainable Energy & Industry Wales

[1] Welsh Low Carbon Research Institute is a multi-disciplinary body set up by Welsh universities to unite and promote energy research in Wales

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11th May, 2011

WDCS' response to the Offshore Energy Strategic Environmental Assessment 2

General comments

The Whale and Dolphin Conservation Society (WDCS) welcomes the OESEA2, as it gives a good review of existing information and data gaps. However, WDCS has made comments on lack of data and false conclusions in response to previous SEAs and these concerns remain.

We are further concerned that this SEA heavily relies on vague references to guidelines and initiatives that may be brought forward without any firm commitment to implement them. In addition, the assessment does not come to a solid conclusion about actual or likely impacts of the proposed plans at any point.

With this in mind, we welcome the suggestion for 'strategic and co-ordinated research' made in paragraphs 18 and 19 under Section 6 (Recommendations and monitoring, Spatial considerations). Useful research has been collected in the Moray Firth to inform decision making. Whilst we do not agree with DECC's decision to allow seismic surveys here, we do believe that this level of field research to inform decision making should be routine throughout the UK's marine territories where development is proposed.

Paragraph 20 (also in Section 6) identifies data gaps, but does not specify proposals to fill those gaps. WDCS has identified data gaps as a problem in all previous SEAs, but no cetacean research has been commissioned to fill these. The entire series of SEAs for oil and gas developments have highlighted the lack of information on

i) cetacean distribution,
ii) important areas of habitat for cetaceans,
iii) actual impacts of many developments and
iv) the actual status of most cetacean populations.

Until further work is carried out on these issues, the SEAs will continue to fail to adequately address cetacean conservation needs and the UK government is therefore not fulfilling its obligation for strict protection of cetaceans.

Specific and substantial flaws

Section 5.3.4 (Controls and mitigation) is very vague. The program of licensing is not properly defined and, as a consequence, no actual assessment of what effects will/may be caused by this program is being carried out. This section needs a more detailed analysis.

The assessment depends upon the JNCC Seismic Guidance and the use of Marine Mammal Observers (MMOs), but does not provide any evidence that this approach actually works to mitigate disturbance to marine mammals, and thereby ensures that the UK government meets the requirements of the Habitats Directive. In addition, concerns have been raised before that MMOs do not have the power to stop surveys either during the ramp up procedure or once surveys are underway.

On page 109, the assessment mentions JNCC Disturbance Guidance and acknowledges that the Guidance is still a draft. No such guidance exists in Scottish waters, despite seismic surveys being planned there. As the JNCC Guidance has not yet been finalised, how can it be relied upon as a mitigation measure?

We are very concerned that the SEA considers that the issue of noise can be dealt with through the Appropriate Assessment process. To begin with, this process is only applicable for SACs. There are only two SACs specifically for cetaceans, and then only for one species, the bottlenose dolphin. All cetaceans are required to have strict protection under Article 12 of the EU Habitats Directive and the effects of noise on all these species therefore need to be considered very carefully to ensure compliance. The Appropriate Assessment is not applicable to most species and most locations, and we do not believe that the project-based Environmental Impact Assessment has been applied robustly enough to assess important issues such as effects of noise where there is considerable uncertainty. The whole point of a SEA is to assess impacts at a strategic level, including cumulative and in-combination impacts. The current assessment singularly fails to do this by deferring to project-level assessment of any form.

Even though the SEA lists key areas of marine mammal sensitivity in section 5.3.6, it does not highlight:

i) the areas that are considered important to cetaceans which should not have developments;

ii) areas where there is currently insufficient information to make a decision at this stage, and so should be avoided on a precautionary basis; and

iii) areas where there is sufficient information to propose development pending the outcome of a full Environmental Impact Assessment.

As SAC designation is only applicable for two of the UK's 28 species of whales, dolphins and porpoises, species such as the fin and blue whale, are currently afforded no spatial protection despite residing in offshore UK waters that coincide with oil and gas

exploration and development year round. We note again that all cetaceans are meant to be offered strict protection under the Habitats Directive.

The assessment states on page 125: "*Despite considerable effort in recent years, notably in relation to wind farm development, the fundamental uncertainty relating to assessment of acoustic effect remains the establishment of meaningful thresholds of significant effect resulting from cumulative exposure. This is due to a combination of the complexity of influential factors, population characteristics of the target species, and conservation and ethical issues associated with direct experimentation; and it is unlikely that substantive progress will be made over the life of this SEA and the potential activities under consideration.*" This gives the go-ahead for developments despite the fact that effects are still unknown and research still needs to be undertaken. In terms of 'deliberate' disturbance, how can the assessment allow a development if the level of disturbance cannot be determined beforehand? For developments affecting SACs, an AA will be needed which has to show no impact beyond reasonable scientific doubt. This obligation should be applicable to the SEA as well, but obviously cannot be fulfilled through this assessment.

The assessment makes several references to the results of previous SEAs and relies on taking them forward, but it makes no reference to the criticisms of the criticisms made by WDCS and others to previous SEAs.

Section 5.17 (Consideration of alternatives) states that spatial and temporal restrictions "*may allow a precautionary approach to be taken*". As the assessment does not specify what these restrictions **may** be, it is impossible to assess if they are acceptable.

Specific comments to Section 6 (Recommendations and monitoring, Spatial considerations)

Paragraph 1 states that new SACs /SPAs may be designated and then will be subject to Habitat Regulations. The assessment does not mention existing sites, or that Cardigan Bay is already subject to an unfavourable AA, so should not be licensed.

Paragraph 3 recommends "*that leasing/licensing and any subsequent consenting of activities must ensure the minimisation of disruption, economic loss and safety risks to other users of the sea and the UK as a whole*." What about the minimisation of impacts on wildlife to achieve 'strict protection' as required under the Habitats Directive?

Paragraph 7 mentions the paucity of information for the area west of the Hebrides. The AA for the Cardigan Bay SAC showed a lack of information to allow oil drilling within or next to the SAC – this must be true in many areas but is not reflected here.

Paragraph 9 states that "*For areas which contain habitats/species listed in the Habitats Directive Annexes, developers should be made aware that a precautionary approach will be taken and some areas may either not be leased/licensed until adequate information is available, or be subject to strict controls on potential activities in the field.*" For harbour porpoise this equates to most of the UK's waters!

Paragraph 10 shows that as with other points, the assessment is relying on implementing something that has yet to be agreed. This is so vague it cannot be used to come to a positive conclusion about future licensing.

Paragraph 11 fails to consider the potential cumulative impact on cetaceans.

Paragraph 20 identifies data gaps, but does not specify proposals to fill those gaps. WDCS has identified data gaps as a problem in all previous SEAs, but no cetacean research has been commissioned to fill these. The entire series of SEAs for oil and gas developments have highlighted the lack of information on cetacean distribution, important areas of habitat for cetaceans, actual impacts of many developments and the actual status of most cetacean populations. Until further work is carried out on these issues, the SEAs will continue to fail to adequately address cetacean conservation needs and the UK government is therefore not fulfilling its obligation for strict protection of cetaceans.

WDCS favours alternative 3 to the draft plan/program for future offshore wind leasing, oil and gas licensing and gas storage:

3. To restrict the areas offered for leasing and licensing temporally or spatially.

Finally, WDCS is concerned that since the demise of OREEF, there is now no central forum to identify and prioritise research requirements. Whilst OREEF was not without its considerable flaws, not having such a forum means that there is no formal setting to discuss issues of concern.

We would appreciate a meeting with you to discuss our concerns at the next possible convenience.

Yours,

Sonja Eisfeld
WDCS Conservation Officer

CC: Kevin O'Carroll
Simon Toole