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**Subject:** RSPB submissions for Hornsea Three Deadline 10  
**Date:** 01 April 2019 19:48:23  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[RSPB - Written Submission for Deadline 10.pdf](#)  
[RSPB - Submission on alternative solutions, imperative reasons of overriding public interest and compensation.pdf](#)  
[Appendix A – Offshore Energy Strategy Strategic Environmental Assessment – Consultation Feedback \(DECC, 2009\).pdf](#)

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I attach the RSPB's final submissions for Hornsea Three.

There are 8 files:

RSPB – Written Submission for Deadline 10

RSPB – Submission on alternative solutions, imperative reasons of overriding public interest and compensation

Appendix A – Offshore Energy Strategy Strategic Environmental Assessment – Consultation Feedback (DECC, 2009)

Appendix B – Managing Natura 2000 sites (EC, 2018)

Appendix C – Contracts for Difference CfD Draft Budget Notice for the Third Allocation Round 2019

Appendix D – Hornsea Two – Written Representations for The Royal Society for the Protection of Birds

Appendix E – Hornsea Two – SMartWind - Appendix J – Response to the RSPB 's Written Representation

Appendix F – Hornsea Two – Final submission on alternative solutions under the Habitats Regulations for the Royal Society for the Protection of Birds

Due to the overall size the Written Submission, Submission on alternative solutions, imperative reasons of overriding public interest and compensation, and Appendix A are included in one email Appendices B-F will be sent separately.

Please could you confirm safe receipt of both emails?

Kind regards,  
James

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**Written Submission for Deadline 10  
for  
The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**



## The Applicant's Documents

### The Revised Development Consent Order

#### Ecological Management Plan

The RSPB welcome the addition of the words “and the relevant recommendations of appropriate British Standards” to the Ecological Management Plan provisions (Schedule 1, Part 3 – Requirements, Regulation 10(1)).

#### In-Principle Monitoring Plan and Ornithological Monitoring Plan

The RSPB requests that it is involved in future discussions concerning the scope and content of the ornithological monitoring under the Ornithological Monitoring Plan (Schedule 11 – Deemed Marine Licence under the 2009 Act – Generation Assets, Part 2 – Conditions, Regulation 13(1)(l)), the In-Principle Monitoring Plan (Schedule 11 – Deemed Marine Licence under the 2009 Act – Generation Assets, Part 2 – Conditions, Regulation 17(1)(a)) and the baseline report proposals (Schedule 11 – Deemed Marine Licence under the 2009 Act – Generation Assets, Part 2 – Conditions, Regulation 17(1)(b)).

#### Post-construction monitoring

The RSPB requests that it is involved in discussions about any post-construction monitoring to be undertaken via the Ornithological Monitoring Plan (Schedule 11 – Deemed Marine Licence under the 2009 Act – Generation Assets, Part 2 – Conditions, Regulation 19(2)(c)).

#### Outline Code of Construction Practice

The RSPB notes the revised text in relation to the pink-footed goose management plan (paragraph 6.5.1.40). We are content with the proposed changes.

### Applicant's comments on Written Representations and Responses submitted by Interested Parties at Deadline 7

The RSPB note the Applicant's statement in relation to a response by Natural England on the Report on the Implications for European Sites (Comment 3.1, Section 3.0.9, page 4):

The Applicant would further conclude that where a negligible impact is identified that an in-combination assessment would be unnecessary as any contribution from Hornsea Three would not materially alter the current in-combination impact.

The RSPB disagrees with this approach and considers it to be fundamentally flawed. The whole purpose of in-combination assessment is to address the “last straw that broke the camel's back” situation. It is precisely at the point where the assessment of a scheme alone considers that it is unlikely to have an effect that it is important to go on to assess the impacts when other schemes are taken into account. The purpose of the in-combination assessment is to pick up the residual impacts which would otherwise be overlooked and could slowly accumulate until a problem is caused. We note that Natural England return to these concerns in Comment 3.2, section 3.1.1 (also on page 4). This issue is considered in the European Union's guidance Managing Natura 2000, which states:

A series of individually modest impacts may, in combination, produce a significant impact. As the Court has pointed out *'the failure to take account of the cumulative effect of projects in practice leads to a situation where all projects of a certain type may escape the obligation to carry out an assessment, whereas, taken together, they are likely to have significant effects on the environment'* (C-418/04, C-392/96 paragraphs 76, 82).

Article 6(3) tries to address this by taking into account the combination of effects from other plans or projects. In this regard, Article 6(3) does not explicitly define which other plans and projects are within the scope of the in-combination provision.<sup>1</sup>

Consequently, the RSPB consider that it is not appropriate for the Applicant to decline to undertake an in-combination assessment.

The RSPB note the Applicant's concluding remarks on Natural England's evidence on page 23:

The Applicant submits that it is incumbent on the competent authority to ensure, insofar as Natural England disagree with the findings of a comprehensive scientific assessment and now wish to present their own alternative analysis, that Natural England is held to a similar standard as the Applicant, whereby Natural England is required to justify its assumptions and substantiate its position through cogent factual submissions based upon sound scientific evidence.

The RSPB consider that this approach is entirely divorced from the requirements of the Development Consent Order process and the requirements of The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017. As a Statutory Nature Conservation Body, if Natural England are not convinced by the evidence that the Applicant has presented it is for the Applicant to address those concerns and not, as they contend, for Natural England to resolve any shortcomings that it has identified in the Applicant's assessment work. This view is supported by *Managing Natura 2000*, which states:

**The onus is therefore on demonstrating the absence of adverse effects rather than their presence**, reflecting the precautionary principle (C-157/96 paragraph 63). It follows that the appropriate assessment must be sufficiently detailed and reasoned to demonstrate the absence of adverse effects, in light of the best scientific knowledge in the field (C-127/02 paragraph 61).<sup>2</sup>

The key issue is that it is for the Applicant to demonstrate that there will not be an adverse effect on integrity of any Natura 2000 site as part of the Development Consent Order application. If they do not supply adequate evidence to discharge that requirement, it is not for Natural England to rectify that situation.

### Statement of Common Ground between Ørsted Hornsea Project Three (UK) Ltd and Norfolk Vanguard Ltd and Norfolk Boreas Ltd

The RSPB is profoundly concerned by the statement in *Table 2 – Status of further consideration between Hornsea Three* in relation to offshore ornithology that

On the basis that cumulative effects have been scoped out, or where CEA has not identified any significant cumulative effects – it is agreed that no further consideration of these effects necessary at this time.

The Applicant would further conclude that where a negligible impact is identified that an in combination assessment would be unnecessary as any contribution from Hornsea Three would not materially alter the current in-combination impact.

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<sup>1</sup> *Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (Brussels, 21.11.2018, C(2018) 7621 final), section 3.5.3.

<sup>2</sup> *Managing Natura 2000*, section 3.7.3.

Given the ongoing concerns in relation to the potential impacts of Hornsea Three upon the Flamborough and Filey Coast SPA we do not consider that it is credibly possible for cumulative effects between Hornsea Three and Norfolk Vanguard to have been scoped out at this stage. We urge the Examining Authority to treat this assertion with a high degree of scepticism.

## Natural England's Documents

### Natural England's Response to the Applicant's Deadline 7 Submissions

The RSPB support Natural England's position as set out in paragraphs 1.2.1 to 1.2.3. It is for the Applicant to supply sufficient evidence for Natural England to be able to draw a conclusion that there is no likely significant effect upon Natura 2000 sites: consequently if Natural England consider that there is insufficient evidence to enable them to do so it is inappropriate for the Applicant to criticise Natural England on this basis. It is important to note that the concerns about the adequacy of the data available for the assessments is shared by the RSPB.

**The consideration of absence of alternatives, imperative reasons of  
overriding public interest and compensation**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

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# The consideration of absence of alternatives, imperative reasons of overriding public interest and compensation

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## Executive summary

The RSPB has a number of concerns with the responses provided to the Examining Authority by the Applicant in its answers to the Second Written Questions on the topic of alternative solutions, imperative reasons of overriding public interest (IROPI), and compensation. At the outset, the RSPB accepts that there is a clear public interest in producing renewable energy to reduce carbon emissions to meet the UK's climate change obligations. For this reason, the RSPB is a strong supporter of increasing renewable energy production and doing so in harmony with nature. Our concern here is ensuring this is done in a way that does not cause unnecessary harm to biodiversity, which is why the Article 6(4) tests are so important. In this context, they are critical in ensuring offshore wind farm schemes predicted to cause damage to Natura 2000 sites are only consented in the exceptional circumstances when all of those tests are met.

The concerns can be summarised as follows:

- i. Alternative solutions, IROPI, and compensation are legal tests which are applied when it is not possible to exclude the risk of an adverse effect on the integrity of one or more Natura 2000 sites designated under the Birds or Habitats Directives.
- ii. These legal tests are required to be applied in a specific sequence ordained by the Habitats Directive: first the consideration of alternative solutions, then IROPI, and finally the consideration of compensation. In its answers the Applicant has applied the tests in the wrong order.
- iii. **Approach to defining the public interest:** to frame the analysis on alternative solutions and IROPI required under Article 6(4), it is vital that the public interest(s) served by the plan or project are clearly and precisely described and the contribution of the plan or project to those public interests also described as precisely as possible. In setting out a broad description of the public interest(s) that Hornsea Three is claimed to serve, the Applicant has failed to set out the role and contribution of the project in meeting the claimed public interest(s).
- iv. **Alternative solutions:** the RSPB considers that the legal test of alternative solutions must be given a wide interpretation, and should be focused on the **ends** that the plan or project seeks to achieve (in this case low carbon electricity) and not, as the Applicant contends, the means by which that end is achieved. The RSPB consider that a key role for the competent authority is to identify the alternative solutions that can meet the public interest(s) which the plan or project serves and whether there are other, less damaging means available. To do this will require a clear view of what the relevant public interest objectives are, the contribution of the project to each of those public interests, and whether there are other ways the public need can be delivered without damaging Natura 2000 sites. We do not consider the Applicant has provided the necessary information to carry out such an analysis.
- v. **IROPI:** if the Secretary of State considers there are no alternative solutions to meet the public interest objectives, they can only approve the project if the IROPI outweighs its impact on the conservation objective. It is for the Applicant to demonstrate that the contribution Hornsea Three makes to its claimed public interests outweigh the public interest of conserving the relevant features of, for example, the Flamborough and Filey Coast SPA. The RSPB considers the Applicant has not made this case out. The Applicant's case emphasises "human health, public safety and beneficial consequences of primary importance are central planks of the case for Hornsea Three", with particular reference to combating climate change, energy security and the economic benefits deriving from those. However, at no point in its submission does the

Applicant make anything more than general statements regarding how the Hornsea Three project itself contributes to each of these public interests. Therefore, the RSPB considers this case is not made out.

- vi. **Compensatory measures:** The Applicant states clearly that it has not identified any relevant compensation. The RSPB notes that securing such measures is the responsibility of the Applicant. If the Examining Authority and/or Secretary of State conclude that an adverse effect on the integrity of one or more of the sites highlighted cannot be excluded the Applicant's failure to secure such measures would jeopardise the ability of the Secretary of State to consent the scheme as the SoS would not have any confidence the compensatory measures required under Article 6(4) had been secured. Therefore, in line with *Managing Natura 2000*, consent could not be granted. In addition to this overarching problem, the RSPB is concerned about the approach that the Applicant has adopted in terms of the selection of compensation, its quantum, the evidence base required to demonstrate its likelihood of success, its location, timing and the role of Natural England in selection of compensation.
- vii. Based on the Applicant's submission, the RSPB considers that the Examining Authority and Secretary of State have not been provided with the necessary information to consent the Hornsea Three project on the basis of no alternative solutions, IROPI and securing of necessary compensatory measures. Therefore, based on the information presented to the Examination, the RSPB considers consent cannot be granted.

## Introduction

1. This document represents the RSPB's response to points raised by the Applicant in its answers to the Examining Authority's Questions 2.2.7 and 2.2.44 set out in Appendix 63 at Deadline 4 and *Applicant's Comments on Interested Parties' Responses to the ExA's Second Written Questions submitted at Deadline 4* for Deadline 5. Due to the importance of these issues we have produced this document to publicly set out where our views on these issues differ from those of the Applicant.
2. In approaching the Applicant's responses the RSPB notes paragraph 3.1 the Answers to the ExA's questions states: "The Applicant's primary case is that Article 6(4) is not engaged in relation to the FFC SPA, the NNSR SAC or the WNNC SAC as a result of Hornsea Three (either alone or in combination)." The RSPB has not made representations about either the North Norfolk Sandbanks and Saturn Reef SAC or the Wash and North Norfolk Coast SAC, and will not repeat our representations about our concerns with the Flamborough and Filey Coast SPA (FFC SPA) here. The focus of this document is solely upon the steps which will need to be taken if the Examining Authority and/or the Secretary of State are unable to conclude that Hornsea Project Three will avoid an adverse effect on the integrity of one or more Natura 2000 sites.
3. The RSPB expressed concerns about the potential impacts of offshore wind farms upon the Flamborough Head and Bempton Cliffs SPA and FFC SPA (which now subsumes the former designation) (the FFC SPA) throughout the Hornsea One and Hornsea Two examinations. Both schemes are significantly closer to the FFC SPA than Hornsea Three and are likely *individually*, to be significantly more harmful to the FFC SPA than Hornsea Three. We argued at the Hornsea Two Examination that other schemes should be consented in preference to Hornsea Two<sup>1</sup>. However, both schemes were consented and are now under construction. If it is not possible to exclude the risk of an adverse effect on the integrity of the Flamborough and Filey Coast SPA it will be because of the impacts of Hornsea Three in combination with Hornsea One and Hornsea Two. If this is the case it is regrettable that the potentially least damaging of the four Hornsea schemes, due to it being the furthest from the FFC SPA, is the one which has reached this threshold.
4. The RSPB consider that the invocation of the approach set out in Article 6(4) of the Habitats Directive (92/43/EEC)<sup>2</sup> should not be approached lightly. The very limited number of cases where it has been deemed appropriate to use this approach gives a clear indication of the high thresholds that have to be passed in order to do so.

## Identification of adverse effect on integrity

5. The RSPB note the statement in paragraph 3.7 of the Applicant's Answers, that "NE's conclusion appears to be based on founded principally on uncertainty (which the Applicant does not accept)", coupled with the request for NE to set out its reasoning "and evidence regarding the extent of harm it identifies in respect of the integrity". This approach has the requirements of

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<sup>1</sup> Initially in our Written Representations (15 July 2015) and then in our *Final submission on alternative solutions under the Habitats Regulations* (10 December 2015).

<sup>2</sup> This provision is transposed into domestic legislation via regulation 64 of The Conservation of Habitats and Species Regulations 2017 (SI 1012) and regulation 29 of The Conservation of Offshore Marine Habitats and Species Regulations 2017 (SI 1013). For ease of reference in this document we refer to Article 6(4), but that should be understood to include reference to these provisions where appropriate.

the test backwards - it is for the Applicant to satisfy the Examining Authority that an adverse effect on integrity upon Natura 2000 sites can be **excluded**.

6. The RSPB note the Applicant's statement:

There are two potential categories of adverse effect conclusion as a result of the *Waddenzee*<sup>3</sup> case:

- (a) A positive conclusion of adverse effect, typically as a result of construction works within the Natura 2000 site as a result of e.g. a port, which is known in advance and can be the subject of advance consideration in terms of appropriate compensation inside and outside (e.g. by way of replacement habitat) the affected site and detailed discussion with the relevant SNCB to agree a deliverable and funded set of proposals; and
- (b) A conclusion based on uncertainty of effect due to an absence of evidence or issues of interpretation of the available evidence, such that, in applying the precautionary principle as required by *Waddenzee* an adverse effect cannot be ruled out.<sup>4</sup>

7. The Applicant then continued:

The present case would seem to fall into the second category. It is submitted that, in various respects, a conclusion based on uncertainty and precaution must necessarily be approached differently to one based on clear, positive evidence of a demonstrable adverse effect on integrity.<sup>5</sup>

8. The RSPB disagrees with this assertion. The Habitats Directive is focused on conservation and sets out one requirement, which is to ensure on the basis of robust science that the integrity of Natura 2000 sites is maintained. To this end it makes no difference whether a scheme is required to proceed to consideration of alternative solutions, imperative reasons of overriding public interest and compensation because it is definitely causing harm or because there is insufficient certainty that harm will not be caused. – the key issue is to ensure that if the scheme goes ahead that there will be no long-term harm to the integrity of the wider Natura 2000 network.

9. *Managing Natura 2000* addresses this point:

According to the Court **the appropriate assessment should contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt** as to the effects of the works proposed on the site concerned (C-304/05 paragraph 69).<sup>6</sup>

*Managing Natura 2000* further states:

Where doubt remains as to the absence of adverse effect on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse authorisation (C-127/02 paragraph 57).<sup>7</sup>

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<sup>3</sup> C-127/02, *Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbbeheer en Visserij*.

<sup>4</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.7.2.

<sup>5</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.7.3.

<sup>6</sup> *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (21/11/18)* C(2018) 7621 final, section 3.6.1.

<sup>7</sup> *Managing Natura 2000*, section 3.7.3.

## Evaluating alternative solutions, imperative reasons of overriding public interest, and compensation

10. The RSPB considers that it is essential that renewable energy, like all other development, is delivered through the least environmentally damaging schemes. The purpose of the alternative solutions and IROPI tests is to decide where the balance lies between the public interest in conserving our biodiversity and the public interest(s) which may be provided by the scheme.
11. Article 6(4) takes as its starting point that it has not been possible to avoid an adverse effect on the public interest of conserving the biodiversity protected by the impacted Natura 2000 sites, which in turn defines the loss to the public interests protected by the EU Birds and Habitats Directives. In order to carry out the critical exercise set out in Article 6(4) it is vital that:
  - i) The public interest(s) served by the plan or project are clearly and precisely described; and
  - ii) The contribution of the plan or project to those public interests is described as precisely as possible.

These are critical preliminary steps to tackling the Article 6(4) tests as they enable the decision-maker to determine:

- a) Whether there are less damaging, feasible alternative solutions by which the plan or project's contribution to the defined public interest(s) could be met; and if not
- b) Whether the plan or project's contribution to the public interest(s) outweighs the damage it will cause to the public interests served by the impacted Natura 2000 sites.

It is not enough to couch Article 6(4) arguments in generalities of meeting broadly described public interests: the role of the specific plan or project in meeting the claimed public interest(s) must be precisely described. At this stage we simply note that the Applicant's statement lacks the necessary precision with regard to the contribution of its project to the claimed public interest(s). Therefore, it will be incumbent on the Examining Authority and Secretary of State to carry out this analysis.

12. At the outset, the RSPB accepts that there is a clear public interest in producing renewable energy to reduce carbon emissions to meet the UK's climate change obligations. For this reason, the RSPB is a strong supporter of increasing renewable energy production and doing so in harmony with nature. Our concern here is ensuring this is done in a way that does not cause unnecessary harm to biodiversity, which is why the Article 6(4) tests are so important. As we go on to argue, we do not consider the Applicant has set out a robust case justifying the Hornsea Three project itself in this context.
13. Without going in to detail at this stage, it is worth summarising the key planks of the Applicant's public interest objective arguments.<sup>8</sup> They draw on the contribution of offshore wind in general to the Government's legal and policy objectives (primarily at a UK level) to:
  - a) Increase renewable energy to reduce carbon emissions to combat climate change;
  - b) Increase security of energy supply; and

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<sup>8</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.6.1

c) Economic benefits deriving from (a) and (b).

14. The Applicant then seeks to categorise these primarily under the Article 6(4) heading of public interest tests, primarily the headings of:

- Human health
- Public safety
- Beneficial consequences of primary importance to the environment.

15. However, it is important to note that at no point in its submission does the Applicant make anything more than general statements regarding how the Hornsea Three project itself contributes to each of these public interests i.e. taking each of the claimed benefits (increased renewable energy, improved energy security, economic benefits):

- i) How do each of these elements contribute to human health, public safety and beneficial consequences of primary importance to the environment and precisely which aspects of these broad categories will benefit?
- ii) What part of the UK population/economy will benefit from these public interests; and in turn
- iii) What contribution will the project itself make to each public interest claimed?

This is essential analysis to provide the framework necessary to carry out the alternative solutions and IROPI tests. At present, this case is not made out.

Adverse effects on site integrity

16. The RSPB note the statement in the Applicant's Answers (at paragraph 3.8) that the consideration of alternative solutions, IROPI and compensatory measures "can only be done if the precise nature and quantified extent of any contended adverse effect on integrity is identified". The RSPB respectfully contends that the potential levels of harm can be derived from the modelled outputs of the likely impacts, with the Population Viability Analysis model giving a strong indication of the likely scale of the impact over the lifetime of the offshore wind farm, and using that to quantify the level of harm, and thus compensation, that may be required. It is the RSPB's view that the outputs of this analysis are sufficient to demonstrate reasonable scientific doubt as to the absence of adverse effects on the integrity of the FFC SPA. As per the Applicant's request the RSPB is willing to have further discussions to consider the position further. We make this offer without prejudice to the Applicant's position that Article 6(4) of the Habitats Directive is not engaged.

17. The Applicant notes that "Hornsea Three is not in or near to the FFC SPA, which is some 149 km (approximately) from Hornsea Three".<sup>9</sup> This is not relevant to considerations of impacts of the offshore array area on the FFC SPA – it is the effect that the scheme might have upon the FFC SPA which is the sole consideration.

18. Throughout its response the Applicant places significant emphasis on DEFRA's document *Habitats and Wild Birds Directives: guidance on the application of article 6(4) – Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*. The RSPB note that this is a statement of the UK Government's policy interpretation of the law,

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<sup>9</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 2.2.

and therefore cannot be considered to be legally definitive. The RSPB highlights the Explanatory note at the start of the guidance that: “This guidance is issued as a stand-alone document on an interim basis.” (contents page). We also note that the document is now more than six years old and that there has been a significant body of recent European Court of Justice decisions which may impact upon it. These judgments have been reflected in the European Commission’s revised version of the *Managing Natura 2000* sites guidance.<sup>10</sup> We make reference to this revised guidance in our response. To the extent that there is disagreement between the 2012 DEFRA guidance and the 2018 European Commission guidance we consider that the latter must be preferred.

19. It is important to note that the tests set out in paragraph 4.5 of the Applicant’s Answers are presented in the wrong order, with imperative reasons of overriding public interest (IROPI) being considered before the absence of alternative solutions. The three elements are sequential legal tests and consequently they must be approached in the correct sequence. *Managing Natura 2000* is clear:

The **absence of alternatives must be demonstrated**, before proceeding with the examination of whether the plan or project is necessary for imperative reasons of public interest (Court ruling in Castro Verde case C-239/04, paragraphs 36 – 39).<sup>11</sup>

20. Similarly, IROPI must be established before the issue of compensation can be considered. All three tests must be satisfied in order for a scheme to be consented under this regime.
21. However, we note that in terms of discussion between parties during the examination process, it is appropriate to discuss such matters in parallel in order to inform the Examination fully. However, there has been no serious discussion of compensatory measures to date.

#### Alternative solutions

22. Given the statement from *Managing Natura 2000* in paragraph 19 above it is clear that the absence of alternative solutions is the most important question to address. *Managing Natura 2000* is clear:

The decision to go ahead with a plan or project must meet the conditions and requirements of Article 6(4). In particular, it must be documented that:

1. the alternative put forward for approval is the least damaging for habitats, for species and for the integrity of the Natura 2000 site(s), regardless of economic considerations, and that **no other feasible alternative exists** that would not adversely affect the integrity of the site(s);<sup>12</sup> (our emphasis)

It is within the context of feasibility that the question of alternative solutions must be considered.

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<sup>10</sup> *Managing Natura 2000 sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (21/11/18)* C(2018) 7621 final.

<sup>11</sup> *Managing Natura 2000* (section 3.7.4, page 57).

<sup>12</sup> *Managing Natura 2000*, section 5.2, page 56.

Is “need” unconstrained?

23. Before considering feasibility, the RSPB notes the contention made by the Applicant that “UK renewable energy targets are therefore essentially unconstrained. This is highly relevant to the consideration of alternatives to Hornsea Three and other offshore wind farms.”<sup>13</sup>

24. Similar arguments were advanced by SMartWind (now owned by Ørsted) at the Hornsea Two examination. In Appendix J to its Deadline II response it stated:

The Applicant would make a very general point, however, that it considers the question of alternatives to be a false premise in the context of the Project.

The concept of alternatives must be seen and gauged against the purpose and nature of the individual project subject to the assessment. In the case of the Project, as noted in Section 8 of the Statement of Reasons, the Project is principally designed to deliver renewable energy generating capacity for the UK to address the need for such in accordance with the UK’s legal obligations.

Regulation 3 of The Promotion of the Use of Energy from Renewable Sources Regulations 2011 (2011/243) places a duty on the Secretary of State to ensure that at least 15% of energy consumption in the UK is from renewable sources by 2020. Crucially, this key target is unconstrained. It is not a fixed percentage or a cap and, accordingly, the Applicant would submit that there can be no ruling out of projects meeting an unconstrained need on the basis of alternative solutions.

The central objective of the current UK Government energy policy is to ensure the security of energy supply whilst responding to the challenge of climate change by reducing carbon emissions. To meet these objectives, it is recognised that more energy infrastructure is needed with an increased emphasis on energy generation from renewable and low carbon sources. The need for this infrastructure is fully recognised in many areas of Government policy and the need to reduce carbon emissions is further enshrined in European law and international obligations, which has been transposed into a range of UK legislation. The Project will accord with these policies and help compliance with the relevant legislation and so will assist the Government in meeting its energy policy obligations.

25. The RSPB rejected this assertion at the Hornsea Two Examination<sup>14</sup> and rejects it now. The Government’s decision on 11<sup>th</sup> September 2015 to refuse consent for the Navitus Bay offshore wind farm demonstrated its willingness to reject a nationally significant offshore wind farm scheme due to its environmental impacts. If, as the Applicant contends, the demand for offshore wind was unconstrained, the Secretary of State would have been obliged to consent the scheme despite its perceived harm. Further, the constraints that the Government has put on Contract for Difference bidding rounds<sup>15</sup> indicates a further restriction on delivery of which the Government is clearly aware. This is also described in the Applicant’s statement.<sup>16</sup>

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<sup>13</sup> Ørsted’s *Detailed response to the ExA Q2.2.7 and Q2.2.44*, paragraph 5.6.16.

<sup>14</sup> See Final submission on alternative solutions under the Habitats Regulations for The Royal Society for the Protection of Birds, paragraphs 54 to 70.

<sup>15</sup> The *Contracts for Difference (CfD): Draft Budget Notice for the third allocation round* indicates that the Government will release £60m for the third CfD round, with an overall capacity cap of 6GW (Department for Business, Energy and Industrial Strategy, 20 November 2018).

<sup>16</sup> Ørsted’s *Detailed response to the ExA Q2.2.7 and Q2.2.44*, paragraph 5.6.26.

26. The decision letter rejecting the Navitus Bay Development Consent Order addressed the interplay between the NPS policy statements and the potential impacts for an application:

... The Secretary of State accepts that the need for the development of the kind represented by the Application Development and the TAMO is in accordance with the policy set out in the relevant NPSs (EN-1 and EN-3) but she considered that, in this case, the potential impacts of the Application Development and the TAMO are of such a scale that they outweigh the policy imperatives set out in those Statements....<sup>17</sup>

27. The Navitus Bay decision makes it clear that policy-driven consideration of need does not trump considerations of impact, and that consequently rejection of applications is justifiable if the decision-maker concludes that the impacts of the scheme are considered sufficiently serious.

28. In terms of the nature of the impact, the RSPB stated at Hornsea Two:

63. It is worth noting that the visual impacts on the WHS [World Heritage Site] were considered to be essentially temporary – capable of being addressed as soon as the turbines are removed. This needs to be contrasted with the likely ecological impacts of the Hornsea Project 2 scheme where the impacts upon the various populations of birds will require a number of years to recover, if indeed they can. The Hornsea Project Two impacts are not readily reversible.

64. The RSPB submits that if transient aesthetic impacts justify the refusal of an NSIP renewable energy scheme then ecological impacts upon the designated species of a European site clearly justify refusal of the Hornsea Project 2 scheme. The RSPB contends that the fact that the Secretary of State could justify refusal on the basis of visual, green belt and National Park impacts clearly demonstrates that it is acceptable to reject a scheme on Natura 2000 grounds.

29. The Secretary of State subsequently rejected the Myndd Y Gwynt onshore wind farm NSIP application. The Secretary of State's consideration of national energy policy was extremely limited:

The Secretary of State has had regard to the Energy National Policy Statements ("NPS") EN-1 (Overarching National Policy Statement for Energy) and EN-3 (NPS for Renewable Energy Infrastructure).<sup>18</sup>

Beyond this there was no consideration of energy issues such as need by the Secretary of State. Again, this counters the argument that need is unconstrained and that potentially damaging schemes should be consented.

30. In relation to Hornsea Project Three, it is worth noting that the Myndd Y Gwynt scheme was refused because the Applicant had failed to provide sufficient ecological information in the HRA, such that:

38. The Secretary of State cannot grant development consent ***because she is not able to conclude that there is no adverse effect on the integrity*** of the red kite feature of the Elenydd – Mallaen SPA. She is therefore refusing the Application in accordance with

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<sup>17</sup> Secretary of State's Decision Letter, 11 September 2015, paragraph 52. The "TAMO" was a reduced 630 MW "Turbine Area Mitigation Option" scheme introduced by the Applicant in an attempt to address concerns about the original 970 MW scheme's likely impacts.

<sup>18</sup> Decision Letter, paragraph 9.

regulation 61(5) of The Conservation of Habitats and Species Regulations 2010. (our emphasis)

31. There was no requirement for Natural Resources Wales to prove that the scheme would have an effect – instead the onus was on the Applicant to demonstrate that there was no adverse effect on the integrity of the SPA. This is the approach required by the Habitats Regulations and Habitats Directive. Consequently we contend that the situation there relates closely to the present situation.

32. At Hornsea Two the RSPB noted:

69. Two key points can be taken from these Government decisions:

- The impacts of a scheme must be taken into account and may justify its refusal, even in the context of a clear national need for renewable energy generating infrastructure; and
- Applicants must fully comply with the requirements of the Habitats Regulations. A failure to support sufficient information to enable a proper conclusion at any stage of the assessment process is sufficient to justify the refusal of the application.

We stand by those points in relation to Hornsea Project Three.

What alternative solutions should be considered?

33. For ease of reference we have drawn together several key points made by the Applicant in relation to alternative solutions that rely upon the DEFRA guidance. We respond to them below.

Paragraphs 13 and 14 of the DEFRA guidance confirm that the competent authority must use its judgement to ensure that the framing of alternatives is reasonable by reference to the identified objectives, as they provide the context and set the scope for consideration of alternative solutions.<sup>19</sup>

34. We return to the issue of reasonableness at paragraph 37 below.

35. The Applicant sets out points from the DEFRA guidance:

DEFRA's guidance states that what must be considered are (our [Ørsted's] emphasis): "other feasible ways to deliver the overall objective of the plan or project". The word 'feasible' is important and is also used in the MN 2000 guidance. DEFRA explain that this means (our [Ørsted's] emphasis):

*"The consideration of alternatives should be limited to options which are financially, legally and technically feasible. An alternative should not be ruled out simply because it would cause greater inconvenience or cost to the applicant. However, there would come a point where an alternative is so very expensive or technically or legally difficult that it would be unreasonable to consider it a feasible alternative."*<sup>2021</sup>

While the DEFRA guidance advises that the "do-nothing" options should be considered, it acknowledges this would rarely be a true alternative:

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<sup>19</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.3.3.

<sup>20</sup> DEFRA guidance, paragraph 18.

<sup>21</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.4.1.

*“Normally this would not be an acceptable alternative solution because it would not deliver the objective of the proposal. However it can help form a baseline from which to gauge other alternatives. It can also help in understanding the need for the proposal to proceed, which will be relevant to any later consideration of the IROPI test...”<sup>2223</sup>*

36. The RSPB agree that the need to tackle pressing climate change is such that a “do nothing” approach is inappropriate. However, we are clear that the need to tackle climate change must be carefully considered through the legal tests and that the consenting of a potentially damaging scheme must have been clearly demonstrated by satisfying all of the tests.

37. The RSPB consider that a key role for the competent authority is to identify the alternative solutions that can meet the public interest(s) which the plan or project serves. To do this will require a clear view of what the relevant public interest objectives are, the contribution of the project to each of those public interests, and whether there are other ways the public need can be delivered without damaging Natura 2000 sites. The RSPB consider that the alternative solutions to be considered should not be limited by the Applicant’s view or definition of the need: the competent authority should ensure that all alternative solutions to the plan or project have been considered. We note the Applicant’s position:

DEFRA explain in their guidance<sup>24</sup> that the competent authority must use its judgement to ensure that the framing of alternatives is reasonable. With regard to the specific example of an offshore wind farm they state (second bullet, our [Ørsted’s] emphasis added):

*“In considering alternative solutions to an offshore wind renewable energy development the competent authority would normally only need consider alternative offshore wind renewable energy developments. Alternative forms of generation (e.g. building a nuclear power station instead) are not alternative solutions to the project as they are beyond the scope of its objective.”<sup>25</sup>*

38. The Applicant expands upon this argument:

... Other forms of renewable energy generation are not alternatives to offshore wind because the UK Government has determined that it is necessary for the energy mix to include a substantial component of offshore wind (irrespective of other forms of renewable energy generation that may be developed). This is evident from NPS EN-1 and EN-3, the latter stating that offshore wind is expected to provide a “*significant proportion of the UK’s renewable energy generating capacity up to 2020 and towards 2050*”<sup>26</sup>. Developing solar or onshore wind farms does not deliver that objective. Moreover, the UK Government has set its mind against future onshore wind development at this time, and neither onshore wind nor solar can be developed at the same scale as offshore wind and do not provide the same level of economic benefit.<sup>27</sup>

It is important to note that the constraints on onshore wind development mentioned relate only to England. Although energy policy is reserved to the UK government, planning policy in relation

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<sup>22</sup> DEFRA guidance, at paragraph 17.

<sup>23</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.5.1.

<sup>24</sup> DEFRA guidance, at paragraph 13.

<sup>25</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.6.1.

<sup>26</sup> NPS EN-3, at paragraph 2.6.1.

<sup>27</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.6.2.

to the construction of onshore wind farms is a matter for the devolved governments. Scottish, Welsh and Northern Ireland government planning policy is far more supportive of onshore wind development. Given that the search for alternative solutions should be at a UK level (in line with the public interests served), it is the RSPB's view these are relevant to the consideration of alternative solutions to meet the public interests described by the Applicant.<sup>28</sup>

39. Therefore, the RSPB disagrees with the Applicant. As highlighted above, the refusal to countenance onshore wind is a domestic policy constraint that only applies in England. Further, we consider that if it is possible to deliver the desired level of renewable energy generating capacity within the required time frame that it does not matter whether this comes from one or two large schemes or a number of smaller schemes. We note that the Applicant also raises the issue of economic benefit: We consider that this may be an entirely inappropriate consideration in the context of alternative solutions. In addition, it is not clear to whom the economic benefit is supposed to accrue, or indeed what the economic benefits are, which makes it particularly difficult for other parties to make representations about them or for decision-makers to take them into account.
40. The RSPB fundamentally disagrees with the approach recommended by DEFRA quoted in paragraph 37 above as we consider that its consideration of alternatives is unduly narrow. We contend that the DEFRA guidance has to be read in a manner which accords with the revised *Managing Natura 2000*. This states:

All feasible alternatives that meet the plan or project **aims**, in particular, **their relative performance with regard to the site's conservation objectives, integrity and contribution to the overall coherence of the Natura 2000 network** have to be analysed, taking also into account their proportionality in terms of cost. They might involve alternative locations or routes, different scales or degrees of development, or **alternative processes**.<sup>29</sup> (our emphasis)

41. *Managing Natura 2000* clearly frames the consideration of alternative solutions around the **designated site** and not the individual scheme which is being proposed. It also clearly envisages alternative **means** to achieve the **aims** of the project - in this case the provision of renewable energy.
42. For the avoidance of doubt the RSPB disagrees with elements of the statement in the DEFRA guidance that:

In considering alternative solutions to an offshore wind renewable energy development the competent authority would normally only need consider alternative offshore wind renewable energy developments. Alternative forms of energy generation (e.g. building a nuclear power station instead) are not alternative solutions to this project as they are beyond the scope of its objective.<sup>30</sup>

43. This approach appears to be contradicted by *Managing Natura 2000* cited at paragraph 40 above. The RSPB considers that a nuclear power station may not be an appropriate alternative<sup>31</sup>, but we consider that measures such as energy efficiency and/or alternative forms of renewable

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<sup>28</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.3.2.

<sup>29</sup> *Managing Natura 2000*, section 3.7.4, page 57.

<sup>30</sup> DEFRA guidance, at paragraph 13, second bullet point.

<sup>31</sup> This view is set in terms of the types of energy generation, rather than in the context of the recent withdrawal of the Moorside and Wylfa schemes.

energy generation would be appropriate alternatives and within the scope of its objective, which is to help combat climate change (the same could be argued in terms of energy security and economic growth). Energy efficiency would help reduce the need for the scheme, whereas the alternative renewables (e.g. solar) would contribute towards the Government's renewable energy targets. Ultimately the question is the *aim* that the scheme seeks to achieve – which is to reduce greenhouse gas emissions whilst ensuring that “the lights stay on” by ensuring that the nation's electricity demand is matched by a sufficient supply of renewable energy. In considering the implications of adopting an alternative solution, it is important to note that to the end user it is not possible to discern the way in which the electricity that is being consumed was generated. We contend that this has a significant bearing on the range of potential alternative solutions. Consequently, the restriction to offshore wind is an unjustified restriction of the scope of the consideration of alternatives, as other renewable energy schemes as well as energy efficiency measures that seek to reduce demand would also serve the overall end as we have set it out in this paragraph. This also accords with the DEFRA guidance:

In some cases wide ranging alternatives may deliver the same overall objective, in which case they should be considered.<sup>32</sup>

44. The DEFRA guidance also notes

The consideration of alternatives should be limited to options which are financially, legally and technically feasible. An alternative should not be ruled out simply because it would cause greater inconvenience or cost to the applicant.<sup>33</sup>

In the event that the Examining Authority and/or the Secretary of State are minded to disagree with the RSPB's position on alternative solutions, we draw attention to the fact that there are already a number of consented offshore wind farms which have yet to be funded which would be capable of providing energy outputs to match that of Hornsea Three. Consequently these offer valid alternatives to the Hornsea Three scheme that meet the narrow test set out by the Applicant and would comply with the extract from DEFRA's guidance at paragraph 37 above.

No feasible locations outside the Hornsea Zone

45. The Applicants have sought to restrict consideration of alternative solutions to the former Hornsea Zone. The RSPB notes the statements made by the Applicant in relation to the Strategic Environmental Assessment work which supported the Round 3 leasing process:

In the UK context, this application is found on, initially, an extensive and rigorous UK wide zone selection process undertaken over many years originally by the Government and TCE and, subsequently, by an equally extensive and rigorous project specific site selection process within the former Hornsea Zone.<sup>34</sup>

And further:

In parallel, DECC concluded a Strategic Environmental Assessment (“SEA”) in accordance with the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations). As set out in NPS EN-3, through this Offshore Energy SEA (“OEESEA”)(DECC, 2009), the Government assessed “*the environmental implications and spatial interactions of a plan/programme for some 25GW of new offshore wind capacity, on top of existing plans*”

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<sup>32</sup> DEFRA guidance, at paragraph 13.

<sup>33</sup> DEFRA guidance, paragraph 18.

<sup>34</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.7.2.

for 8GW of offshore wind". The OESEA included consideration of alternatives to the draft plan/programme for all elements covered by the SEA, including future offshore wind leasing. The Government concluded there were no overriding environmental considerations to prevent the achievement of the plan/programme.<sup>35</sup>

46. The RSPB does not wish to engage in a detailed discussion over an assessment and consultation exercise that was conducted nearly 10 years ago. However, we do wish to highlight for the record the concerns that the RSPB and the Statutory Nature Conservation Bodies set out about the "extensive and rigorous" process that was undertaken at the time.
47. The RSPB made detailed comments on the Offshore Energy Strategic Environmental Assessment (June 2009). We highlight some key points that we made at the time which are pertinent for this case in terms of alternatives and cumulative effects (text in bold italics are our emphasis now):

However, this SEA fails to consider a wide range of alternatives for each activity (section 5.16), ***nor has it undertaken a satisfactory assessment of likely cumulative effects*** (sections 5.5.4 & 5.14), particularly for birds.<sup>36</sup>

In our view, the above conclusion does not adequately reflect the likely significance of the Draft Plan's effects on birds a population level. While significant displacement, barrier and collision effects ***might be unlikely, significant effects cannot be ruled out in the absence of a strategic-level Cumulative Impact Assessment (CIA) of the offshore wind element*** of the Draft Plan.<sup>37</sup>

Most of the RSPB's objections to OWF proposals ***have related to cumulative effects of multiple wind farms and impacts on the relevant SPA populations*** (e.g. Sheringham Shoal), rather than implying biogeographical population level impacts.<sup>38</sup>

***The SEA identification and evaluation of the potential cumulative effects of multiple offshore licences is unsatisfactory, particularly with respect to birds.*** The claim made in section 5.5.4 that there are unlikely to be cumulative effects on biogeographical populations is not supported by a robust assessment. This effect cannot be ruled out for specific species depending on the scale of multiple wind farms and other developments affecting species across occupied sea areas, including transboundary effects.<sup>39</sup>

We ***recommend that a strategic level Cumulative Impact Assessment (CIA) is undertaken***, ideally led by DECC, as project level CIA is unlikely to adequately predict cumulative effects. This CIA could underpin the assessment of cumulative and in-combination effects for the Appropriate Assessment of the Draft Plan.<sup>40</sup>

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<sup>35</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.7.9.

<sup>36</sup> UK Offshore Energy Plan – SEA for Offshore Oil and Gas Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 8.

<sup>37</sup> UK Offshore Energy Plan – SEA for Offshore Oil and Gas Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 11.

<sup>38</sup> UK Offshore Energy Plan – SEA for Offshore Oil and Gas Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 14.

<sup>39</sup> UK Offshore Energy Plan – SEA for Offshore Oil and Gas Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 16.

<sup>40</sup> UK Offshore Energy Plan – SEA for Offshore Gas and Oil Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 17.

The assessment of Alternative 3, the preferred alternative, concludes that there are potential negative effects due to barrier effects and changes in food availability, and potential minor negative impacts upon birds due to collision and behavioural changes (p.109). However, the overall conclusion is that these effects are not significant at a strategic level. As mentioned above, our view is that the criteria for determining significance are unclear and the data to make such an assessment are not robust. We therefore believe that some of these potential negative/minor negative effects are as likely to be significant at the biogeographical scale as they are likely to be insignificant and as such, we cannot make a definitive determination either way. Therefore, the most we can say is that there is no evidence that there is a significant effect, but equally, there is no evidence to show that there is not a significant effect.<sup>41</sup>

48. A paper written by the RSPB, *Assessing Marine Cumulative Effects in SEAs: An Overview of Basic Principles (August 2008)* which was appended to the RSPB's response to the Offshore Energy Strategic Environmental Assessment concluded:

***The scale of the Round 3 programme implies potential for significant cumulative effects both within and between the development zones proposed by the Crown Estate. (page 4) (our emphasis)***

49. The Joint Nature Conservation Committee's (JNCC) response to the Offshore Energy Strategic Environmental Assessment Research Programme, representing the collected views of the Countryside Council for Wales, Natural England and Scottish Natural Heritage, noted:

We also agree, subject to important caveats, that the environmental data presented in the SEA provides no conclusive evidence that overriding environmental considerations will prevent the achievement of the plan/programme. However we do have concerns with respect to the evidence base and with some of the interpretation. In our view ***there are significant environmental risks that need to be effectively managed to ensure the plan/programme can be delivered.*** We are not convinced that the recommendations as currently represented are sufficiently robust to ensure that environmental risks will be adequately addressed.<sup>42</sup> (our emphasis)

50. The JNCC continued:

In our view there is significant uncertainty with respect to the likely impacts of implementing the plan/programme on birds. For example, locations of marine SPAs have yet to be finalised. We believe ***the evidence base for likely cumulative impacts at the strategic/population level needs to be improved*** and that the recommendations could more clearly reflect this need.<sup>43</sup> (our emphasis)

Our principal concern with the SEA conclusion that there is unlikely to be a significant effect on birds, is the ***lack of available evidence in the form of synthesised post-construction monitoring reports*** from the UK. ***Available evidence is not appropriate for assessment of***

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<sup>41</sup> UK Offshore Energy Plan – SEA for Offshore Gas and Oil Licensing and Wind Leasing – Environmental Report Consultation, Response by The Royal Society for the Protection of Birds, page 19.

<sup>42</sup> JNCC response, page 2.

<sup>43</sup> JNCC response, page 2.

***the impacts of the draft plan***, due primarily to differences in scale and site characteristics.<sup>44</sup>  
(our emphasis)

51. Natural England's response to the Offshore Energy Strategic Environmental Assessment noted:

We are surprised that there are no specific recommendations to gather more data or initiate research into specific topics such as modelling displacement or barrier effects and ways in which cumulative effects on birds might be assessed and mitigated.

Whilst we support in general the conclusion that there are more numerous and potentially greater sensitivities in coastal waters, the SEA does acknowledge that there are data gaps further offshore, especially for up to date bird distributions, therefore ***we are concerned that there could be areas beyond territorial waters which may be more sensitive to windfarm development than areas within where we can have greater confidence in the data available.***<sup>45</sup> (our emphasis)

52. Drawn together these concerns highlight the lack of available data, coupled with the lack of an assessment of cumulative impacts which prevent firm conclusions being drawn on the likely cumulative effects arising from offshore wind farms in Round 3. This criticism would not be expected of a rigorous evaluation of potential areas for development. However, as stated in paragraph 46 above, the RSPB highlights these historic concerns not to be drawn into further debate but rather to draw attention to the importance of good strategic level assessment and to highlight that any problems arising now are a legacy of potential historic deficiencies. The question for all parties now is how to proceed in dealing with the current application if the Examining Authority and the Secretary of State are unable to exclude the risk of an adverse effect on the integrity of one or more Natura 2000 sites.

53. The Applicant offers the following conclusions with regard to site selection:

- (a) Developers can only bid for the right to develop sites or zones made available by TCE. Sites not within areas identified to date by the TCE are not legally available.
- (b) The location/boundaries of the former Hornsea Zone were outside the control of the Applicant and locations outside the former Hornsea Zone are not legally available to the Applicant (i.e. not feasible). Furthermore, the coordinates within the Agreement for Lease awarded by TCE mean Ørsted has to focus development projects within identified areas of the former Hornsea Zone.
- (c) But in any event, the identification of the former Hornsea Zone was the output of a robust Government and TCE process involving SEA on the environmental implications of developing 25GW of offshore wind (which encompassed the Round 3 proposals) to identify indicate relative levels of constraint and opportunity, and an AA by TCE of its plan to award the 9 ZDAs. The former Hornsea Zone, within which Hornsea Three is located, was identified through this process.
- (d) There is no good published evidence that identifies other less constrained sites which could host a comparable large-scale offshore wind proposal and avoid or

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<sup>44</sup> JNCC response, page 8.

<sup>45</sup> Natural England response, section 3, Birds.

have less impact on Natura 2000 interests. No one has identified an alternative location that could replace the current proposal wholesale.

- (e) The notion that as yet unidentified and unconstrained areas exist to deliver the scale of development required, without the same or similar effects on the same or other Natura 2000 interests is speculative, as is the proposition that it is possible that a number of smaller schemes, developed incrementally across a wider geographical area, could come forward and deliver the same benefits, without similarly giving rise to impacts on Natura 2000 interests (cumulatively if not individually). Neither can reasonably be viewed as an alternative to Hornsea Three.<sup>46</sup>

54. The RSPB offers the following comments in relation to the points in paragraph 53 above, repeating the lettering used by the Applicant:

- (a) The restrictions on bidding locations are a constraint introduced by a domestic procedure. However, there are other schemes (in all phases of the consenting process) within other licensed zones that are legally available and could act as alternative solutions within the offshore wind sector.
- (b) As with (a) above, this is a domestic procedural constraint and is not a relevant consideration here. The alternative solutions that should be considered include ones which are not open to the Applicant.
- (c) The RSPB has highlighted a number of concerns that were raised at the time that the assessments were undertaken. It would be inappropriate to disregard them when considering issues now that were raised then.
- (d) At paragraph 44 above the RSPB has highlighted that other potentially less constrained sites have already been consented and are merely waiting for appropriate funding to enable them to proceed.
- (e) The RSPB observes that The Crown Estate has publicly announced ongoing Round 3 Extensions and Round 4 leasing rounds which seek to identify other areas of future offshore wind development. In addition, subject to appropriate assessment, other schemes could be delivered across a wider geographical area to deliver the same benefits: in the absence of an exercise to evaluate these possible alternatives it is not appropriate to rule them out of consideration.

Imperative reasons of overriding public interest

55. The DEFRA guidance is clear on IROPI:

In practice, plans and projects which enact or are consistent with national strategic plans or policies (e.g. covered by or consistent with a National Policy Statement or identified within the National Infrastructure Plan) are *more likely* to show a high level of public interest. **However consideration would still need to be given to whether, in a specific case, that interest outweighs the harm to the affected site(s)** and therefore whether IROPI can be demonstrated.<sup>47</sup> (our emphasis)

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<sup>46</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 6.7.10.

<sup>47</sup> DEFRA guidance, paragraph 26.

56. The RSPB respectfully submit that this statement, coupled with the points flagged above in relation to alternative solutions and the refusal by the government of two renewable energy NSIPs provide a clear steer that damaging proposals are highly unlikely to satisfy the tests.

57. The Applicant states:

The DEFRA guidance advises<sup>48</sup> that NPS and other documents setting out Government policy (e.g. the UK Renewable Energy Roadmap) provide a context for competent authorities in considering Article 6(4) and that projects which enact or are consistent with national strategic plans or policies (e.g. such as those provided for in NPS EN-1 and EN-3) are more likely to show a high level of public interest.<sup>49</sup>

58. The RSPB consider that it is helpful to separate this précis out into its constituent text (paragraphs 18 and 26):

National Policy Statements and other documents setting out Government policy (e.g. the UK Renewable Energy Roadmap) provide a context for competent authorities considering the scope of alternative solutions they will assess.<sup>50</sup>

The other element of the text (paragraph 26) has been set out at paragraph 55 above.

59. Although these documents do provide a context for considering Article 6(4) they are by no means determinative. The RSPB considered this issue during the course of the Hornsea Two Examination<sup>51</sup>. We attach copies of the relevant documents.

60. The Applicant states:

As noted above, the DEFRA guidance explains<sup>52</sup> that a project which enacts or is consistent with national strategic plans or policies such as one (or more) NPS, is likely to show a high level of public interest. Offshore wind projects such as Hornsea Three are covered by and strongly supported in principle by:

- (a) EN-1 Overarching National Policy Statement for Energy (July 2011); and
- (b) EN-3 National Policy Statement for Renewable Energy Infrastructure (July 2011).<sup>53</sup>

61. The Applicant also states:

Hornsea Three enacts and is consistent with national strategic policy in NPS EN-1 and EN-3 and therefore demonstrates a high level of public interest<sup>54, 55</sup>.

62. In relation to these points raised by the Applicant it is important to note paragraph 1.7.13 of EN-1, which states:

Habitats Regulation Assessments (HRA) have been carried out and published for the non-locationally specific NPSs EN-1 to EN-5 and for EN-6 which does specify sites suitable for development. As EN-1 to EN-5 do not specify locations for energy infrastructure, the HRA is a

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<sup>48</sup> See paragraphs 14 and 26.

<sup>49</sup> Ørsted's *Detailed response to the ExA Q2.2.7 and Q2.2.44*, paragraph 5.6.2.

<sup>50</sup> DEFRA guidance, paragraph 14.

<sup>51</sup> Set out in paragraphs 25, 26, 27, 28 and 32 above.

<sup>52</sup> DEFRA guidance, at paragraph 26.

<sup>53</sup> Ørsted's *Detailed response to the ExA Q2.2.7 and Q2.2.44*, paragraph 5.6.30.

<sup>54</sup> DEFRA guidance, paragraph 26.

<sup>55</sup> Ørsted's *Detailed response to the ExA Q2.2.7 and Q2.2.44*, paragraph 5.11.1

high-level strategic overview. Although the lack of spatial information within the EN-1 to EN-5 made it impossible to reach certainty on the effect of the plan on the integrity of any European Site, the potential for proposed energy infrastructure projects of the kind contemplated by EN-1 to EN-5 to have adverse effects on the integrity of such sites cannot be ruled out. The HRA explains why the Government considers that EN-1 to EN-5 are, nevertheless, justified by imperative reasons of overriding public interest, while noting that **its conclusions are only applicable at the NPS level and are without prejudice to any project-level HRA, which may result in the refusal of consent for a particular application.** Section 1.7 of EN-6 sets out details of the nuclear HRA. (our emphasis)

63. This sentence in EN-1 is particularly important. In the context of the national overarching policy on energy it makes it clear that it is necessary for individual projects to be assessed on their own merits under Article 6(4) and that it is perfectly feasible for applications to be refused as a result of its project-level HRA.

64. Critically, *Managing Natura 2000* states:

It is for the competent authorities to weigh up the imperative reasons of overriding public interest of the plan or project against the objective of conserving natural habitats and wild fauna and flora. **They can only approve the plan or project if the imperative reasons for the plan or project outweigh its impact on the conservation objective.**<sup>56</sup> (our emphasis)

It will be up to the Applicant to demonstrate, in relation to the FFC SPA species which will be affected, that this requirement is being met. As *Managing Natura 2000* sets out, they will need to demonstrate that the contribution Hornsea Three makes to its claimed public interests outweigh the public interest of conserving the relevant features of the FFC SPA.

Considerations of health and safety public interest arguments

65. The Applicant has made a number of statements about health and safety and their importance in the consideration of IROPI. For ease of reference the RSPB includes the key excerpts here.

While the full range of IROPI can apply for Hornsea Three, it is important to recognise that considerations relating to human health, public safety and beneficial consequences of primary importance are central planks of the case for Hornsea Three.<sup>57</sup>

... the most important reasons which may arise in the context of IROPI, and the considerations which must carry most weight, are those arising under the heads (i) 'human health', (ii) 'public safety' and (iii) 'primary beneficial consequences for the environment.'<sup>58</sup>

The RSPB consider that the Applicant's arguments on these points merit careful consideration, focusing especially upon the circumstances within which, in the RSPB's view, health and safety issues can be properly considered.

66. The Applicant relied on the DEFRA guidance and section 5 of *Managing Natura 2000*:

The ambit of IROPI is not precisely defined but the EC and DEFRA guidance articulates some broad principles:

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<sup>56</sup> *Managing Natura 2000*, box, page 59.

<sup>57</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.4.1.

<sup>58</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.4.2.

- (a) **Urgency and importance:** There would usually be urgency to the objective(s) and it must be considered “indispensable” or “essential” (i.e. imperative). In practical terms, this can be evidenced where the objective falls within a framework for one or more of the fundamental values for citizens’ life (health, safety, environment);<sup>59</sup>

67. The Applicant then continues to expand on this by referring to combatting climate change and the threats it poses to human well being:

Combating climate change and contributing to the provision of affordable and sustainable energy for future generations are objectives of fundamental social and environmental as well as economic importance which fall into the categories ‘human health’, ‘public safety’ and ‘primary beneficial consequences for the environment; as these are the most important forms of IROPI, the case for Hornsea Three carries substantial weight.<sup>60</sup>

The Applicant has also mentioned the role of increased energy security in relation to human health and public safety<sup>61</sup>.

68. The Applicant has contended that

The relevant public interests relating to Hornsea Three must be set against the weight of the interests protected by the Birds and Habitats Directives, having regard to the nature and extent of the harm identified to the relevant Natura 2000 interests. The overriding nature of the public interests engaged in this case should be evident from the suite of legislation and policy documentation summarised above and need not be repeated. In this case, in terms of the approach to the balancing exercise, two key points should be borne in mind:

...

- (b) Second, related to the above, not all IROPI weigh equally in the balance. Hornsea Three would deliver benefits relating to human health, public safety and beneficial consequence of primary importance for the environment. These considerations carry greatest weight because these reasons are capable of automatically overriding the competing public interest of preserving priority habitats and species.<sup>62</sup>

69. We have several comments on the approach described by the Applicant. First, we fundamentally disagree with the assertion that the considerations of human health, public safety and beneficial consequence of primary importance for the environment can “automatically” override competing public interests. By definition, they are public interests to be weighed in the balance following careful analysis. There is nothing “automatic” about it: Article 6(4) demands a deliberative and careful approach in determining where the balance of public interest lies in any specific case. Therefore, praying them in aid of an IROPI argument does not negate the need for that balancing exercise to be carried out.

70. Second, the Applicant does not go on to set out how the provision of renewable energy through this specific project directly contributes to human health, public safety and beneficial

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<sup>59</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.5.1.

<sup>60</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.11.5. Similar statements are made at 5.6.1(a), 5.7.1 and 6.5.4.

<sup>61</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.6.1(b).

<sup>62</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 5.9.2.

consequences of primary importance for the environment. The RSPB argues that it is not enough to make the case in only the most general of terms, given that IROPI is predicated on a careful balancing exercise between the competing public interests of the need to avoid the residual adverse effects on Natura 2000 sites and the contribution of the project to the claimed public interests. The Applicant has failed to make out its IROPI case in terms that establish precisely the contribution of its project to the claimed public interests. The RSPB considers this makes it difficult for the Secretary of State to undertake the IROPI assessment necessary under Article 6(4).

## Compensation

71. The RSPB notes the Applicant's statement:

the Applicant has not identified any relevant compensation at this stage. This is reasonable, particularly since a real and fundamental doubt exists as to whether an adverse effect will actually arise in practice and if so what the extent of that impact may be.<sup>63</sup>

We consider that the decision not to identify compensation is a matter for the Applicant, but note that if the Examining Authority and/or Secretary of State conclude that an adverse effect on the integrity of one or more of the sites highlighted cannot be excluded that this would jeopardise the ability of the Secretary of State to consent the scheme as the SoS would not have any confidence the compensatory measures required under Article 6(4) had been secured. Therefore, in line with *Managing Natura 2000*, consent could not be granted.

72. The RSPB notes the Applicant's statement:

The Applicant is open to discuss this matter in principle on a without prejudice basis with NE to understand its views on compensatory measures, in the event that the Applicant's primary case that Article 6(4) need not be invoked at all is not accepted and the Secretary of State is considering this question. In this context it is noted that DEFRA advise that competent authorities and SNCBs should help applicants identify suitable compensatory measures<sup>64, 65</sup>.

We are willing to enter into such discussions. However, the onus remains on the Applicant to identify and secure any necessary compensation measures.

73. The Applicant sets out its position in relation to compensation, based on the DEFRA guidance:

DEFRA's guidance recognises that in designing compensation requirements, competent authorities and SNCBs should ensure the requirements are "*flexible to ensure adequate compensation without going further than necessary*"<sup>66</sup>. DEFRA has in contemplation a case where the anticipated harm to a site proves to be less than anticipated, such that compensatory measures could be scaled-back. The issue is more acute where the adverse effect may not arise at all, such that compensation was never "necessary". In this context it may be noted:

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<sup>63</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.3.

<sup>64</sup> DEFRA guidance, at paragraph 30.

<sup>65</sup> Ørsted's Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.4.

<sup>66</sup> DEFRA guidance, at paragraph 33.

- (a) research projects continue (e.g. the Offshore Renewables Joint Industry Programme – ORJIP) with government and industry funding intended to provide a firmer evidence base;
- (b) there are key disputes between the Applicant and NE, particularly over the adequacy of the baseline characterisation and the correct approach to risk assessment (notably Collision Risk Modelling). However, on some of the points NE has previously provided different advice, their advice now differs from that being provided by other SNCBs (eg SNH). Furthermore, projects have recently been consented in Scotland (Near na Gaoithe) that have a similar, if not greater, proportional effect on the same species which form the qualifying interest features of other SPAs. The implication is that if the current application were being decided in Scotland, under the same Habitats regime, no issue of adverse impact on the SPA might arise.
- (c) other approved plans or projects may not proceed, or where they do proceed, may not fully-build out to the size and extent consented or assessed in the corresponding EIA, such that the conclusion of adverse effect on integrity is likely to have been predicated on a false cumulative baseline (on a precautionary basis). This is addressed further in Appendix 4 of the Applicant’s Deadline 1 submission (Analysis of precaution in cumulative and in-combination assessments – as-built scenarios)[REP1-148].<sup>67</sup>

74. The Applicant developed this point:

This principle is reflected in DEFRA’s guidance at paragraph 32, which states bluntly: *“Competent authorities should not require more compensation than is needed to ensure the integrity of the network of European sites is maintained”*. This further underlines the importance of DEFRA’s advice that SNCBs should provide their view on *“the extent of any AEol and the compensatory measures required”*<sup>68</sup> (our [Applicant’s] emphasis).<sup>69</sup>

75. The RSPB notes the Applicant’s position. However, *Managing Natura 2000* is clear that compensatory measures “are intended to offset the residual negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 network is maintained.”<sup>70</sup> Consequently, the fundamental requirement for compensatory measures is that there should be certainty that they will address the adverse effect on integrity caused by the particular scheme. This has to be approached on a precautionary basis, and as a result of this, and the requirement that compensation is normally in place before the adverse effect is experienced, it is likely that compensation measures will be required to err on the cautious side.

76. Further, the Applicant poses the question:

(c) If compensatory measures are identified as necessary and become available, how would they be calibrated and allocated between offshore projects which collectively have given rise to the conclusion of adverse effect on integrity?<sup>71</sup>

77. The RSPB consider that this question is fundamentally misplaced. The position is clear: if a scheme cannot exclude the risk of an adverse effect on the integrity of a Natura 2000 site (whether the impact arises from the scheme alone or in combination with other plans or

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<sup>67</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.7.4.

<sup>68</sup> DEFRA guidance, at paragraph 9.”

<sup>69</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.9.3.

<sup>70</sup> *Managing Natura 2000*, bullet point 2, section 3.7.6, page 60.

<sup>71</sup> Ørsted’s Detailed response to the ExA Q2.2.7 and Q2.2.44, paragraph 7.7.5(c).

projects) it is for that scheme to demonstrate why there are no alternative solutions, that imperative reasons of overriding public interest exist, and, crucially, it is then up to that scheme to secure the compensation necessary to address the impacts that the scheme may have if it is consented. Whether this arises from the scheme on its own or in combination with other plans or projects is immaterial: it is for this scheme to compensate as it is this scheme which has, so to speak, “broken the camel’s back”.

Evidence for the compensation measures

78. The RSPB notes the Applicant’s statement:

The Applicant would agree that measures for which there is no reasonable prospect of success should not in general be considered and that evidence would need to be provided as to the technical feasibility. However, it is not the case that there must be empirical evidence as suggested. It is recognised that compensatory measures by their nature be novel.<sup>72</sup>

We note *Managing Natura 2000*’s position in relation to this:

Compensatory measures must be feasible and operational in reinstating the ecological conditions needed to ensure the overall coherence of the Natura 2000 network. The estimated timescale and any maintenance action required to enhance performance should be known and/or foreseen right from the start before the measures are rolled out. This must be **based on the best scientific knowledge available**, together with specific investigations of the precise location where the compensatory measures will be implemented. **Measures for which there is no reasonable guarantee of success should not be considered** under Article 6(4), and the likely success of the compensation scheme should influence the final approval of the plan or project in line with the prevention principle. In addition, when it comes to deciding between different possibilities for compensation, the most effective options, with the greatest chances of success, must be chosen.<sup>73</sup> (our emphasis)

The RSPB contend that the stipulations cited above place very clear limitations upon the Applicant’s contention that there does not need to be empirical evidence. *Managing Natura 2000* makes it clear that there must, at a minimum, be a reasonable guarantee of success. Reliance on “technical feasibility” alone without any empirical evidence would not provide that reasonable guarantee. Therefore, we fundamentally disagree with the Applicant’s argument on this key point. The compensatory measures must therefore be both credible and feasible, rather than simply technically feasible.

79. The RSPB also notes the overall statement about compensatory measures provided by DEFRA which reflects the guidance in *Managing Natura 2000*:

The competent authority, liaising with the SNCB and others as necessary (and, before consent is granted, consulting the appropriate authority) must have confidence that the compensatory measure will be sufficient to offset the harm. This can be a complex judgement and requires consideration of factors including:

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<sup>72</sup> Applicant’s Comments on Interested Parties’ Responses to the ExA’s Second Written Questions submitted at Deadline 4: response to Natural England’s answer to Q2.2.8.

<sup>73</sup> *Managing Natura 2000*, section 3.7.11.

- The technical feasibility of the compensatory measures as assessed based on robust scientific evidence. Measures for which there is no reasonable expectation of success should not be considered
- Whether there is a clear plan for undertaking the compensation, with the necessary provision of management and objectives for the duration over which compensation will be needed
- Distance from the affected site. In general compensation close to the original site will be preferable, but there may be instances where a site further away will be better suited, in which case it should be selected. This judgement must be based solely on the contribution of the compensatory measures to the coherence of the network of European sites
- Time to establish the compensatory measures to the required quality
- Whether the creation, re-creation, or restoration methodology is technically proven or considered reasonable.<sup>74</sup>

Based on this, DEFRA is stating that the technical feasibility of such measures must be based on robust scientific evidence. Logically this will need to be empirical in nature. This will need to be expanded upon with a clear evaluation of the types of measures that are required to compensate for the predicted impacts of the scheme. This will need to consider whether different types of compensatory measures are required for the different species that are likely to be affected. A final consideration will need to be given to selecting a suitable location to ensure that the measures that will be brought forward will not be affected by the same scheme that they are being introduced to compensate for. We return to this final point at paragraph 81 below.

80. The DEFRA guidance continues: “Competent authorities should require no more compensation than is needed to ensure the integrity of the network of European sites is maintained.”<sup>75</sup> The DEFRA guidance continues:

In designing compensation requirements competent authorities and SNCBs should ensure the requirements are flexible enough to **ensure adequate compensation** without going further than necessary. This recognises that **in some cases compensation requirements will need to cater for uncertainty over the harm that might be caused** by a proposal or the effectiveness of compensation measures, or to account for any time lag before compensatory habitat becomes established. For example:

- **If there is uncertainty** about the success of the proposed measures, **the compensation area might need to be larger than the area damaged**
- Potential actions may be required as a condition of consent in case compensation proves to be less successful than anticipated
- It may be that anticipated harm to a site proves to be less than anticipated, or compensation measures are more successful than expected. Where feasible, compensation requirements should be sufficiently flexible to scale back the

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<sup>74</sup> DEFRA guidance, paragraph 31.

<sup>75</sup> DEFRA guidance, paragraph 32.

compensation required in such cases. Habitats legislation should not be used to force applicants to over-compensate.<sup>76</sup> (our emphasis)

This guidance clearly envisages that due to uncertainty the provision of sufficient compensation has to err on the side of caution. This is distinct from “over-provision” and relates to the ability of human interventions to replicate precisely the ecological functions provided by habitats and any other functions relied upon by the impacted species. The RSPB would not argue for over-provision of compensatory measures, but given the precautionary nature of the Directive any argument that what is being required represents over-provision would need to be clearly evidenced.

Location of compensation

81. The RSPB notes the Applicant’s statement:

It is not the case that compensation in all cases must be in the same biogeographical region. MN 2000 notes (pages 62/63) that the Birds Directive does not provide for biogeographical regions, or selection at EU level. However, by analogy, it gives an example that *the overall coherence of the network* may be ensured if compensation fulfils the same purposes and function along the same migration path; and compensation areas are accessibly with certainty by the birds usually occurring on the site affected by the project.<sup>77</sup>

82. From the page numbers given above it is clear that the statement above is a reference to the revised version of *Managing Natura 2000*. We consider that the reference to biogeographical regions does not necessarily accurately reflect the position, and consequently we set out the full text below.

In order to ensure the overall coherence of Natura 2000, the compensatory measures proposed for a project should therefore: a) address, in comparable proportions, the habitats and species negatively affected; and (b) provide functions comparable to those which justified the selection criteria for the original site, particularly regarding the adequate geographical distribution. Thus, ***it would not be enough for the compensatory measures to concern the same biogeographic region*** in the same Member State.

The distance between the original site and the place of the compensatory measures is not necessarily an obstacle ***as long as it does not affect the functionality of the site, its role in the geographic distribution*** and the reasons for its initial selection.<sup>78</sup> (our emphasis)

83. Further, *Managing Natura 2000* states that in relation to SPAs it

could be considered that *the overall coherence of the network* is ensured if:

- compensation fulfils the same purposes that motivated the site’s classification under Article 4(1) and (2) of the Birds Directive;
- compensation fulfils the same function along the same migration path; and
- the compensation areas are accessible ***with certainty by the birds usually occurring on the site affected by the project.*** (our emphasis)<sup>79</sup>

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<sup>76</sup> DEFRA guidance, paragraph 33.

<sup>77</sup> *Applicant’s Comments on Interested Parties’ Responses to the ExA’s Second Written Questions submitted at Deadline 4*: response to Natural England’s answer to Q2.2.8.

<sup>78</sup> *Managing Natura 2000*, box, page 63.

<sup>79</sup> *Managing Natura 2000*, section 3.7.7, pages 62-63.

84. *Managing Natura 2000* is clear:

The compensatory measures have to ensure that a site **continues** contributing to the conservation at a favourable status of natural habitats types and habitats of species ‘within the biogeographical region concerned’, in short, ensure the maintenance of the overall coherence of the Natura 2000 network. (our emphasis)<sup>80</sup>

85. The RSPB interprets the cumulative implications of these statements in *Managing Natura 2000* to indicate a strong preference for compensatory measures to be located in the same biogeographical region **and** to show a strong connection with the existing site. However, the RSPB recognises that there is an inherent challenge in this context: the bird populations provided for by the compensatory measures must not be subject to the same adverse effects giving rise to the need for those very compensatory measures. This is likely to have significant implications for the identification of a suitable location for compensatory measures, especially in and around the North Sea where we would, by definition, be reaching a critical threshold of cumulative adverse effects on site integrity. As referred to at paragraph 79 above, the RSPB consider that these requirements will present significant challenges to the Applicant to be able to demonstrate that the necessary compensatory measures are both sufficiently connected to the Flamborough and Filey Coast SPA to compensate for the impacts from the offshore array whilst sufficiently removed to be confident that birds using the compensatory measures will not be harmed by the array area.

Timing of compensation

86. The RSPB has already considered the issue of the technical feasibility of the compensatory measures at paragraphs 78 to 80 above. Expanding upon those points, if the Applicant proposes to rely upon measures that are considered to be “technically feasible” but which have never been tested, then logically these measures should be provided many years in advance of the predicted damage in order to test the effectiveness of the measures empirically and allow time to make any adjustments to the compensatory measures before any damage has occurred. Otherwise there will be a high risk of a negative effect that the compensation is supposed to address. This underlines the inherent uncertainty in proceeding in the absence of scientific evidence that the compensation measures will succeed and strongly suggests that consent could not be given in such circumstances.

87. The RSPB notes the Applicant’s statement:

It is not the case that any compensatory measures must always be completed before any work on the plan or project may proceed. In some cases damage to European sites may necessarily occur before the compensatory measures are fully functioning. The DEFRA guidance also recognises that there may also be circumstances where the compensatory measures will take a long time to become fully-functioning. This is set out in paragraph 36 of the DEFRA guidance.<sup>81</sup>

88. For ease of reference the RSPB sets out paragraph 36 of the DEFRA guidance in full here:

Where possible, compensation measures should be complete before the adverse effect on the European site occurs. However, in some case damage to European sites may necessarily

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<sup>80</sup> *Managing Natura 2000*, section 3.7.8, page 63.

<sup>81</sup> *Applicant’s Comments on Interested Parties’ Responses to the ExA’s Second Written Questions submitted at Deadline 4*: response to Natural England’s answer to Q2.2.8.

occur before the compensatory measures are fully functioning. **There may also be circumstances where the compensatory measures will take a long time to become fully-functioning (e.g. re-creation of woodland).** In such circumstances it may be acceptable to put in place measures which do not provide a complete functioning habitat before losses occur – provided undertakings have been made that the measures will in time provide such a habitat, and additional compensation is provided to account for this. Such cases require careful consideration by the competent authority in liaison with SNCBs. (our emphasis)

89. *Managing Natura 2000* states:

as a general principle, a site should not be irreversibly affected by a project before the compensation is in place. However, there may be situations where it will not be possible to meet this condition. For example, the recreation of a forest habitat would take many years to ensure the same functions as the original habitat negatively affected by a project. Therefore **best efforts should be made to ensure that compensation is in place beforehand, and, in the case this is not fully achievable, the competent authorities should consider extra compensation for the interim losses that would occur in the meantime;**<sup>82</sup> (our emphasis)

90. *Managing Natura 2000* also makes it clear that:

Time lags **must not be permitted**, for example, **if they lead to population losses** for any species protected on the site under Annex II to the Habitats Directive or Annex I to the Birds Directive;<sup>83</sup> (our emphasis)

91. The RSPB considers that it will be for the Applicant to clearly demonstrate why it is not possible for necessary compensation measures to be put in place before the offshore wind array is constructed, and that this would need to be justified solely on the basis of the length of time required to properly establish the ecological functions that the compensation is seeking to provide. In addition, the Applicant would need to demonstrate that delays would not lead to any population losses and what additional compensatory measures it proposed to put in place to cover any period whilst the main compensation measures were still being delivered.

92. Given the considerations above, the RSPB considers that the requirements for compensation will be difficult to identify and secure. In particular it will be essential for the Applicant to be able to clearly demonstrate that any measures proposed are truly compensation (as required under Article 6(4) of the Habitats Directive) rather than necessary for site management (under Article 6(2) of the Habitats Directive). Measures that should be delivered to address current problems with the condition of the site will not be acceptable as they arise from a separate obligation.

The role of Natural England in identifying compensatory measures

93. In paragraph 3.6 of Appendix 63 the Applicant states:

The DEFRA guidance sets out the Government's expectation that applicants and statutory nature conservation bodies ("**SNCBs**") will engage constructively, and that SNCBs will provide their view on "**the extent of any AEoI and the compensatory measures required**"<sup>84</sup>

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<sup>82</sup> *Managing Natura 2000*, section 3.7.8, bullet point 1, page 63.

<sup>83</sup> *Managing Natura 2000*, section 3.7.15, bullet point 4, page 69.

<sup>84</sup> DEFRA guidance, at paragraph 9.

(our emphasis). DEFRA add that where Article 6(4) is engaged, they expect SNCB to play a role in helping to identify compensatory measures.

94. The RSPB notes that the expectation is that the SNCB will “have a role in helping”, but ultimately the requirement to provide adequate compensatory measures (if required) is a matter for the Applicant. If the Applicant wishes the scheme to go ahead and it is unable to demonstrate to the required standards that an adverse effect on integrity of one or more Natura 2000 sites cannot be avoided then the onus is clearly upon it to demonstrate to the Secretary of State that it has identified and legally secured the necessary compensation, with appropriate advice from Natural England. We consider that the role of the SNCB is limited to helping evaluate the quantum of compensation required and offering advice on the suitability of measures proposed. The RSPB would strongly resist any other interpretation of this point in the guidance.
95. The RSPB wishes to be involved in any future discussions about the design and implementation of compensatory measures if these are deemed necessary by the Examining Authority and/or the Secretary of State.

## Concluding remarks

96. The RSPB has produced this document to set out its views on the appropriate way to approach the legal tests that will need to be considered in the event that the Examining Authority and/or the Secretary of State are unable to conclude that the risk of an adverse effect on the integrity of one or more Natura 2000 sites can be excluded on the basis of the best available scientific information. The RSPB’s view is that, based on the evidence that has been presented to the Examination, that it is not possible to exclude the risk of an adverse effect on the integrity on the Flamborough and Filey Coast SPA.
97. Based on the Applicant’s submission, the RSPB considers that the Examining Authority and Secretary of State have not been provided with the necessary information to consent the Hornsea Three project on the basis of no alternative solutions, IROPI and securing of necessary compensatory measures. Therefore, based on the information presented to the Examination, the RSPB considers consent cannot be granted.
98. The RSPB reserves the right to amend or make further submissions on this issue, in particular if the issue falls to be considered further after the close of the Examination.

## Appendices

- A. Offshore Energy Strategic Environmental Assessment – Consultation Feedback (DECC, June 2009)
- B. *Managing Natura 2000 sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (21/11/18) C(2018) 7621 final*
- C. *Contracts for Difference (CfD): Draft Budget Notice for the third allocation round* (Department for Business, Energy and Industrial Strategy, 20 November 2018)

### Hornsea Two Examination Documents

- D. Written Representations from the RSPB
- E. The Applicant’s Response to RSPB’s Written Representations, Appendix J to the Response submitted for Deadline II
- F. Final submission on alternative solutions under the Habitats Regulations for the Royal Society for the Protection of Birds (10 December 2015)

**Appendix A - Offshore Energy Strategy Strategic Environmental  
Assessment – Consultation Feedback (DECC, 2009)**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

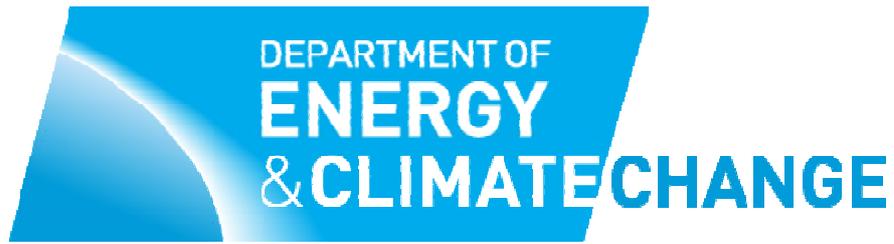
**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**







# Offshore Energy Strategic Environmental Assessment

## Consultation Feedback

JUNE 2009

## CONSULTATION FEEDBACK

Responses were received from the following organisations and individuals:

Airtricity  
Bournemouth Borough Council  
British Wind Energy Authority  
Campaign for National Parks  
Campaign to Protect Rural England  
Centrica  
Chamber of Shipping  
Countryside Council for Wales  
Derek Limbert  
DONG Wind (UK) Limited  
Dorset County Council  
Dutch Fisheries Organisation  
Dutch Government  
E.ON UK  
Eastern Sea Fisheries Joint Committee  
Econcern  
EDF Energy  
EDP Renováveis & Sea Energy Renewables  
English Heritage  
Environment Agency  
Forewind  
Forth Ports PLC  
Fred Olsen Renewables  
Global Marine Systems  
Historic Scotland  
Inch Cape Offshore Wind Farm Ltd  
Joint Nature Conservation Committee  
Kate Elridge  
Ministry of Environment, Czech Republic  
Ministry of Environment, France  
National Air Traffic Service En Route Limited  
National Federation of Fishermen's Organisations  
Natural England  
Norfolk County Council  
Northern Ireland Environment Agency  
Northumberland Sea Fisheries Committee  
Ocean Electric Power  
Philips Advanced Development Lighting, Netherlands  
Renewable Energy Association, Ocean Energy Group  
Renewable Energy Systems Offshore

Richard Cowen  
Royal Yachting Association  
RWE Npower Renewables Limited  
Sándor Gera  
Save-our-Seas  
Scottish Environmental Protection Agency  
Scottish Natural Heritage  
Scottish Power Renewables  
South Downs Joint Committee  
South West RDA and Regen SW  
Terence O'Rourke  
The Crown Estate  
The Royal Society for the Protection of Birds  
The Wildlife Trusts  
Whale and Dolphin Conservation Society  
World Wide Fund for Nature UK

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

Wednesday 22<sup>nd</sup> April 2009

Dear Sir / Madam,

**COMMERCIAL IN CONFIDENCE: Department of Energy and Climate Change Offshore Energy Strategic Environmental Assessment Consultation**  
**- Airtricity Response**

Airtricity is writing in response to the recently published Offshore Energy Strategic Environmental Assessment (SEA) and is pleased to be able to submit its comments on the assessment to the Department of Energy and Climate Change (DECC).

Airtricity welcomes the publication of the DECC Offshore Energy SEA and in particular the confirmation of the likely environmental constraints and data gaps/information requirements for development of offshore wind energy in UK waters. Airtricity recognises that the SEA forms a framework which will support future considerations for offshore projects requiring EIA and the associated licence applications. Therefore it is important that any conclusions are clear and concise, and that the assumptions behind these conclusions are clear. Where the SEA assessment approach differs from an EIA assessment approach, Airtricity believes that this should also be stated transparently in any final document to ensure that the SEA high level approach does not unnecessarily exclude areas where more detailed studies and analysis can show that these are acceptable.

Airtricity has divided its response under the following headings:

- Environmental Information and Data Gaps;
- SEA Screening Criteria used for Spatial Mapping;
  - i. Constraints which are inconsistently reported in the SEA and/or which are considered to be too constrained/should be revisited in terms of existing practical examples.
  - ii. Criteria where an alternative approach to determining hard constraints is recommended.
- Conclusions/Recommendations.

These sections outline and examine the points which raise concern for Airtricity and their likely impacts on future offshore renewable energy developments. Airtricity raises questions regarding outcomes of the SEA and encourages DECC to take into consideration the concerns put forward within this response.

Airtricity would like to thank the Department of Energy and Climate Change for the opportunity to contribute to the SEA and looks forward to receiving the details of the final plan this summer.

Yours sincerely,

**Peter Raftery**

**COMMERCIAL IN CONFIDENCE: Department of Energy and Climate Change Offshore Energy Strategic Environmental Assessment Consultation.**

**- Airtricity Response**

Airtricity has conducted an extensive and detailed screening exercise for the Round 3 bid process, based on the zones offered for bidding by The Crown Estate. Given the Zone-specific nature of this work, it has been conducted at a significantly more detailed level than the SEA analysis. Airtricity has uncovered some differences between the recommendations of the SEA and the results obtained from its screening of the Zones. These discrepancies are included in the comments below.

Airtricity believes that the SEA would benefit from a clear statement advising on the scope of the assessment and that as a fundamental principle, all detailed assessments for the development of offshore energy installations will need to be undertaken at a site specific level.

**Environmental Information and Data Gaps**

The SEA report identifies a number of subject areas where baseline information is limited. Clearly these will need to be enhanced to support future marine spatial planning and project-specific consenting. These include:

- Seabed topography and texture. For some areas there is excellent data, for example from multibeam mapping undertaken by the MCA, BGS and the SEA programme, but the UK lacks a coordinated programme to marshal such data, to identify priority gaps and to find ways to fill them.
- Recent information on the distribution of fish eggs and larvae, and variability in space and time.
- Details of bird migration patterns, and variability in space and time including flight heights in different weather conditions.
- An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs.
- Ecology of most marine mammal species and in particular important areas for breeding, foraging and resting.
- Finer scale distribution of fishing effort, gears and catches for smaller vessels (<15m).
- Precision on the offshore distribution of shipping (AIS data coverage typically only extends 80km from shore).
- Effects on fishing activity in and immediately adjacent to constructed wind farms.

It would considerably enhance the value of the SEA if the final plan expanded on how these data gaps may be filled, and who would take a lead role in funding and managing data gathering exercises.

**SEA Screening Criteria used for Spatial Mapping**

- i. Constraints which are inconsistently reported in the SEA and/or which are considered to be too constrained/should be revisited in terms of existing practical examples**

**Navigation**

**1nm buffer around primary shipping routes as identified by the SEA using 2007 AIS data**

Within the SEA, analysis of Automatic Identification Systems (AIS) data identifies primary navigational routes for shipping based on data taken in 2007. A 1nm buffer is then suggested to be applied to the

routes based on the 'high' to 'medium' risk threshold, as defined in the shipping route template in Annex 3, Template for assessing distances between wind farm boundaries and shipping routes of Marine Guidance Note 371. The SEA suggests that a larger buffer may be required where *'additional factors such as traffic density and tidal set increase local risk'*.

Airtricity are concerned that the data set analysed for the SEA consists only of 4, one week periods – this is too short a sample period to fully characterise an area and make informed judgements. Airtricity considers that it is necessary to collect a longer duration data set (for example one year of full data) – at the moment there is a risk that the short period of data collected may not be giving a true picture of the long-term shipping activity.

Airtricity would also like to see a clear justification of the method of analysing the AIS data. It appears from a comparison with our work that the SEA has applied a lower threshold of density during their analysis than is standard within the offshore wind industry for EIA navigation risk assessment. Airtricity would normally consider over 4 vessels a day to be significant. The lower threshold utilised in the SEA work results in much wider shipping lanes.

Airtricity would like to draw attention to page xvi of the non-technical summary, which states that "windfarm siting should be outside areas important for navigation (these are mapped in the Environmental Report)". This could be interpreted as defining exclusion zones within the SEA. This would not be appropriate given the limitations in the navigation assessment conducted (as detailed above). It is requested that this paragraph to be rephrased.

Airtricity would also promote the periodical review and refinement of shipping lanes to ensure an accurate view of the actual shipping activity is always maintained.

### **Coastal Buffer**

#### **Presumption that the bulk of windfarms should be sited outwith 12nm of the UK coast.**

The SEA identifies an area, extending to 12nm from the coast, where development of offshore wind farms of over 100MW in size are typically prohibited for a variety of reasons including impacts on landscape and seascape, coastal fishing, tourism and recreation and coastal ecology. Although Airtricity is aware that development within this 'coastal buffer' area is not excluded *per se*, Airtricity has concerns about the potential disadvantageous effect it could have on development around the coast (i.e. in fostering a 'presumption against development' without proper assessment).

Airtricity wishes to indicate its considerable concerns over the arbitrary 100MW windfarm figure. Within the SEA non-technical summary, page xiv, it notes that for reasons of landscape/seascape, windfarms larger than 100MW in size should be sited outwith 12nm from the coast. Airtricity would like to see within the SEA a reasoned justification attached to this 100MW figure as it believes that a threshold of numbers of turbines (rather than MW) would be more appropriate for landscape/seascape issues.

Airtricity is also concerned with the basic concept of a 12 nautical mile limit "buffer zone" as it may have the potential to be used with detrimental effect for developers. Airtricity believes this initiative should be reviewed and amended, to prevent it becoming a barrier to development of offshore wind farms within the UK, together with a clear statement that this does not apply to development in Scotland.

Also pertinent to this debate are the existing approved offshore wind farms within 12 nm in England and Wales. Does the SEA consider there to be a cumulative issue within 12 nm that should be considered in relation to further development? It is currently silent on this issue, but it will be important for ongoing developments.

Airtricity would like to see further evidence based justification as to why the buffer has been set to 12nm. The SEA clearly states that development both within and outwith the 12nm limit would be subject to further, site specific detailed information gathering, which would need to be assessed. It is unclear why a 12nm buffer is therefore required. Airtricity would like to see a clear statement in the SEA that the coastal buffer has to be dealt with on a case-by-case basis.

Airtricity would suggest that a more satisfactory solution would be for the SEA to provide more objective justification for this buffer and also denote that development outside this area was less contentious, and therefore be likely to require a lower level of assessment. Airtricity would suggest that this be developed further within National Policy Statements.

The use of a 12nm coastal buffer has the potential to render visual impact assessment both more onerous and more subjective for those sites closer than 12nm. This reinforces the need for the 'buffer' area to be better specified and in such a way that it is appropriate and not unnecessarily restrictive.

Although the SEA report states that in an 'international' context, Belgium and the Netherlands have adopted wind farm zones beyond 12nm from the coast; there appears to be limited and insufficient justification for application of a similar figure around the UK coastline. Human activities and features of conservation interest within the UK are generally concentrated along the coastline, significantly inshore of the proposed buffer zone, rather than out to 12nm.

### **Oil and Gas Platforms**

#### **Presumption that windfarms should be sited no closer than 6nm to oil and gas infrastructure.**

Airtricity considers the SEA approach to oil and gas infrastructure buffer zones is overly cautious and does not reflect existing and accepted practice. Airtricity requests that this 'hard' constraint be reviewed and re-assessed.

Airtricity understands that there is a fundamental safety need, as indicated by the CAA, to maintain a 'buffer' area around oil and gas infrastructure - currently, the default 'buffer' zone is set to 6nm. Within section 5.7.2 of the SEA, the 6nm is assumed, and has been applied, as a hard constraint, regardless of any precedence which has been set during previous offshore windfarm development. For example, Airtricity's consented site West Rijn, offshore of the Netherlands, is located within 0.3nm of the unmanned P15-F platform, within 3.6nm of the unmanned P15-G platform and within 4.4nm of the manned P15-C central production platform. This has resulted in an additional 45km<sup>2</sup> (or approximately 225MW) being made available to the Development Areas than that which would have been achievable using the SEA mapping constraints.

The net result of this 'hard' constraint would also reduce the possibility for co-existence between the offshore windfarm industry and oil and gas facilities. If this is to be the case, it will put enormous significance on the wind farm overlap guidelines currently being drawn up by BERR/DECC/BWEA. Round 3 developers will not be able to accept a risk that future oil and gas licensing rounds could impose licences contiguous with planned or consented offshore wind projects.

Airtricity, whilst fully endorsing the importance of maintaining safe access (principally relating to helicopter movements) feels it would be appropriate to adopt a less conservative approach to oil and gas infrastructure within the SEA, acknowledging that development closer to oil and gas infrastructure can be (and has been) achieved through successful consultation between developers and platform owners.

## **ii. Criteria where an alternative approach to determining hard constraints is recommended**

**Bathymetry:** Airtricity considers 50 to 60m depth a soft constraint based on assumptions that there is likely to be an engineering solution to the challenges of developing in these deeper waters.

**Dredging Areas:** Airtricity applies *active* and *licensed* dredging areas as a ‘hard’ constraint. However it considers that dredging *application* and *option* areas should be viewed as an ‘other’ constraint because although these are precursors to fully licensed dredge areas, the proposed area extents are subject to change and cannot be considered absolute and final. Airtricity recognises the standing of existing licensed dredging operations. However, both dredging application and options areas represent a potential user conflict which could be resolved through consultation and consolidation by The Crown Estate, who is responsible for leasing the sea bed for both industries. It is understood that that there may be a preference for not extending the license of existing areas where environmental damage may have occurred, and that there could be a preference for relocating these areas further from the coast line. Preferred areas for dredging are informed by a Marine Aggregate Regional Environmental Assessment (MAREA), and Airtricity believes that dredging areas should not be considered as a ‘hard’ constraint but that the in-combination effects of these two industries should be considered during the respective zonal appraisals and subject to consultation.

**MoD PEXA Areas:** In its screening of spatial constraints, the SEA Environmental Report considers MoD Practice and Exercise Areas classified as ‘Danger’ areas as a ‘hard’ constraint, which would exclude offshore wind farm development. Table 5.17 (p.151 of the Environmental Report) implies that all PEXA referenced with the ‘D’ prefix have been treated as a hard constraint in the SEA.

However Appendix 3h of the SEA Environmental Report (in particular Table A3h.5, p.446), indicates that application of this constraint is not consistent, with some Danger areas treated as a hard constraint, and others not. The Appendix text explains this application of the constraint, stating that only Danger areas where live firing occurs are treated as a hard constraint. However it would appear that this is not the case with, for example, PEXA used for live firing in the Moray Firth, which is not considered a hard constraint. Given the extent to which PEXA overlap with a number of Round 3 zones, it would be beneficial if the SEA Environmental Report more clearly explained and justified the application of PEXA as a development constraint.

Airtricity believes that in the interests of consistency and avoidance of future conflict, that these constraints should also be noted within the SEA, as well as government’s position as to their relevance to offshore wind developments. This is because the SEA is intended to influence the Round 3 zone boundaries, and is a material consideration in the assessment of the EIA’s for each project.

## **Conclusions/Recommendations**

The SEA addresses several issues which potentially could be viewed as hard constraints, e.g. distances from coastline, oil and gas platforms, navigation routes etc. There are circumstances where it is possible to construct wind farms within these constraints without severe negative consequences for other stakeholders. Consequently the SEA should be clearer that a site-by-site discussion between

developers and affected stakeholders must take place to identify and assess the impacts from the actual windfarm development plan.

The 12nm coastal buffer needs to be developed from a comprehensive evidence base to ensure that it is applied for the correct reasons and is not unnecessarily restrictive to future offshore wind energy development and hinders the achievement of 2020 aspirations.

The navigation and shipping guidance should be supported by further data to ensure that the large generalisations made are supported by detailed data, or revised as appropriate.

The 6nm buffer zone surrounding oil and gas infrastructure should be assessed on a site by site basis and this should be outlined within the SEA.

Several further potential constraints (MoD PEXA areas, dredging application and option areas) should be taken into account in the SEA to provide a more robust assessment of the area for offshore wind energy installation.

Airtricity would like to thank DECC for providing the opportunity to contribute to the development of the Offshore Energy Strategic Environmental Assessment and looks forward to these issues being addressed in the final document later in the spring/summer.

Your ref:  
Our ref:

This matter is being dealt with by: Geoff Turnbull  
e-mail: geoff.turnbull@bournemouth.gov.uk

Direct line: 01202 451382

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

20 April 2009

Dear Sir,

### UK Offshore Energy SEA Consultation

I note that public consultation on the UK Offshore Energy SEA Environmental Report is now in progress and will close on 22 April 2009.

At a meeting of the Council's Overview Board on 8 April 2009, Members discussed the implications on the environment and tourism for Bournemouth of the Zone 7: West Isle of Wight Wind Farm proposals, contained in the Crown Estate's UK Offshore Round 3 Wind Energy Programme.

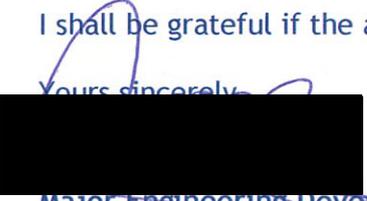
The following issues were raised:

- the lack of engagement with the public and key stakeholders by The Crown Estate,
- the visual impact of the turbines from the beach and the cliffs,
- the impact on safety of small craft,
- the implications on ferry services and shipping routes to Poole Harbour,
- the impact on marine life (in particular from undersea noise),
- the implications of the current economic climate on the timetable for the proposals, and
- the environmental implications of other alternative sources of renewable energy.

The Council agreed that the proposals for the West Isle of Wight wind farm be supported, subject to there being meaningful public consultation and that the implications for shipping routes, small sailing craft safety and marine life be considered.

I shall be grateful if the above issues can be taken into account in your public consultation process.

Yours sincerely,

  
Major Engineering Developments Manager

cc Hannah Cherry, The Crown Estate, 16 New Burlington Place, London W1S 2HX



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

## **BWEA Offshore Energy SEA Consultation Response**

The British Wind Energy Association (BWEA) is the leading UK renewable energy trade association. With over 470 corporate members BWEA represents the large majority of the wind, wave and tidal energy companies in the UK.

BWEA is informed by an established and active network of working groups consisting of leading experts in the offshore wind industry. BWEA has received multiple individual contributions on the consultation from member companies and has also carried out an informative, half day, SEA focused workshop attended by key industry players designed to help formulate this consultation response.

BWEA is therefore suitably well placed to comment on the SEA report for offshore energy. General comments are described below and comments on the report's recommendations follow in section 2.

BWEA hope that the our consultation response is useful and constructive in forming the Government's decision statement. BWEA are fully committed to working with the Government to further our mutual ambitions for maximising offshore renewable energy generation and volunteer the use of our network of industry working groups.

Please do not hesitate to contact me should you have any questions.

Yours sincerely

Duncan Ayling  
BWEA Head of Offshore Renewables  
0207 901 3018  
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## 1. General comments

- A. BWEA welcome the SEA report's high level statement that "...*there are no overriding environmental considerations to prevent the achievement of the ..... wind elements of the plan/programme*". However, this statement is qualified with "*albeit with a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea.*" It is therefore in the detail of these mitigation measures that lie the industry's concerns. These are addressed in section 2.
- B. BWEA believe that Government's 2020 renewable energy targets are of such strategic importance to the nation that a *presumption in favour* of renewable energy development should be written into the National Policy Statement for renewable energy.
- C. Marine spatial overlaps with sea users highlight conflicting governmental policies being pursued by different government departments. BWEA believe that a cabinet level sub-committee for renewable energy is needed to coordinate the strategic delivery of the Government's 2020 renewable energy targets.
- D. The SEA report is generally considered to be "unhelpful" to maximising delivery of offshore renewable energy. The report contains a theme of presumption against renewable energy development wherever spatial conflict arises. The offshore wind industry appears to be treated as lower priority than other industries.
- E. It is vital that a holistic approach is adopted whereby the recommendations from the SEA are balanced against economic drivers and the current lack of any offshore transmission network to ensure that delivery of offshore wind is both practical and economically feasible.
- F. It is vital that the government recognises the importance of near shore offshore wind development and the significant benefits for practical, cost efficient construction and operation. There appears to be no clear basis for the recommendation against much development taking place within the 12nm limit. The increased risk to the plan of pushing development long distances from shore has not been taken into account in the SEA report but should be in the subsequent Government thinking.
- G. The environmental benefits of offshore renewable energy development brought through climate change mitigation should receive a much higher prominence.
- H. Uncertainty remains within industry as to the influence of the SEA report; how Government will translate the information into policy; and what influence it may have on the National Policy Statement for renewable energy. BWEA understands the process to be as below but requests that this is confirmed and communicated to industry:
  - o The government decision statement on the SEA is intended to be published in June 2009. The statement will come in the form of a

comprehensive report and it is this decision report which will inform, or be referenced in, the NPS for renewable energy

- I. Industry requests, through BWEA, the opportunity to feedback on the government's decision report prior to publication.
- J. Any delay on the government's decision after consultation will maintain uncertainty and prolong high levels of risk for developers.

## 2. Comments on the SEA Report Recommendations

*1. In areas with high renewable energy generation potential DECC should ensure decisions on renewable energy leasing and licensing for oil & gas (including natural gas storage) are coordinated to minimise potential sterilisation of areas for other industries. This recommendation extends to maintaining options for potential future geological storage of captured carbon dioxide.*

- 1.1. It is vitally important that areas with high renewable energy potential are not sterilised unnecessarily. Rigorous, strategic consideration needs to be given to the benefits and costs of limiting use to one interest or activity over another. BWEA support a coordinated approach to minimize sterilisation for other industries however it should be remembered that suitable areas for offshore wind are limited by water depth and seabed conditions so cannot be easily relocated.
- 1.2. Careful consideration should be given to an automatic presumption against development due to spatial conflict. Spatial conflicts should examine mitigation rather than expulsion and/or compensation.
- 1.3. Although developers do not want to negatively affect safety, the oil and gas installation 6nm exclusion zone should not be considered a strict boundary as it can be negotiated on a case by case basis with the relevant installation owners. Examples where this has happened are Beatrice and Ormonde.
- 1.4. A major issue with oil and gas spatial conflict is in the lease condition stating that oil and gas interests take priority and the financial risk that this imposes on offshore renewable projects. However, this is not considered to be an SEA issue.

*2. The draft plan/programme for an additional 25GW of offshore wind farm (OWF) generation capacity will require wind farm development on a massive scale. In advance of a formal marine spatial planning system being in place for the UK, the leasing and consenting of OWFs must ensure the minimisation of disruption, economic loss and safety risks to other users of the sea and the UK as a whole. In particular, there should be a presumption against OWF developments which:*

- a. impinge on major commercial navigation routes, significantly increase collision risk or cause appreciably longer transit times*
  - b. occupy recognised important fishing grounds in coastal or offshore areas (where this would prevent or significantly impede previous activities)*
  - c. interfere with civilian aviation including radar systems*
  - d. could potentially jeopardise national security for example through interference with radar systems or significant reductions in training areas*
  - e. result in significant detriment to tourism, recreation and quality of life*
- 2.1. Whilst human safety must remain of paramount importance, the scale of the challenge of meeting the UK's renewable energy targets suggests that there will be some disruption of other activities.
  - 2.2. It should be noted that each offshore wind energy project is unique. This is recognised in the existing consenting process with the requirement for Environmental Impact Assessment and stakeholder consultation. With this in mind, recommendation 2 above may be interpreted as simply a general statement against licensing offshore wind farms.

- 2.3. The navigation data used consists of 4 x 1 week of data in 1 year. Whereas at regional and EIA level this is considered adequate for decision making purposes it is not sufficient to draw conclusions on a UK wide SEA scale. Detail at regional or EIA level would show different results. The SEA should therefore not rule out areas that would show up as developable under REA or EIA.
- 2.4. BWEA remained concerned that unpublished data (from the MCA OREI 1 report) was used to mark out shipping density and that the analysis of this data could be interpreted in a different ways.
- 2.5. It appears that large areas have been excluded without explanation. The presumption in favour of shipping in the SEA report contradicts the government's renewable energy plan.
- 2.6. The type of shipping impacted is very important and has not been analysed.
- 2.7. It is not correct to assume that visual impact is negative. Existing near shore offshore wind farms have been well received by coastal communities and statistics have shown an increase in associated tourism.

*3. Until there is a firmer base of information available to inform adaptive management, in respect of ecological receptors a precautionary approach to siting is recommended since the offshore wind industry is relatively young, with appreciable technological development expected in for example, turbine size, rotation speed, spacing and potentially rotational axis. This precautionary approach dictates that unless suitable evidence indicates otherwise, avoidance (for the present) of areas known to be of key importance to waterbird and marine mammal populations, including breeding colonies, foraging areas and other areas essential to the survival of populations.*

- 3.1. The report quotes the precautionary principle too frequently and liberally. In areas where sufficient data from previous studies exists and the effects are well understood PP should not be quoted.
- 3.2. Consenting authorities should be able to consider results and data collected elsewhere.
- 3.3. BWEA is surprised that in Section 6.2 in the SEA Environment Report, 'Effects Monitoring', there is the conclusion that existing monitoring activity as part of the DECC SEA process is considered to be adequate. BWEA recommend that the programme of monitoring and analysis from Round 2 should be continued by Government to further inform future development.
- 3.4. It should be emphasized that developers are responsible and have invested significant time and money to environmental research to develop with minimal impacts. It is fair to say that offshore developers are driving marine environmental research in the UK.
- 3.5. It should be noted that environmental statutory consultees are keen for win-win situations with dual use and appropriate monitoring. BWEA considered this to be a better solution than exclusion through the over-application of the precautionary principle.

- 3.6. BWEA request that specific guidance is developed from Government to consultees and regulators on a consistent approach to the invocation of the precautionary principle. Developers have experienced a sense of 'moving goalposts' in relation to data required.
- 3.7. In reality, due the changing nature of the marine environment, it will be necessary for developers and regulators to make positive decisions on development in face of some environmental uncertainties if large-scale renewable energy delivery is to be achieved by 2020.
- 3.8. Construction and/or operational restrictions imposed by consent conditions must be mindful of the risk and cost implications for developers.

*4. Reflecting the relative sensitivity of multiple receptors in coastal waters, this report recommends that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km). The proposed coastal buffer zone is not intended as an exclusion zone, since there may be scope for further offshore wind development within this area, but as mitigation for the potential environmental effects of development which may result from this draft plan/programme. The environmental sensitivity of coastal areas is not uniform, and in certain cases new offshore wind farm projects may be acceptable closer to the coast. Conversely, a coastal buffer in excess of 12nm may be justified for some areas/developments. Detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 or subsequent wind farm projects close to the coast can be assessed. Marine spatial planning proposals are under consideration in Parliament, which would give coastal regulators and communities further opportunities to have a say in the way the marine environment is managed, in addition to the existing routes for consultation as part of the development consent process.*

- 4.1. BWEA welcome that there is no exclusion on development near the coast and that development will have to justify plans as usual with Environmental Impact Assessment (EIA). "Detailed site-specific information gathering and stakeholder consultation" is already required and stakeholder consultation requirements are already in place. It is however, unclear if this recommendation adds a new layer of investigations and consultation or if this refers to the existing consenting process.
- 4.2. BWEA acknowledge that the 12nm recommendation is not intended as an exclusion zone but the recommendation that "the bulk of" offshore wind should be outside brings great concern in that the terminology is open to interpretation. Objectors to renewable energy projects will undoubtedly use this 12nm recommendation as a reason to oppose near shore projects. This 12nm recommendation therefore creates increased difficulty for 3 entire Round 3 zones and the closest areas of 2 other zones.
- 4.3. The general 12nm recommendation is arbitrary and will risk the clear economic advantage to near shore construction clearly identified in the Carbon Trust report "Big Challenge, Big Opportunity". Each project should be considered in its own a unique impact and not on general recommendations.
- 4.4. Although the SEA did not cover Scottish Territorial Waters this 12nm recommendation directly contradicts Scotland's plans for offshore wind.
- 4.5. For the reasons above, BWEA recommends that the Government ignores the SEA report's 12nm recommendation. BWEA recommends that Government

does not reference any specific distance in their decision report. EIA is, and will continue to be, sufficient to inform decisions on sensitivity of wind farm proximity to the coast.

*5. To minimise habitat change and to ensure areas developed as a result of the current draft plan/programme are left fit for previous or other uses after decommissioning, the volumes of rock used in cable armouring, foundation scour protection and pipeline protection must be minimised and there should be active promotion of alternative protection methods through the consenting process.*

- 5.1. Environmental considerations are important in deciding protection methods and materials. However, human safety, security of assets and power generation must not be compromised due to equipment or infrastructure becoming exposed or being made unstable.
- 5.2. BWEA wish to question the significance of this impact on habitat change. When considered in relation to habitats, any residual materials will be minimal and highly localised.
- 5.3. Government, The Crown Estate and industry have worked successfully to develop accepted decommissioning guidelines. Decommissioning plans consistent with international and national obligations must be approved prior to construction.

*6. For areas (zones and blocks) which contain good examples of habitats/species on the Habitats Directive Annexes, developers should be made aware that a precautionary approach will be taken and some areas with relevant interests may either not be leased/licensed until adequate information is available, or be subject to strict controls on potential activities in the field. Similarly, developers should note that DECC will continue to conduct Appropriate Assessments/screenings to consider the potential of proposed leasing/licensing and subsequent activities to affect site integrity.*

- 6.1. Concerns over the application of the precautionary principle have been previously mentioned in response to recommendation 3.
- 6.2. There remains uncertainty within industry as to how and when Appropriate Assessments (or Appraisals of Sustainability) for Round 3 zones will be undertaken. BWEA request guidance from DECC to give clarity on this issue.

*7. The effects of noise on marine mammals particularly from piling and seismic survey remain an issue of debate. A range of mitigation measures are available and their adoption is normally required through consenting. However, there is a need for cross-industry coordination of what noisy activities are planned, where and when, to facilitate the assessment of cumulative effects and implementation of temporal/spatial mitigation actions. The approach would require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the future MMO.*

- 7.1. BWEA have real concern about how combination noise effects from installation activity, seismic activity and other sectors activity would be dealt with. In particular how this would be addressed in licences application and delivery.

- 7.2. To be effective, cross industry coordination will need to encompass all industries, internationally, that operate in the marine environment not just renewables and oil and gas.
- 7.3. It should be noted that there is still considerable debate amongst specialists as to the significance of noise on marine mammals.

*8. Although there has recently been significant survey effort in coastal waters, the lack of modern data on waterbirds in offshore areas is noted. Developers need to be aware that access to adequate data on waterbird distribution and abundance is a prerequisite to effective environmental management of activities for example in timing of operations and oil spill contingency planning.*

- 8.1. BWEA agree with this recommendation. The Round 3 zonal programme will enable assessment over a wider area than with individual project EIAs. A difficulty encountered by developers is found when attempting to compare baseline bird data with the area outside of the proposed development. It would be unrealistic and unreasonable to expect developers to survey everywhere therefore it will surely fall to the Government to fund survey works outside of the Round 3 Zone boundaries.

*9. There remain a number of subject areas for which the information base is limited and will need to be enhanced to support future marine spatial planning as well as project specific consenting. These information gaps include aspects of the natural world and human uses, with regional context and long-term trend data notably lacking. These gaps include:*

- Seabed topography and texture. For some areas there is excellent data for example from multibeam mapping undertaken variously including by the MCA, BGS and the SEA programme, but the UK lacks a coordinated programme to marshal such data, to identify priority gaps and to find ways to fill them*
- Recent information on the distribution of fish eggs and larvae, and variability in space and time*
- Detail of bird migration patterns, and variability in space and time including flight heights in different weather conditions*
- An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs*
- Ecology of most marine mammal species and in particular important areas for breeding, foraging and resting*
- Finer scale distribution of fishing effort, gears and catches for smaller vessels (<15m)*
- Precision on the offshore distribution of navigation (AIS data coverage typically only extends 80km from shore)*
- Effects on fishing activity in and immediately adjacent to constructed wind farms*

- 9.1. BWEA agree that marine spatial planning will benefit from further research into these areas and supports further work in this direction. We also recommend research into the ecological significance of the effects of offshore wind development. Many of the above issues are complex and spatially and temporally variable and therefore may never be understood to the levels that we would wish. It is therefore imperative that decisions can be made in the face of incomplete information or there will be a danger of "paralysis by analysis".

- 9.2. The use of a VMS system for smaller fishing vessels would aide future marine spatial planning. This would help developers and fishermen by giving

developers increased certainty when planning projects and considering important fishing grounds.

*10. In areas of cold water coral reefs and other vulnerable habitats and species, physically damaging activities such as rig anchoring and discharges of drilling wastes (from hydrocarbon or renewable energy related activities) should be subject to detailed assessment prior to activity consenting so that appropriate mitigation can be identified and agreed which may include no anchoring and zero discharge.*

No comment

*11. For the area to the west of the Hebrides (covered in SEA 7) it is recommended that 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. This is in view of the paucity of information on many potentially vulnerable components of the marine environment, and other considerations. Once further information becomes available, the possible licensing/leasing in these areas can be revisited.*

No comment

*12. Potential applicants for licences in the 26th and subsequent oil and gas licensing rounds should be reminded that the expectation for facilities design will be for zero discharge of oil in produced water.*

No comment

*13. The Department has a central role in UK energy and climate change response policies; in recognition of the national and international focus on climate change and curbing fossil fuel emissions, DECC should seek and give consideration at both the oil and gas licensing and project consenting stages to CO2 emission reduction proposals e.g. capture and storage (rather than venting) of CO2 from gas treatment offshore.*

13.1. BWEA agree with the above recommendation.

*14. Efforts are (or will be) underway to identify offshore Marine Conservation Zones / Marine Protected Areas e.g. under the Marine Strategy Framework Directive, OSPAR and the Marine and Coastal Access Bill. Where the objectives of the conservation sites and renewable energy development are coincident, preference should be given to locating wind farms in such areas to reduce the potential spatial conflict with other users.*

14.1. BWEA agree with the recommendation but wish to state that proposals for projects can only be considered in the context of what actually exists or has definite plans to exist. Proposals for future MCZs may not succeed and may not therefore be material considerations.

14.2. BWEA would also like to note that MCZs must be designated on sound evidence-based data and the socio-economics impacts of the designations must be considered prior to designation by the competent authority. MCZs should not be influenced by landscape and visual opinions which are not evidence based. It is noted that there are no buffer zones for onshore development around Areas of Outstanding Natural Beauty.

14.3. BWEA support the stakeholder led approach to MCZ designation that will include representation from marine based industries.

14.4. Uncertainty over the effects of MCZ designation on other activities remain. BWEA understand that until the habitat or species to be protected is known, it is naturally difficult to say what restrictions on development will be required. Wherever possible, the reduction of this uncertainty is clearly in the best interests of the environment and renewable energy development.

*15. Similarly, as part of the Natura 2000 initiative, further offshore SACs and extensions to SPAs are being identified. Such sites are not intended to be strict no-go areas for other activities and a number have been mooted in areas with significant potential for offshore wind farm development. Wind farm developers should be aware that SAC/SPA designation may necessitate, subject to the conclusions of any appropriate assessment, suitable mitigation measures so as to avoid adverse effects on a designated site or species.*

15.1. BWEA wish to emphasise that the SEA report indicates the least constraints for renewable energy development in the Dogger Bank area. This area is also earmarked as a potential SAC.

15.2. Please also refer to comments on recommendation 14.

*16. Gas storage projects need an EIA under the requirements of the EIA Directive. However, it is unclear at present under which UK regulations EIA for such projects would be undertaken, and early resolution is desirable in light of the drivers for increased UK gas storage capacity.*

No comment

*17. The Offshore Vulnerability Index (OVI) to surface pollutants developed by the JNCC should be reviewed in the light of results from recent aerial and boat based bird survey data, and updated if necessary. Consideration should also be given to whether the development of UK-specific individual waterbird species sensitivity indices and mapping of a Wind Farm Sensitivity Index (WSI) in UK waters would be useful in support of site selection and consenting.*

17.1. WSI would need better knowledge of potential effects on birds to have any useful meaning. For example, a high WSI scoring species may be present in a development site but reality could be that any effect could be insignificant. The presence of the high WSI could raise the barrier to successful permitting without genuine good reason. Advice received by BWEA from industry is that Population Viability Assessment models for specific species would prove of more value.

17.2. It should also be noted that seasonal restrictions on windfarm operation are very unlikely to be economically feasible and must therefore be considered to be unrealistic.

*18. The existing initiatives to develop waterbird Population Viability Analysis for sensitive species should be progressed, including, if necessary, research to improve the accuracy of inputs to the models.*

18.1. BWEA agree that this should be a priority for the Government, possibly in collaboration with The Crown Estate and industry. This work is likely to take a long time and although useful for informing future development it cannot be allowed to delay projects.

*19. The potential for capacity extensions to existing Round 2 wind farm leases requires careful site specific evaluation since significant new information on sensitivities and uses of these areas*

*is now available (see also recommendation 2 above). As a general rule it is recommended that any such site extensions are to the seaward rather than the landward side. Round 1 sites are closer to the coast and it is anticipated that the majority would not be extended; any application for this would also require detailed site specific evaluation.*

19.1. The general rule that site extensions are to the seaward side, or any specific side, should be flatly ignored by Government. Extensions, as with all development, would require detailed site specific evaluation. There is no justification for a general rule of this nature.

*20. Siting and consenting processes for offshore wind farms must remain flexible to allow for technological innovation, including in mitigation measures.*

20.1. Agreed. It is of utmost importance to allow sufficient flexibility to optimise renewable energy generation.

*21. The information collected by offshore renewables and oil industry site surveys and studies is valuable in increasing the understanding of UK waters. The initiatives such as the UKDEAL, COWRIE and UK Benthos databases to ensure that such information is archived for potential future use should be continued and actively promoted during the consenting processes. Similarly, there should be encouragement for the analysis of this information to a credible standard and its wider dissemination.*

21.1. BWEA agree with this recommendation and note that The Crown Estate lease requires environmental data to be submitted for public release.

*22. It is recommended that in certain key areas of marine mammal sensitivity, operational criteria are established to limit the cumulative pulse noise "dose" (resulting from seismic survey and offshore pile-driving) to which these areas are subjected. This could be implemented within the existing regulatory framework for activity consenting, but will require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the MMO when established, with suitable links to all parts of the UK.*

22.1. As mentioned previously, the issue of cumulative noise must include other marine based industries as well as oil and gas and renewables.

22.2. Restrictions on wind farm construction must be considered in the full view of the safety, practical and cost effects they have on the wind farm. For example, weather windows for installation work offshore dictate short periods of time that are safe to work within. Further restricting installation times will ultimately delay delivery of renewable energy in the UK.

*23. To assist developers and the achievement of conservation objectives, DECC and others in Government should encourage the adoption of consistent guidance across the UK on the implementation Habitats Directive requirements, for example disturbance of European Protected Species (Annex IV species).*

23.1. BWEA agree with this recommendation and suggest that it should be progressed with urgency. UK guidance should be in line with European Commission guidance work which is currently underway.

22 April 2009

President Ben Fogle Chief Executive Kathy Moore

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*By email: [sea.2009@berr.gsi.gov.uk](mailto:sea.2009@berr.gsi.gov.uk)*

Dear SEA team

### **Offshore Energy Strategic Environment Assessment Consultation**

The Campaign for National Parks (CNP) welcomes the opportunity to respond to the above consultation. CNP campaigns to protect National Parks for the benefit and quiet enjoyment of all.

### **National Parks**

CNP supports the Environmental Report's overall commitment to reducing the environmental impacts of offshore energy developments. Offshore developments that are not located appropriately would have an adverse impact on those National Parks with boundaries on or near to the coast. These areas are enjoyed for their openness and natural beauty and the presence of large scale development near to National Park coastlines would conflict with the statutory purposes of National Parks. DECC and other relevant authorities have a statutory duty to take National Park purposes into consideration when making decisions that could affect the National Parks.<sup>1</sup>

Whilst the report makes several references to the landscape/seascape sensitivities of designations such as National Parks, CNP would like to see a stronger commitment to ensuring that no offshore energy developments are permitted that would harm the visual amenity and public enjoyment of National Park coastlines.

### **Coastal buffer zone**

CNP welcomes the report's recommendation that the standard distance of any offshore energy developments from the coastline should be increased to 12 nautical miles and that there is the option to increase this distance if necessary. We understand that distances will have to be considered on a case by case basis, but if the proposal in the above paragraph is not accepted, we would welcome the assurance that developments would not be permitted closer than 12 nautical miles in coastal areas surrounding National Parks.

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<sup>1</sup> Section 11A(2) of the 1949 Act as amended by section 62(2) of the Environment Act 1995 requires all relevant authorities performing any function in relation to, or so as to affect, land in a National Park to have regard to National Park purposes.

## **Cumulative impact of offshore energy developments**

CNP agrees that the assessment of the cumulative impact of offshore energy developments must take onshore energy developments and proposals into consideration. This is essential given the increasing number of large scale onshore wind energy developments proposed near to National Park boundaries, which although outside the boundaries have the potential to have an adverse impact on the setting of the National Parks. Consideration also needs to be given to the impact of other energy-generating developments that might be located on or near to coastlines, for example the potential new nuclear energy sites proposed in Cumbria and the implications that these would have for the Lake District.

## **Infrastructure relating to offshore energy developments**

CNP would like to reiterate the need to give adequate consideration to the onshore implications of potential offshore energy developments. If such developments are located near to National Parks then the required infrastructure such as additional roads, substations and transmission lines to connect to the national grid, could have a detrimental impact on the landscape and public enjoyment of the Parks. Although the impacts of onshore developments will be considered by the land use planning system, CNP suggests that it would be helpful for the SEA to recognise this matter.

## **Regional SEAs**

The Regional SEAs recognise the value of the coast for many areas including National Parks. However, there is no clear indication of what this means for the location of offshore developments in practice. As stated previously CNP would like to see strengthened guidelines for offshore energy developments in the vicinity of National Parks, all of which should be considered as high sensitivity areas.

National Park Authorities are well placed to provide information about the possible adverse impacts of offshore developments on National Parks and must be consulted when any offshore energy proposals are proposed close to their boundaries.

Please do not hesitate to contact me should you require clarification of any of the above.

Yours sincerely



Amy Peters  
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Campaign to Protect  
Rural England

**Offshore Energy Strategic Environmental Assessment  
A CPRE submission to the Department of Energy and Climate Change**

**April 2009**

**Introduction**

1. The Campaign to Protect Rural England (CPRE) welcomes the opportunity to comment on the Department of Energy and Climate Change's Offshore Strategic Environmental Assessment. It is clear that offshore energy resources, particularly offshore wind, will need to be exploited to reduce UK greenhouse gas emissions, and CPRE supports the Government's desire to generate more renewable energy from offshore wind. However, we believe that new opportunities for offshore energy development should not come at the expense of highly valued landscapes and seascapes, and in this context, we welcome the recognition that major offshore wind farms should normally be sited outside a 12 nautical mile buffer zone.

**General Comments**

2. Views from land over the sea are an integral part of a coastal landscape. Coastal waters and the coastline are indivisible, both in terms of the natural processes at work which create the coastal morphology and in terms of the visual integrity of land and sea when viewed from land. Coastline viewed from the sea or from islands is similarly indivisible from its marine setting.

3. The United Kingdom Government has shown the importance it attaches to the concept of landscape by ratifying the European Landscape Convention. English Heritage has also conducted a Historic Characterisation of Seascapes similar to its Historic Characterisation of Landscapes. Just as our finest terrestrial landscapes are designated as National Parks and AONBs, so our finest seascapes, including the marine dimension of our nationally protected landscapes on the coast, should be protected. CPRE is pursuing this through the current Marine Bill by supporting amendments to ensure that Marine Conservation Zones can be designated grounds of their natural beauty or cultural, archaeological or geological heritage.

4. We welcome the recognition in Appendix 3c of the effect that offshore infrastructure may have on designated areas onshore. We also welcome the recognition that "over 60% of the UK public regarded the countryside as a vital component to their quality of life" and that "experience of the countryside is an important seasonal relief." Much of our coastline is mapped as being particularly tranquil using the mapping technique established by CPRE in 2006 and endorsed by Natural England. The experience of tranquillity on the coast is strongly determined by the seascape. Defra's own research show how central tranquillity is to peoples' enjoyment of the countryside

5. For many people, the clearest and most relevant manifestation of the marine environment is the view of it from land or from the surface of the sea. CPRE believes that the understanding of the sea and its wildlife is in large part informed by the experience of the view of the sea and its coastline. This is not to say that seascapes are defined simply by the view. They embrace not only the natural world as expressed in terms of biodiversity and physical features but also the human world in terms of the historic and cultural heritage, opportunities for recreation and enjoyment of beautiful scenery, and the connections and associations between them. There is a very substantial literature and body of poetry and art related to the coast and seascapes which is at the heart of the expression of British identity and also a valuable contributor to our tourism. Natural England has acknowledged this in its

objectives for enhanced coastal access in the Government's Marine Bill which CPRE strongly supports.

6. CPRE considers that the definition of what constitutes 'major' offshore wind development is a vital and urgent question. A distance of 12 nautical miles is, in our view, satisfactory for very large scale turbine installations seen from sea level or low ground level. But in the case of important views from higher elevations such as Hartland Point in north Devon (c 100m asl), or Tennyson Down on the Isle of Wight, for instance, longer exclusion distances may be justified. CPRE is encouraged by the careful consideration of coastal atmospheric conditions in the consultation as well as the question of 'horizon crowding'. In our view, these issues need a range of threshold distances to be established.

7. The high value that the public places on seascapes, we believe, warrants comprehensive landscape assessments of coastal areas adjacent to regional seas 1, 2, 3 and 4, prior to the development of Round 3 offshore wind farms and CPRE looks forward to contributing to these.

CPRE  
April 2009

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**BY EMAIL ONLY**

Our Ref: GE-G-CR-001-000000-004-L

21<sup>st</sup> April 2009

Dear Sir / Madam,

**UK Offshore Energy Strategic Environmental Assessment January 2009 – Centrica Response.**

Centrica welcomes the opportunity to respond on the Department for Energy and Climate Change's Offshore Energy Strategic Environmental Assessment (SEA) consultation, and is involved in a number of offshore interests that would be affected by these proposals.

Centrica's principle upstream operations include the operation of power generation assets, energy trading, gas production, and operation of renewable energy assets. Centrica also supplies energy to residential and business customers in the UK through its retail subsidiaries, British Gas and British Gas Business.

This response is predominately focused on impacts from an offshore wind perspective, since the proposals in the SEA are likely to have greatest impact on our future wind developments. Centrica has strong experience in this field and is currently investing in six offshore wind farm developments, three of which are now operational, and also hopes to be involved in the future Round 3 developments. Hence this response summarises our views predominately in relation to future offshore renewable projects.

**General Comments on the SEA**

The UK has been set challenging targets for renewable energy generation, including the EU legally binding target to ensure that 20% of all energy will be generated from renewable sources by 2020, with a UK specific target of 15%. Centrica believes the Government therefore needs to take a key role in facilitating and resolving the conflicts between oil and gas, commercial shipping, and the fishing industry in order to meet the 2020 targets and push forward renewable energy generation. Furthermore, if the SEA is delayed we believe this will only delay progression towards these targets.

Centrica feels it is unfortunate timing to conduct the SEA during the bid submissions for The Crown Estate Round 3 tender, in case the outcomes of the SEA result in changes to any of the zone boundaries after the developers have submitted their bids. We feel it would have been more productive to finalise the SEA before bids were required to be submitted to The Crown Estate.

Centrica also feels that in certain sections the language in the SEA should be reviewed, particularly with reference to landscape and visual assessment, and the general presumption that wind farms have a negative impact on landscape, tourism, recreation and quality of life. We believe these issues are subjective and this presumption should not run as a theme throughout the SEA. The offshore wind industry also appears to be treated as a lower priority than other industries where the issue of spatial planning conflict arises.

There is also a clear conflict with comments made regarding a 12 nautical mile buffer zone and the Scottish Territorial Waters (inshore) round of wind farm developments within the 12 nautical miles that needs to be clarified.

Centrica also believes there is uncertainty as to how the SEA report will be used by the Government to translate into policy, in particular the National Policy Statements for renewable energy, and therefore requests that greater clarity is provided on this issue.

### **Shipping**

The SEA contains some good baseline information; however Centrica has a number of concerns regarding the recommendations and interpretation of the shipping data in particular. We believe the shipping data used in the SEA (four weeks worth) is too small a dataset to make any detailed recommendations, particularly in respect to sterilising areas for wind farm development. We also believe that the types of shipping that will be impacted upon have not been analysed, and it also appears that large areas of the sea have been excluded from the research.

We would recommend that shipping restrictions should be dealt with on a case-by-case basis using datasets of longer periods, using input from stakeholders, and an understanding of the movements of vessels in periods of bad weather. We recommend that the baseline information gathered under this SEA is not the same method going forward for further SEA rounds.

### **Comments on the Environmental Report**

Below are comments on most of the recommendations made on pages 213-217.

- *Recommendation 1*

This recommendation discusses coordination of renewable energy leasing and licensing for oil and gas in order to minimise potential sterilisation of areas for other industries. However, it appears the SEA states that offshore wind can be effectively sterilised by other industries as detailed in Recommendation 2. Further clarification is sought regarding this premise. There is no legislative basis for offshore wind farm development to be treated in a non-equitable way.

For Government targets to be met, a unified Government departmental approach needs to be effective immediately. Conflicts between the major users of the sea will require clear decision making and resolution from Government going forward.

This includes:

- oil and gas priority
- shipping

- *Recommendation 2*

We request clarification on the economic bias toward tourism. Centrica believes that this particular factor should not be used as a presumption against wind farm developments, nor should recreation or quality of life. The SEA overall presumes a negative bias toward offshore wind rather than a neutral bias. There has been no evidence given to suggest that wind farms are detrimental to tourism, recreation and quality of life. Many of the onshore studies suggest the opposite. Centrica would therefore suggest that these presumptions are removed from the SEA or clarified by further work.

We would also like to make the point that Centrica considers itself a responsible wind farm developer, and invests significant time, resources and funds to research and survey its sites to understand the potential environmental impacts. We are also actively working with organisations (such as JNCC) that wish to use our data to inform their own studies.

- *Recommendation 3*

The 'precautionary approach' mentioned here requires some clarity on its use in the SEA and the direction that the Government will take. As the ecological points such as marine mammal and seabird foraging areas are known to shift and change due to the complexity of the marine environment (nutrient upwelling, etc), this particular recommendation should be reviewed.

Since ecosystems are complex matters, we believe the SEA should not look to impose a hard constraint such as the precautionary approach, on such aspects that are not spatially and temporally fixed.

- *Recommendation 4*

The report recommends that "the bulk of new generation capacity should be sited well away from the coast, generally outside 12 nautical miles." Centrica would welcome the assurance that such a limitation of 12 nautical miles would not be imposed on developers and that the matter of landscape and visual assessment is dealt with on a case-by-case basis at the EIA stage. It would also be useful to understand the definition of 'the bulk of' new generation capacity, and how much exactly this relates to.

The SEA also appears to presume a negative association here with offshore wind turbines, and in addition is the overall concern as to how this recommendation will be interpreted by other stakeholders with concern for some of the affected Round 2 and Round 3 planned wind farm sites.

- *Recommendation 5*

Engineering and construction constraints and alternatives will be dealt with during detailed Environmental Impact Assessment studies on a case-by-case basis and will involve best practice but not at uneconomical costs or at the compromise of health and safety procedures.

- *Recommendation 6*

Further clarity will be required on the Government's approach to Appropriate Assessments and how it intends to impose the precautionary principle. Is the recommendation suggesting that the Appropriate Assessment will be conducted on the Round 3 zones or is it referring to the case-by-case assessment that will occur at the EIA stage?

- *Recommendation 7*

This recommendation could be closed out with guidance from Government agencies. Centrica supports the idea of a web-based forum to facilitate the exchange of information. The organisation most likely to run this effectively is the JNCC with further funding from the Government.

- *Recommendation 8*

Agencies and major stakeholders such as the RSPB need to formulate early guidance on the detail of the studies expected for Round 3 and the zones. It is recommended that the Government facilitate discussions with stakeholders to ensure the appropriate guidance is given during the scoping period.

- *Recommendation 9*

The statement in paragraph one reads that there are a number of subject areas for which the information base is 'limited' and contains 'information gaps', however, this appears to conflict with the statement on page 217 which states that "This existing monitoring activity.....to date has been found adequate" and hence further clarity should be provided.

- *Recommendation 14*

This recommendation is unclear and further clarity is required, particularly under what instances the objectives of a conservation site and a renewable energy development would be coincident, and what is

meant by giving preference to locating wind farms in such areas to reduce spatial conflict with other users.

Centrica would like to make the further point that Marine Conservation Zones should consider the socio-economic impacts before they are designated, and should not be influenced by landscape and visual aspects which are, as stated previously, a subjective matter.

- *Recommendation 17*

Centrica would like to make the point that whilst interpreting the results of such studies, any seasonal restrictions on wind farm operation would be very unlikely to be economically feasible and should be considered unrealistic as a potential proposal.

- *Recommendation 18*

It is not understood why Population Viability Analysis is singled out and why the recommendation is limited to one particular method of analysis. Centrica believes the recommendation should be broader and encompass guidance and research on a variety of methods. Further clarity should be provided in the SEA or amended to encompass other methodologies, but should not delay future projects.

- *Recommendation 19*

Centrica believes this recommendation should not presume that landward extensions are not possible. We welcome the opportunity to extend capacity on constructed sites, but believe extensions would need to be dealt with on a case-by-case basis, with the consenting regime for these considered also. No justification for a general rule exists since constructed projects many not necessarily have the potential for spare capacity.

- *Recommendation 21*

Centrica supports this recommendation, and welcomes such research, but would like to make the point that survey data and research collected by developers during the development of offshore wind projects can be of commercial confidence and of high monetary value to the developers that collected it. We therefore would welcome developer involvement in agreeing how the data is used and what confidential measures are placed on the data before it is provided.

- *Recommendation 22*

Centrica supports this recommendation. We suggest the expertise lies within JNCC to facilitate the web-based forum. However, JNCC will need additional funding to carry this out and the Government should recognise this.

- *Recommendation 23*

Centrica would like to make the point that new designations should be discussed and engaged upon with affected developers as soon as they are identified.

If you require any further clarification on this response please don't hesitate to get in touch,

Yours sincerely,

Maria Scarlett  
Round 3 Development Manager

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20 April 2009

Dear Sir,

### **UK Offshore Energy Strategic Environmental Assessment (EIA) Consultation**

**I am responding on behalf of the Chamber of Shipping which is the trade association for UK based ship owners and ship managers. With 137 members and associate members, the Chamber represents approximately 860 ships of about 23 million gross tonnes and is recognised as the voice of the UK shipping industry. This response reflects the consolidated view of our members representing diverse range of operational shipping interests.**

Having read in detail the SEA consultation report on offshore wind energy and offshore oil and gas, the Chamber of Shipping is pleased to say that most of our concerns have been highlighted in the SEA report findings. In our view comprehensive coverage has been given to the issues that impact shipping operations, services, routes and businesses competitiveness in the UK. In short the Chamber supports the Government's initiative to meet energy commitments to generate more renewable energy by 2020. But, we are also keen to emphasise that the key to handle offshore renewable development process also lies with the fact of striking a right balance between the valuable opportunities and the potential threats.

The overall aim is to achieve a position whereby offshore renewable energy proposals are facilitated without merchant shipping interests being either advantaged or disadvantaged by their development. Given the diversity of ships and routes on which they are employed no single formula or regional approach is likely to be suitable for all the proposed sites. Obviously, our main concern in responding to this SEA report is to ensure that shipping interests are not jeopardised or neglected in order for the Government to achieve its renewable energy targets, especially if this results in disruption to the existing shipping lanes.



Our case is further strengthened by the fact that one of the key recommendation in the SEA report states that “*wind farm citing should be outside areas of important for navigation (these are mapped in the Environmental Report) and that this would not preclude the attainment of the draft plan/programme objective*”. It is our intention to engage in a positive and an early dialogue with the offshore wind farm developers (once awarded) and provide appropriate information, guidance and suggestions to mitigate the navigational risks related to shipping traffic, density, safety and commercial routing.

Some of the key recommendations in the report which we find particularly welcoming are listed below;

- a) scope of development outside the 12 nautical miles,
- b) to set up a coordinated approach for future developments,
- c) establishment of buffer zones, and
- d) measures to avoid disruption and deviation to normal commercial shipping traffic, routes and lanes.

However, we would like to add one further comment with regards to the cumulative impact assessment process. In our view the current process needs to provide alternative options or measures that other sea users should adopt to mitigate navigational risks that might be posed as a result of a proposed development.

In suggesting these measures, the report should clearly indicate potential and existing developments in the vicinity and a comprehensive risk assessment. This assessment should include the extent of any deviation for shipping (if at all applicable) and the consequences of it on the routes commercial viability. If, for any reason, shipping is forced to deviate from the existing route as a result of an offshore development being consented then a suitable compensation should be payable and this off course being subject to an impartial assessment.

The Chamber appreciates the key sensitivities and concerns that might arise as a result of implementing the findings and recommendations of the SEA report and therefore it is prudent to suggest that the same should be consistently applied across the border in view to achieve a level playing field for the other sea users. Finally, we hope that the potential offshore renewable developers in future will conduct a comprehensive navigation risk assessment that would incorporate the recommendations made in the SEA report and our response.

In conclusion, we support the tenet of the offshore Energy SEA and hope that these comments are useful.

Yours sincerely

A solid black rectangular box used to redact the signature of Captain Saurabh Sachdeva.

Captain Saurabh Sachdeva

Nautical Consultant  
The Chamber of Shipping, London



# Cyngor Cefn Gwlad Cymru Countryside Council for Wales

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PRIF WEITHREDWR/CHIEF EXECUTIVE: ROGER THOMAS

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FAO: Kevin O'Carroll – Head of Environmental Policy Unit

22<sup>nd</sup> April 2009

Dear Kevin

## **CCW Comments on the UK Offshore Energy Strategic Environmental Assessment 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. 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 summary, CCW supports the overall conclusion of the SEA that alternative 3 to the draft plan or programme is the preferred option, with the area offered restricted spatially through the exclusion of certain areas. CCW also agrees with the conclusion that the bulk of new generation capacity should be located well away from the coast, generally outside 12 nautical miles.

However, we have a number of concerns about aspects of the SEA, in particular about the scope of the SEA, the need for a more efficient and coordinated approach to the strategic assessment of marine energy



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development and the level of support SEA provides to subsequent decision-making. CCW raises these concerns here to help improve future strategic assessments that may be undertaken for large scale marine energy development. CCW has also identified a number of weaknesses in the report that should be addressed before finalising this assessment and prior to subsequent offering of areas for development.

We have therefore provided general comments on the Offshore Energy SEA process, general comments on the Environmental Report followed by more detailed comments on the detail of the report contained in an annex to this letter.

## General Comments on the SEA process

### *Scope of the SEA and consideration of alternatives*

1. The report states that ‘the draft plan or programme subject to this SEA needs to be considered in the context of overall UK energy supply policy and greenhouse gas emissions reduction efforts. The main objectives of the current plan/programme are to enhance the UK economy, contribute to...carbon emission reductions and security of energy supply’. However, the plan as described by the report and that is subject to this SEA is only based on elements of the energy generation infrastructure that might contribute to the achievement of this objective; a number of potentially significant elements sit outside the plan and therefore the SEA (e.g. the Severn Tidal Power Project and other wave & tidal stream development). As we stated in our comments on the scoping of the SEA in February 2008, CCW are concerned that by considering only selected elements of offshore energy generation, DECC have limited the assessment of alternatives and therefore risk failing to fully assess the environmental effects of the stated overall objective of the plan/programme.
2. We advise that an assessment of the risks and benefits of a more comprehensive range of energy generation alternatives is needed to provide a more robust evaluation of the overall environmental risk associated with UK energy supply policy.
3. The SEA might also have considered potential conflicts between future energy generation activities, for instance, whether oil and gas licensing should be ruled out in some blocks to provide space for renewable energies to be built.

### *Reducing risks and providing greater certainty*

4. Given the amount of evidence gathered by the assessment and evaluation undertaken during this SEA, CCW considers that the report should have provided greater certainty by going further in identifying areas that may or may not be suitable for offshore windfarm development (OWF).
5. The recommendation of the report that OWF development should take place beyond 12 nautical miles provides only a very approximate guide to developers and fails to provide the certainty necessary to facilitate timely decision-making required (by the IPC) to allow projects to proceed at a pace consistent with that needed to meet renewable energy targets. Whilst we agree with the general conclusion that sensitivities increase significantly in close proximity to the coast and that, in general, development should take place beyond 12 nm as sensitivities fall away, we believe the spatial constraints mapping

work outlined in Section 5.7.2 should have gone further to identify more precisely those areas that might or might not be suitable for OWF development (both inside and outside the 12 nm boundary).

6. CCW is aware of the approach taken by The Crown Estate to identify what it considers to be areas that may be suitable for OWF development. CCW was not consulted during the process of identifying these areas and cannot therefore comment on their suitability from an environmental perspective. However, we consider that such an approach, informed by the wealth of information and evaluation gathered by the SEA, has the potential to bring a much needed focus to the search for, and debate about suitable locations.
7. It is important that any process of identifying indicative areas is based on data and methods that are appropriate. CCW believes that the process of identifying and publishing information about specific areas (including maps) should take place but that this process should take place within an SEA and be subject to open discussion and agreement between government, statutory advisors, developers and other users. This would result in greater certainty which in turn would facilitate more rapid deployment and so increase the likelihood of achieving energy targets.

### *Efficient engagement with marine energy assessment processes*

8. CCW considers that there is a need for better coordination between assessments of marine energy plans and programs across the UK to ensure that best use is made of resources available to regulators, advisors and developers.
9. The issue of under-resourced statutory advisors becoming a bottleneck in the energy consenting process has frequently been highlighted not only by the advisors themselves but also by developers and The Crown Estate. Notwithstanding the need for government advisors to be suitably resourced, an approach to SEA that provides for more precise identification and agreement of areas suitable for OWF development (as outlined above) should be pursued until such time as a formal system of multi-sectoral marine spatial planning provides for this. This would represent a more efficient process that would allow statutory advisors to engage more effectively at a strategic level and so reduce (although not eliminate altogether) the level of commitment required at the project level.

## **General Comments on the Environmental report**

### *Evaluation of the effects of gas storage and oil and gas activity*

10. In general the evaluation contained within the Environmental Report, perhaps understandably, focuses very much on the implications of offshore windfarm development. However, gas storage is a new technology that is not well understood and, whilst there is little information about its potential impacts that can be evaluated within this document, the SEA should have provided more comprehensive recommendations for improving the knowledge base in relation to this activity. This is of particular importance in light of DECC's current consultation on the proposed offshore gas storage and gas unloading licensing scheme, which states that "the Government is committed to introducing the licensing scheme as soon as possible in order to ensure that new infrastructure can go ahead and contribute to the security of energy supply in the UK". It is therefore likely that gas storage (and

unloading) infrastructure will be allowed to develop in the coastal waters in the near future. Greater understanding of the environmental impacts of this new activity, alone and in combination with offshore windfarm and other development, is urgently needed.

11. Furthermore, although the potential effects of oil and gas activity are well understood and so can be effectively mitigated against in many circumstances, robust evaluation and regulation are still essential if significant impacts are to be avoided. In places, notably Section 5.5, the report should have evaluated the potential effects of oil and gas activity more comprehensively (or refer to where such evaluation has been previously undertaken). This and future SEA's should continue to provide comprehensive assessment of oil and gas activities.

### *Landscape implications*

12. The report fails to include sufficient information on the likely significant effects on landscape/seascape of the plan/programme. For example there is no evaluation of short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative effects, or of the effects of oil and gas infrastructure on landscape/seascape. The report appears to focus only on the direct impacts of wind turbines - once erected - on the visual resource. Thus the requirement of the SEA Regulations, to identify measures to prevent, reduce and, as far as possible, offset any significant adverse effects of implementing the plan/programme are unlikely to be met.
13. The definition of seascape is limited to visibility and views and needs expanding so that effects on seascape character can be considered too. Since the UK government signed and ratified the European Landscape Convention, the following definition is increasingly used: "An area of sea, coastline and land, as perceived, whose character results from the actions and interactions of land and sea, by natural and/or human factors". The definition of seascape and other relevant terms should also be included in the Glossary.

### *Impacts of coastal and terrestrial infrastructure*

14. The supporting study on the need for onshore transmission concluded a need for reinforcement of grid infrastructure in north-west Wales. Although the Environmental Report describes the potential impacts in general terms it is not clear whether or how this has been considered within the mapping of spatial constraints.
15. Furthermore, the potential effects of energy development on sites designated for the protection of biodiversity focuses strongly on the risks to European marine sites. However, there is a need to recognise the potential implications for other protected sites (e.g. SSSI's) and biodiversity (e.g. UK BAP species/habitat) designated under the Wildlife & Countryside Act 1981 and Natural Environmental & Rural Communities Act 2006 (notably Appendix A3j.6 that covers 'UK Biodiversity Action Plans' is very out of date). These resources are of particular relevance in the consideration of the landfall and wider terrestrial impacts of energy developments.
16. The report also fails to consider the effect (direct and indirect) of terrestrial infrastructure on views and on landscape character and sensitive receptors.
17. It seems likely, therefore, that the terrestrial/coastal effects of OWF development may have been underestimated.

## *Reliance on mitigation*

18. As understanding of the effects of marine energy activity has developed, especially in relation to oil and gas, so has our ability to employ robust mitigation to avoid significant impacts. This also includes mitigation developed to minimise the effects of OWF during Rounds 1 and 2. However, Round 3 is likely to result in development at a much greater scale and the report should contain a recommendation for a comprehensive review of the adequacy of existing mitigation (eg. in respect of combined effects of piling noise).

## *Information about the Welsh marine environment*

19. CCW has recently undertaken a number of information gathering exercises that provide better resolution of the environmental baseline in Wales. Firstly, the HABmap project has completed detailed assessment of the sea bed and work continues in order to improve the geographical coverage of this study.
20. Secondly, information about marine mammal distribution in the Irish Sea will shortly be published which incorporates new data and provides an assessment of the distribution of key mammal species at a higher resolution than was previously available. This new information should be taken into account prior to finalising the Environmental Report.
21. Finally, since the draft Environmental Report was published for consultation CCW has also published detailed regional assessments of seascape character including an assessment of sensitivity to marine energy developments<sup>1</sup>. This study represents an important step forward by providing a rigorous and robust process for characterising seascape and assessing impacts of activities upon it.

## *Potential Benefits of OWF development*

22. The possible benefits of OWF development to the local environment are not well understood from either a technical or policy perspective. It may be that the environmental benefits of such technologies may act to counterbalance some of the impacts within or close to the footprint of developments and that important resources can co-exist with renewable energy development. However, this concept is not well understood and further investigation is necessary to support proposals for such arrangements (as suggested in Recommendation 14).

## *Evolution of the baseline – future conservation sites*

23. Whilst the location, extent and features of future conservation sites (such the Marine Conservation Zones proposed in the Marine & Coastal Access Bill) remains uncertain, the potential for impacts on these sites should be recognised more clearly in the main body of the report, and particularly in Section 4.2 that describes the likely evolution of the baseline.

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<sup>1</sup> Briggs, J.H.W. and White, S. (2009). *Welsh seascapes and their sensitivity to offshore developments*. Countryside Council for Wales. CCW Policy Research Report No. 08/5



# Cyngor Cefn Gwlad Cymru Countryside Council for Wales

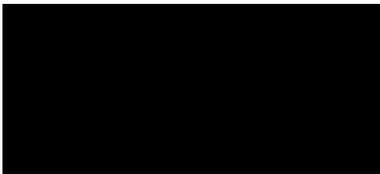
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*Links with wider UK data management policy and process*

24. The report recommends the continued use and further promotion of information management initiatives such as UKDEAL, Cowrie, UKBenthos etc (Recommendation 21). There needs to be effective consistency and coordination with UK wide data management policy and processes such as those covered by the Marine Data Information Network (MEDIN).

CCW hopes that you find these comments useful in finalising the SEA and moving towards offering areas for development. If you would like to discuss any of the points we have raised please contact either Andrew Hill or John Hamer in the first instance.

Yours sincerely



Keith Davies  
Head, Environmental Policy Group



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## Annex 1. Detailed comments on the Environmental Report

### Section 4. Environmental Information

#### Subsection 4.4. Likely Evolution of the Baseline

The section on marine mammals should also highlight the fact that distribution is strongly affected by food availability, abundance & distribution.

### Section 5. Assessment

#### 5.2.1 Sources of potentially significant effect

Box 5.1: Bird collision risk is considered to be a significant factor but not the potential for attraction to and collision with oil and gas platforms. Although this issue has been identified as a potential physical effect in Section 5.5.1, only the evidence in relation to collisions with windfarms receives any further consideration. Further evaluation of the evidence in relation to oil and gas platforms should be undertaken before concluding whether or not it is a significant factor (which CCW considers it can be).

#### 5.3.6 Summary of findings

CCW is concerned that the areas of key mammal sensitivity identified in the report are not sufficiently comprehensive and do not seem to be closely based on the available evidence, either the evidence described in the report itself or elsewhere. It is essential to correctly identify these areas if measures are to be selectively applied to them but not elsewhere. We have identified below those areas and species, in addition to those described in the report, which we consider to be of particular importance in waters around Wales (Regional Sea areas 4 and 6).

##### NW-NE Anglesey

This area is important for bottlenose dolphins (as described in the report Pesante *et al*, 2008 which is listed in the reference section of the Environmental Report) and is also important for harbour porpoise, Risso's dolphin and grey seal.

##### Lleyn Peninsula

Grey seal, harbour porpoise and Risso's dolphin should be included.

##### Cardigan Bay

Grey seal and harbour porpoise should be included.

##### Pembrokeshire

Grey seal, harbour porpoise, Risso's dolphin, common dolphin, and minke whale should be included.

##### Celtic Sea

Minke whale should be included.

## Carmarthen Bay

Harbour porpoise and grey seal should be included.

### **5.5.3 Spatial considerations**

Figures 5.19 & 5.20: These two maps are both based on ESAS data. The legend indicates that these maps are based on data sourced in 2004. Survey work has since been undertaken (on behalf of BERR/DECC) in some areas for which there was previously poor survey coverage (eg Cardigan Bay). We suspect that these maps should be updated to include the more recent information.

Table 5.5: In relation to Regional Sea areas 4 and 6, Manx shearwater should be identified as being potentially at risk of collision (given that the risks are identified as 'unknown' in Table 5.4). For Regional Sea 6, gannet, of which there is a major colony on Grassholm Island, should also be included as a collision risk. Red throated diver should be included as being potentially displaced in Regional Sea 6 as there are large concentrations of red throated divers in the northern area of Cardigan Bay.

### **5.5.4 Cumulative impact considerations**

#### **5.5.4.1 Birds**

There is a good possibility that significant cumulative impacts on migratory passerines are unlikely. However, current understanding is based more on our knowledge of general migration patterns, rather than sufficient hard evidence. Furthermore, much of the evaluation contained in this section draws heavily on MacLean & Rehfish, 2008. This was a draft position paper describing discussions of a workshop held that year. If possible the SEA should base its evaluation on the final report of the workshop.

### **5.5.5 Summary of findings and recommendations**

The first paragraph of this section states "Overall the assessment outlined above concludes that the available evidence from existing OWF developments suggests that displacement, barrier effects and collisions are all unlikely to be significant to birds at a population level". We would argue that the evidence presented in previous sections does not support such a conclusion. Much of the evidence presented is circumstantial and does not prove beyond reasonable doubt that population effects can be discounted. Again, the evaluations are to some extent based on MacLean & Rehfish, 2008, the draft paper described above. If possible, the evaluation should be based on the findings of the final report. We suggest a more precautionary conclusion: that the likelihood of population level effects remains uncertain and should be considered on a case by case basis.

It is also important to recognise that assessments should also cover effects in addition to those significant at the population level, such as affects on the integrity of protected sites.

## Subsection 5.6 Landscape/Seascape

### 5.6.1 Visibility of turbine structures from the coast

There is a need to define the concept of 'significance' (of distance offshore). Also need to state the basis of these figures (Table 5.9). They appear to be qualitative judgements, so the study needs to estimate their robustness. Intuitively, they appear to us to be too short.

Sensitivity varies between development type. Sensitivity for offshore wind farms may be different to that for other types of development. This point should be acknowledged.

### 5.6.4 Landscape 'value'

The Registered Historic Landscapes (unique to Wales) should be included in relation to designated landscapes. The registers are a non-statutory material planning consideration.

Reference has been made in places to the Welsh seascape assessment and calculations of 'value' have been created, based on (in summary) the percentage of the seascape unit that is designated. Please note that the final Welsh seascapes study<sup>2</sup> stops short of this, though relative levels of sensitivity are given.

CCW did not prescribe an overall level of value as it tempts 'adding up scores', which risks comparing fundamentally different things via their scores (e.g. 2 World Heritage sites does not equal a National Park). Furthermore, the European Landscape Convention reminds us that all landscapes matter, and an approach that considers who values what, where and why (at an appropriate scale), would be preferable to an approach that assumes that undesignated areas have no value.

### 5.6.6.6 & 5.6.6.7 Regional Seas 4 & 5, 6

See also comment on 5.6.4 above – the value scores have been included from an unpublished draft version of the Welsh seascapes study (White, 2008). Note these scores were based on the level of designation.

### Subsections 5.2, 5.5, 5.8 & 5.16.

Introduced non-native species (INNS) are mentioned in relation to ballast water in these sections, however the report should also consider the added risk of the spread/introduction of INNS via rigs and other mobile construction equipment and the use by INNS of any permanent structures as stepping stones across otherwise unsuitable substrata. It should be acknowledged (perhaps in 5.5.2.5) that in certain areas there might be a risk of non natives spreading via 'stepping stones'. For instance, where an installation is mid way between two rocky areas interspersed with areas of sediment.

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<sup>2</sup> Briggs, J.H.W. and White, S. (2009). *Welsh seascapes and their sensitivity to offshore developments*. Countryside Council for Wales. CCW Policy Research Report No. 08/5

## Section 6. Recommendations & Monitoring

### **Recommendation 2**

There should also be a presumption against any activity that is likely to result in a significant deterioration in biodiversity status and the quality of habitats and landscape.

### **Recommendation 14**

It is important to optimise the use of space in the marine environment, especially given the likely scale of future marine renewable energy development. Co-locating renewable energy technologies with future or existing conservation areas may be possible, but this arrangement should not automatically be considered in preference to co-location with other developments and users. Further research is required to understand the spatial and temporal implications of co-locating renewable energy development with protected areas, both at the level of the individual site but also at the scale of the protected area network.

### **Recommendation 15**

The recommendation states that "wind developers should be aware that SAC and SPA designation may necessitate, subject to the conclusions of any appropriate assessment, suitable mitigation measures so as to avoid adverse effects on a designated site or species". This section should also recognise that development will not obtain approval where significant adverse effects upon the integrity of any European site are anticipated unless it can be demonstrated that there are no alternative solutions to the plan or project, there are overriding reasons of public interest and that satisfactory compensation can be secured.

### **Recommendation 21**

Initiatives seeking to provide for better management of information gathered during the assessment of energy infrastructure need to be consistent and coordinated with wider UK data management policy and processes such as those covered by the Marine Data Information Network (MEDIN).

## **Appendices**

Below we have suggested a number of amendments to improve accuracy of the statements and to correct some errors. We suggest that the Appendices should be checked thoroughly before finalising.

## **Appendix 3 Biodiversity, Habitats, Flora and Fauna**

### **3a.2 Benthos**

The text in this section seems rather disjointed. Some aspects are covered in great detail whilst others are dealt with less comprehensively. In general, the clarity of the Regional Sea sections would be improved if the structure, based on habitat types, is the same for each. Where a particular habitat type does not occur the relevant section should perhaps record "absent from this Regional Sea area". We suggest the following amendments:

Page 28 – The section covering Regional Seas 4 and 5 should include a subsection on Biogenic Habitats. For instance *Sabellaria* is known to occur in the Severn and Bristol Channel area.

Page 34 – Although the sublittoral habitats and communities of the Bristol Channel and the Severn Estuary have been relatively well studied there remains considerable uncertainty about the precise distribution of subtidal *Sabellaria* reef.

Page 36 – Information from CCW's HABmap sea bed mapping project should also be referenced as an additional source of information

Page 37 –The statement that 'to the east of Tremadog Bay, the seabed is varied but dominated by current swept coarse cobbles sustaining, in places, minimal epifauna (Rees, 1993).' needs checking. It is not clear what is meant by 'east of Tremadog Bay'. Furthermore, the currents are not particularly strong on the eastern side of Tremadog Bay.

Figure A3a.2.5 - a reference should be provided for this figure

Page 39 – The phrase 'In offshore parts of Cardigan Bay, finer sediments dominate the substratum' is ambiguous as its not clear whether they mean finer than the cobbles mentioned in the previous paragraph, or finer as in fine sands (the former is generally accurate but the latter interpretation would be incorrect).

Page 40 – The statement that 'Nearshore habitats along the west coast of Wales from the Llyn Peninsula at the northern limit of the scenario to Milford Haven in the south are characterised by a mixture of sandy gravel and gravel' is a considerable oversimplification that appears to be based on BGS maps where all grain sizes in excess of 2mm are classified as 'gravel' (so includes pebbles, cobbles and small boulders) and where rock is under-represented. In reality there is a wide range of sediment and rocky habitat types which should be classed as mixed sediments that include sand, gravel, pebbles and cobbles.

Page 41 CCW disagrees with the statement that the 'coast around Strumble Head and Skomer consists of a series of bays separated by headlands characterised by a relatively impoverished fauna determined by the degree of exposure.' Strumble Head and Skomer are characterised by a number of species-rich rocky habitats. Furthermore, it is not really clear which sections of coast are described by this passage, for instance, does this also include St Brides Bay?

Page 42 – The section on Biogenic habitats should also include mention of the extensive *Modiolus* bed off the North Llyn (it wasn't surveyed as part of SEA6 as the extent was already known) and reference to *Musculus* beds.

Page 43 – Other communities of conservation importance in the Regional Sea 6 area should be included such as seagrass, oyster and maerl beds.

### 3c Landscape/Seascape

A3c.1 Introduction - Although visibility is a significant aspect, the definition of 'seascape' should be broader (see paragraph 13 above).

A3c.1.1 Designations - The Register of landscapes of Outstanding and Special Historic Interest (CCW/CADW) should be included. (This non-statutory material planning consideration is unique to Wales).

A3c.2 Landscapes Seascapes Background - Note that the final Welsh seascape assessment considers sensitivity but it does not define seascape 'value' and hence it also does not provide seascape 'capacity' scores.

A3c.4 Evolution of the Baseline and Issues - As a general rule, it is helpful to distinguish between changes to views and changes to the character of a place. The two are different concepts and both are relevant in seascape assessment. Although impacts from offshore wind farms are not direct impacts on the coastline or landscape, the importance of the visual aspect is acknowledged here as being especially important.

## 3j Conservation of Sites and Species

### 3j.6 Biodiversity Action Plans

This section is now considerably out of date and should be re-written. It fails to recognise that arrangements for managing BAP's are now devolved, and not UK led, and that the BAP process also now has a statutory basis provided by the Natural Environment & Rural Communities Act 2006. The UK BAP process underwent a period of review in 2005, which culminated in 2007 in a revised UK list of priority species and habitats. Individual administrations have drawn on the UK list of priority species and habitats but lists differ markedly between each country. The text and tables in this section need to better reflect the differences between the priority biodiversity and national BAP arrangements for each country. Information about Welsh BAP arrangements and relevant species and habitat lists and can be obtained from [www.biodiversitywales.org.uk](http://www.biodiversitywales.org.uk).

### 3j.7 Species Conservation

Page 596 - paragraph 3 – there is mention here of the devolved listings of habitats and species. However, it needs to be clarified that these species and habitats are not subject to UK action plans as such (each devolved country identifies action relevant to its own country) and are not confined to those listed as UK priorities (Wales, Scotland and NI have added extra habitats and species to their devolved listings).

page 624 - paragraph 4 should be amended as *Zostera* beds do not grow in saltmarshes.

## Appendix 4 Other Potentially Relevant Initiatives

### 4.3 National Initiatives

The Interim Marine Aggregates Dredging Policy should be referred to in this section. This is an important policy document which makes recommendations about areas that may be suitable and should be taken into account by any assessment of constraints upon windfarm licensing.

The Welsh Coastal Tourism Strategy should also be referred to, as should the existence of 'Regulation 33 advice' and management plans prepared for European Marine Sites as a requirement of the Conservation (Natural Habitats, &c) Regulations 1994.



# Cyngor Cefn Gwlad Cymru Countryside Council for Wales

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## 4.4 Other Renewable Energy Initiatives

It would have been helpful to have an 'implications' column in these tables for the previous tables in respect of International and EU Strategies, etc. The potential for consequent and in-combination effects arising from a Severn Barrage (or any other tidal structures) may be considerable.

## 4.5 Recent Key Acts and Bills

This section should also include reference to Natural Environment & Rural Communities Act 2006.

## Appendix 5 Regulatory Controls

Sub-sections relating to habitats and species protection should also include reference to consenting and assenting mechanisms that apply to works affecting SSSI's under the Wildlife & Countryside Act 1981 as amended.



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**From:** Derek Limbert  
**Sent:** 10 March 2009 11:34  
**To:** sea.2009@berr.gsi.gov.uk  
**Subject:** Strategic Environmental Assessment-Offshore Energy

Dear Sir,

I list below a number of comments on your recently published SEA with respect to Offshore Energy. I am restricting my comments to the Offshore Wind aspects and whilst appreciating that this is an Environmental Assessment my comments are largely directed at the practical and Engineering aspects of the contents.

The fact that this assessment has been carried out at all means that there is an intent to proceed with some or all of the proposed developments at some time in the future and my observations are primarily concerned with the execution of any proposed developments. The fact that they may have been given a more or less clean bill of health from an environmental point of view does not mean that they are, as indicated in the report feasible or economically viable. Equally the Assessment does not consider in any detail the land based activities relating to Offshore Wind or the short life span of Wind turbines and the overall logistical requirement for their dismantling and disposal after only 20 years life.

These comments are not in any order of importance or any other criterion, but are observations that I hope will be of value to BERR and DECC in considering the proposed vast investment in Offshore Wind and ensuring that this expenditure is not otiose.

- There is an indication that 25GW of Offshore wind produced electricity will be required by 2020 in order to meet the Government's intent of producing 30% of our electricity from 'renewables' by 2020. Bearing in mind that there are no other proven ways than wind, albeit uncontrollable unpredictable intermittent and expensive, this is inadequate. At 30% efficiency 25GW will produce only 7.5GW continuous equivalent. Current average production of electricity in the Country Including Scotland and Northern Ireland is around 42GW, 30 % of which is 12.6GW, it is not clear therefore where the bulk of the other 5GW continuous production will come from. It would appear therefore that the 25GW figure may be too small.
- The graphs on Page 89 Fig 5.11 seems to suggest a programme for the construction of the 25GW of wind turbines. This appears to show a rate of about 600 no 5MW turbines per year, i.e. 3000MW per year. Bearing in mind that The London Array at 1000MW is currently planned to take 4 years to construct, this will mean that by 2013 or so 12 such projects would be underway simultaneously in order to meet this target!
- The question of decommissioning does not appear to have been addressed in any meaningful way. The offshore wind turbines are likely to have a life of around 25 years. This means that the dismantling of the first machines will probably be taking place at the same time as new machines are being installed. This is likely to be the

case as it would appear impossible to install the proposed number of turbines in the next ten years.

- Carbon Capture and Storage (CCS):- CCS does not appear to have been considered in this report. There appears to be growing enthusiasm for this technology, if it can be demonstrated to work and be financially viable. A demonstrator plant is planned to be in operation by 2014 which will produce of the order of 2 million tonnes of CO<sub>2</sub> per annum or around 5000 tonnes per day. I understand that 'storing' this in or under the North Sea is being contemplated. Should CCS prove viable and the North Sea a suitable repository geologically, as much as 250,000 tonnes per day may need to be dealt with from 2020 onwards. This quantity is of the same order of magnitude as the amount of gas extracted on the average throughout the life of North Sea gas extraction. It would appear that the question of CCS is worthy of greater environmental investigation, if it is to be stored, for ever, under the North Sea than the question of wind turbines.

Derek Limbert C Eng FICE

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22<sup>th</sup> April 2009

### **Offshore Energy SEA Consultation**

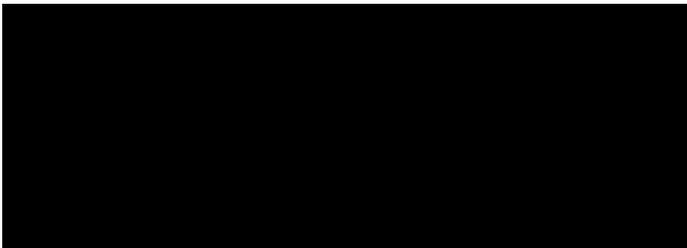
DONG Energy is grateful for the opportunity to comment on the Offshore Energy SEA Environmental Report. This response is made solely in respect to offshore renewable installations.

DONG Energy was founded in 2006 as the result of a merger of six Danish energy companies – DONG, Elsam, ENERGI E2, Nesa, Copenhagen Energy's power activities and Frederiksberg Forsyning. DONG Energy is a major European energy company with extensive interests across the energy supply chain. 15% of the company's electrical output is from renewable sources, predominately wind power. DONG Energy has been a pioneer in the establishment and operation off offshore wind farms and today the company is a world leader in offshore wind energy.

In the United Kingdom, DONG Energy is a 50% shareholder in the Barrow Offshore Wind Farm and a 100% shareholder in the Burbo Banks Wind Farm (both now in commercial operation DONG Energy is currently constructing the Gunfleet Sands I+II projects and furthermore holds sole or shared interests in six other UK offshore wind farms in varying stages of development -, London Array, Scarweather Sands, Walney, West of Duddon Sands, Westermost Rough and Wigtown Bay.

Specific comments to the recommendations in the SEA environmental report are attached as an annex to this letter.

Yours sincerely



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We have not produced a comment for every recommendation in the SEA environmental report. The comments below correspond to the specific recommendations preceding them:

*1. In areas with high renewable energy generation potential DECC should ensure decisions on renewable energy leasing and licensing for oil & gas (including natural gas storage) are coordinated to minimise potential sterilisation of areas for other industries. This recommendation extends to maintaining options for potential future geological storage of captured carbon dioxide.*

1. DONG energy agrees that there is a need for coordinated licensing between renewable energy, oil & gas and potential CO<sub>2</sub> storage sites. How this will be achieved is critical; wherever possible co-existence of the industries should be promoted, but DECC should investigate how this could take place. E.g. horizontal drilling, subsea completion etc.
2. DECC should keep in mind the extra restrictions facing offshore wind developers, including spatial restrictions such as the boundaries of the round three zones, and constraints to development within zones, such as depth and international shipping lanes. As these constraints will reduce the area available for development within the round three zones, further spatial restrictions from future developments, e.g. new oil & gas infrastructure need to be avoided in order for the UK Government's 2020 targets to be realised. Where there is a potential conflict between offshore wind and oil & gas efforts should be made to site new oil & gas infrastructure in areas that are already spatially constrained to wind development.

*2. The draft plan/programme for an additional 25GW of offshore wind farm (OWF) generation capacity will require wind farm development on a massive scale. In advance of a formal marine spatial planning system being in place for the UK, the leasing and consenting of OWFs must ensure the minimisation of disruption, economic loss and safety risks to other users of the sea and the UK as a whole. In particular, there should be a presumption against OWF developments which:*

- a. impinge on major commercial navigation routes, significantly increase collision risk or cause appreciably longer transit times*
- b. occupy recognised important fishing grounds in coastal or offshore areas (where this would prevent or significantly impede previous activities)*
- c. interfere with civilian aviation including radar systems*
- d. could potentially jeopardise national security for example through interference with radar systems or significant reductions in training areas*
- e. result in significant detriment to tourism, recreation and quality of life*

1. This statement should not be used to prevent development in areas that may have an impact on the listed issues, as responsible developers we would expect any of these issues to be investigated during the Environmental Impact Assessment process and development to occur only where a developer has shown that significant impact will not occur or appropriate mitigation measures can be put in to place. This statement could be used as an excuse for other stakeholders to erect barriers to development and not engage with developers, DECC needs to ensure that developers are still able to investigate all opportunities to prove that any impact will not be significant.

2. Additionally DECC should clarify whether it considers the areas presented in the SEA GIS exercise as potential hard constraints are now considered off limits to wind development or whether there is scope for interpretation (e.g. using improved data etc). Currently the definition of some of the points a-e lacks clarity, there should also be some clarification of terms such as 'important fishing grounds' and 'major commercial navigation routes' and whether these are now fixed or if there is scope for determining these definitions or scope for determining whether they apply in specific cases, within the EIA process.
3. With regard to the navigation data used for mapping shipping density in the SEA report, we are concerned that unpublished data (MCA OREI 1 report) was used; we would therefore not expect that the areas excluded from zones using this data are considered no go areas for wind development by the government response to the SEA. Further research and analysis of data, including analysis of the type of shipping, needs to be undertaken.

*4. Reflecting the relative sensitivity of multiple receptors in coastal waters, this report recommends that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km). The proposed coastal buffer zone is not intended as an exclusion zone, since there may be scope for further offshore wind development within this area, but as mitigation for the potential environmental effects of development which may result from this draft plan/programme. The environmental sensitivity of coastal areas is not uniform, and in certain cases new offshore wind farm projects may be acceptable closer to the coast. Conversely, a coastal buffer in excess of 12nm may be justified for some areas/developments. Detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 or subsequent wind farm projects close to the coast can be assessed. Marine spatial planning proposals are under consideration in Parliament, which would give coastal regulators and communities further opportunities to have a say in the way the marine environment is managed, in addition to the existing routes for consultation as part of the development consent process.*

1. We do not agree with setting what seems to be an arbitrary figure and attaching it to a proposed coastal buffer zone. Although we welcome the fact that it is recognised that the buffer zone should not be considered an exclusion zone, in practise many stakeholders could come to recognise it as one, especially with a specific distance attached to it. In practice a nominal buffer zone of 12nm that may not be required in some instances or may be required to be larger in others instances is a confusing concept. As responsible developers we would consider and investigate all of the issues raised in the SEA that contributed to the proposal for a buffer zone within the EIA required for development consent. It would be better for the SEA to suggest that certain, specified issues become more prevalent the closer to shore development occurs (e.g. coastal birds) and should therefore expect to receive detailed examination in any development's EIA.

*7. The effects of noise on marine mammals particularly from piling and seismic survey remain an issue of debate. A range of mitigation measures are available and their adoption is normally required through consenting. However, there is a need for cross-industry coordination of what noisy activities are planned, where and when, to facilitate the assessment of cumulative effects and implementation of temporal/spatial mitigation actions. The approach would require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the future MMO.*

1. Any system developed in this regard must be fair and equitable to all developers and should aim to coordinate activity to prevent delays. The specific needs of different industries must be considered within this coordination. E.g. considering the potential restrictions on piling the construction of an offshore wind farm should not be then delayed because there have been too many seismic surveys undertaken by another industry. We would recommend that clear guidance and direction is forthcoming from the departments and bodies involved in this coordination and on the definition of what will be considered harmful doses of noise.

*9. There remain a number of subject areas for which the information base is limited and will need to be enhanced to support future marine spatial planning as well as project specific consenting. These information gaps include aspects of the natural world and human uses, with regional context and long-term trend data notably lacking. These gaps include:*

- *Seabed topography and texture. For some areas there is excellent data for example from multibeam mapping undertaken variously including by the MCA, BGS and the SEA programme, but the UK lacks a coordinated programme to marshal such data, to identify priority gaps and to find ways to fill them*

- *Recent information on the distribution of fish eggs and larvae, and variability in space and time*

1. This should be a priority area for research and funding effort by the SEA process, DECC and Defra etc. More certainty in this area would help reduce unnecessary construction delays, aid conservation of stocks and reduce developer risks.

- *Detail of bird migration patterns, and variability in space and time including flight heights in different weather conditions*

- *An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs*

- *Ecology of most marine mammal species and in particular important areas for breeding, foraging and resting*

2. These three points are all areas that should also be priorities for government research funding

- *Finer scale distribution of fishing effort, gears and catches for smaller vessels (<15m)*

3. DECC should discuss with the MFA the possibility of introducing a VMS system for the smaller fishing vessels as this will improve certainty for the MMO's marine planning system and help developers and fishermen alike by allowing developers to incorporate the important fishing grounds in to their planning with increased certainty.

*14. Efforts are (or will be) underway to identify offshore Marine Conservation Zones/Marine Protected Areas e.g. under the Marine Strategy Framework Directive, OSPAR and the Marine and Coastal Access Bill. Where the objectives of the conservation sites and renewable energy development are coincident, preference should be given to locating wind farms in such areas to reduce the potential spatial conflict with other users.*

1. Whilst DONG recognises the potential for this type of cooperation between offshore wind farms and conservation zones and welcomes a recognition that this is a possibility it should be noted that more research on the subject is needed, without it developers will face greater risks and longer development timescales than for developments outside of such areas. Whilst we recognise the potential for wind farms to work alongside and promote the objectives of a conservation zone the conservation bodies and other stakeholders will need to be comfortable with this idea and this means more evidence is required. Whilst additional evidence and time is rightly required of developers choosing to try to develop inside a conservation zone this would be an unfair burden if the choice was made for them due to a spatial conflict.
2. We would be concerned that in instances of spatial conflict wind developers are pushed in to areas that require longer to develop (e.g. appropriate assessments), and carry a greater risk of failing to be granted consent. This point underlines a theme within the SEA that wherever potential spatial conflict occurs there seems to be a presumption against offshore wind development. This point needs to be addressed at some level, in some instances during consenting for round three decisions will have to be made between stakeholders, if in all instances of spatial conflict the presumption is against offshore wind then the chances of hitting the UK Government's 2020 targets be severely diminished.

*17. The Offshore Vulnerability Index (OVI) to surface pollutants developed by the JNCC should be reviewed in the light of results from recent aerial and boat based bird survey data, and updated if necessary. Consideration should also be given to whether the development of UK-specific individual waterbird species sensitivity indices and mapping of a Wind Farm Sensitivity Index (WSI) in UK waters would be useful in support of site selection and consenting.*

*18. The existing initiatives to develop waterbird Population Viability Analysis for sensitive species should be progressed, including, if necessary, research to improve the accuracy of inputs to the models.*

1. DONG agree that points 17 and 18 are useful areas to be researched further.

*22. It is recommended that in certain key areas of marine mammal sensitivity, operational criteria are established to limit the cumulative pulse noise "dose" (resulting from seismic survey and offshore pile-driving) to which these areas are subjected. This could be implemented within the existing regulatory framework for activity consenting, but will require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the MMO when established, with suitable links to all parts of the UK.*

1. Please see our answer to recommendation 7.

## DORSET COUNTY COUNCIL OFFICER COMMENTS ON OFFSHORE ENERGY SEA ENVIRONMENTAL REPORT

### 1. INTRODUCTION

- 1.1 These comments are made on behalf of officers of Dorset County Council. We welcome the opportunity to comment on the Environmental Report arising from the Offshore Energy SEA process. Our comments relate largely to our interest in potential development in SEA areas 3 and 4 which cover the Dorset coast, and in the West Wight area identified for potential offshore wind farm development, though some have wider application and relevance.

### 2. OVERALL COMMENTS

- 2.1 We support the aims of the plan/programme as set out in the Energy White Paper 2007, namely to **tackle climate change** by reducing carbon dioxide emissions and ensuring **secure, clean and affordable energy supply**. While there are legitimate concerns about the impacts of offshore development on coastal landscapes, biodiversity and other issues, we believe that these are not inherently in conflict with our objective of protecting and enhancing our unique coastal and marine environment. Individual schemes will clearly need to be judged on their merits, and we are keen to ensure that all schemes are subject to robust environmental tests regardless of the form of energy they are seeking to promote. We set out below some of the policy tests on which the County Council's view will be based, and hope that the SEA process can take these into account as it progresses.
- 2.2 We support the conclusion of the Environmental Report that of the **alternatives** outlined (1. Do not offer any areas for leasing/licensing 2. Proceed with a leasing and licensing programme 3. Restrict the areas offered for leasing and licensing temporally or spatially) that alternative 3 should be the preferred option. We also broadly support the conclusion that 'there are no overriding environmental considerations to prevent the achievement of the offshore oil and gas, gas storage and wind elements of the plan/programme, albeit with a number of mitigation measures to prevent, reduce and offset, significant adverse impacts on the environment and other users of the sea', subject to individual schemes complying with the policies and passing the tests referred to below.
- 2.3 We also support the conclusion of the Environmental Report on **buffer zones** that the bulk of offshore wind generation capacity 'should be sited well away from the coast, generally outside 12 nautical miles (some 22km)'. While we accept that the environmental sensitivity of coastal areas is not uniform, and that this buffer could be closer or further offshore depending on local sensitivity, we would emphasise that we see the Dorset coast as particularly sensitive, this being reflected by the international and national designations which cover it, particularly the Dorset and East Devon Coast World Heritage Site and the Dorset AONB, plus the Heritage Coast, Natura 2000, SPA and SAC designations. This said, consideration of sensitivity should clearly apply to all forms of offshore development and activity and we would not wish to single out offshore wind farms which offer many positive benefits compared to non-renewable forms of energy, some of which pose greater threats to the integrity

of the coastal environment – for example, the potential impact of oil spills on both the geology and the visitor economy of the World Heritage Site.

- 2.4 While we also accept that **wave and tidal energy** do not form part of the plan or programme considered by the SEA, we would like to take this opportunity to urge DECC to support these technologies more fully with a view to improving their commercial viability, and reflecting the fact that their viability will change as fossil fuels become more scarce.
- 2.5 We note that one of the stated aims of the SEA process is to ‘provide routes for **public and stakeholder participation** in the process’. While DCC has not joined other local authorities in the public criticisms of DECC and the Crown Estate which have been levelled about the process to date, we do believe that some opportunities to engage local authorities and the wider public may have been missed and are concerned that the process in future should address this, and could be more effectively promoted to improve engagement and understanding.
- 2.6 The SEA process inevitably concentrates on offshore impacts, though clearly associated onshore development will also be of concern to coastal communities and local authorities. We would welcome clarification as the process develops of how the **onshore implications of offshore development** will be dealt with through the planning system.

### 3. KEY ENVIRONMENTAL CONSIDERATIONS SPECIFIC TO DORSET

- 3.1 Safeguarding Dorset’s unique environment is one of DCC’s primary corporate aims, and a headline objective in Dorset’s Community Strategy, *Shaping our Future*. We are therefore particularly keen to ensure that the nature and significance of onshore areas designated for their environmental quality is understood and reflected in the SEA process and specific project proposals which may come forward. While individual schemes must be judged on their merits as they come forward, we hope that the following will be taken fully into account:

- *The Dorset and East Devon Coast World Heritage Site*: the ‘Jurassic Coast’ was inscribed by UNESCO as a World Heritage Site in 2001. The Site was granted World Heritage status under UNESCO’s criteria viii – ‘Earth’s history and geological features’ - which indicated that its geology and geomorphology were of Outstanding Universal Value. The implications of being on the World Heritage List are that properties have Outstanding Universal Value. UNESCO define this as ‘cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole’.

Those responsible for managing World Heritage properties (i.e. the UK Government as ‘state party’ to the World Heritage Convention, and the WHS Steering Group constituted locally to oversee development and implementation of the site’s Management Plan) therefore have a ‘common obligation’ to ensure that they are protected for present and future generations, not just through legal means, but through responsible, inclusive, sustainable management practices. This is the primary reason

why a World Heritage Site must have an agreed management plan in place, and this expectation has been reinforced in the Governments Draft Circular on Protection of World Heritage Sites and accompanying guidance from English Heritage. These make clear that Management Plans should also address issues of the setting of the World Heritage Site, and views to and from the site, as well as the site itself.

The Management Plan for the Dorset and East Devon WHS is currently being reviewed and a Consultation Draft Management Plan for the period 2009-14 was published in March 2009. The Draft Circular on Protection of WHSs states that relevant policies in Management Plans should be treated as material considerations in making plans and planning decisions. Relevant policies from the Consultation Draft Management Plan which we believe should be applied to the offshore energy programme are therefore highlighted below.

- *The Dorset AONB*: the Dorset AONB was designated in 1959 and is the fifth largest AONB in the country. It covers approximately 42% of the County and stretches from Lyme Regis in the west and along the coast of Poole Harbour in the east. As a coastal protected landscape, management of the Dorset AONB must take into account its links to the marine environment. Activities at sea can have significant implications for the character and qualities of the AONB. Production of a Management Plan for the AONB is a statutory requirement, and the Management Plan has been recently revised to cover the period 2009-14. As such it provides an up to date policy framework against which proposals for offshore development should be tested. Relevant policies which we believes should be applied to the offshore energy programme are therefore highlighted below.
- *Durlston National Nature Reserve, Castle and Country Park*: photo-montages shared with us in pre-application discussions with potential developers show the visual impact of offshore wind farm development from Swanage Pier. While a valid viewpoint, we believe that viewpoints with higher elevations along the Dorset coast should also be an essential part of the assessment of the programme in general and of individual schemes. Schemes viewed from elevated locations will clearly have a very different visual impact from schemes viewed at sea level, which may in turn lead to different perspectives on siting and mitigation.

One of the key viewpoints in respect of the West Wight area is that from Durlston National Nature Reserve near Swanage. Durlston Castle is currently undergoing a multi-million pound refurbishment which will increase its position as a major visitor attraction, and provide an important gateway to the World Heritage Site. The National Nature Reserve at Durlston is also England's newest and Natural England's first NNR. We would urge that the significance of the site be recognised in it being used as a key viewpoint for the purposes of Environmental Assessment. Again, we do not suggest that the importance of Durlston should necessarily prevent offshore development viewable from the site, but its importance should be reflected in the assessment process. The need and potential for interpreting offshore development at coastal visitor centres like Durlston, explaining to the visiting public why it might be considered necessary, what the costs and benefits might be etc - should also be borne in mind as part of the process of building public understanding about schemes which are deemed necessary.

## **4. POTENTIAL AREAS OF IMPACT**

Using the headings identified in the Environmental Report as potentially affected receptors, we would make the following comments:

### **4.1 Biodiversity, habitats, flora and fauna**

4.1.1 We support the conclusion that research results be monitored to inform site specific considerations. Indeed, the programme of research which will be necessary to robustly assess potential schemes could be a major opportunity to fill in the many gaps in our knowledge about the marine environment, and in this context we would hope that research is promoted actively and not just monitored passively.

### **4.2 Geology and sediments**

4.2.1 As set out above, the basis of the World Heritage Site inscription is the earth sciences and geological interest represented by the Site. We would therefore encourage the SEA process, and individual scheme assessment, to take full account of this. Relevant policies from the draft WHS Management Plan include:

- 'Policy 1.2 Protect the Outstanding Universal value of the site through prevention of developments that might impede the natural processes of erosion, or obscure the exposed geology, as set out in the GC/SSSI details, now and in future'.
- 'Policy 1.3 Mitigate negative impact on the natural processes of erosion and exposed geology where developments in the Site or setting do take place'.

4.2.2 We do not regard either of these policies as necessarily being in conflict with offshore energy development, though there is of course the potential for conflict based on proximity of individual schemes to the coast and onshore infrastructure associated with offshore development.

### **4.3 Landscape/seascape**

4.3.1 Relevant policies from the AONB Management Plan include:

- 'PD1i: Support renewable energy production where compatible with the objectives of AONB designation, taking into account the relative sensitivity of the landscape'.
- 'PD3b: Protect the quality of uninterrupted panoramic views into, within and out of the AONB'.
- 'CS3b Conserve tranquil areas along the coast'.
- 'CS3c Conserve the undeveloped nature of the coast'.
- 'CS3d Promote and support the removal of intrusive and urbanising features from the coast'.
- 'CS3f Promote understanding of underwater landscapes'.

4.3.2 While these policies are not necessarily in conflict with offshore energy development, subject to its precise location and scale, to ensure a robust assessment of the offshore licensing programme, however, we would encourage the proposals to be tested against these policies.

4.3.3 The 'setting' of the World Heritage Site is also an important landscape/ seascape consideration, and while the setting of the WHS relies largely on AONB designations for its statutory protection, there are parts of the Site and its setting which are not covered by AONB designation (e.g. Portland) and these could be affected by development in the West Wight zone. Relevant policies from the draft WHS Management Plan include:

- 'Policy 1.5 Protect the landscape and natural beauty of the Site and setting of the World Heritage Site from inappropriate development.'
- 'Policy 1.9 Any offshore oil exploitation and exploitation, should it be considered, must take full account of the seascape and natural beauty of the World Heritage Site.'
- 'Policy 1.14 Encourage offshore energy developments to take full account of the Site and seaward setting, particularly regarding the infrastructure needed to bring power ashore.'

#### **4.4 Climatic factors**

4.4.1 We question the statement in the non-technical summary of the Environmental Report that 'domestic hydrocarbon production would be neutral in the attainment of UK climate change response policy objectives, and potentially positive in respect of oil, since associated gas is put to beneficial use rather than mostly flared as in some other sources of potential supply'. While the relative benefit of domestic hydrocarbon production is not disputed, given the link between the burning of fossil fuels and climate change, and the importance of a robust SEA process, the suggestion that hydrocarbon production could in any way be 'neutral' or 'positive' (as opposed to 'less negative') in terms of meeting climate change objectives and the UK's legally binding carbon emission reduction targets risks undermines the credibility of the SEA process.

#### **4.5 Other users, material assets (infrastructure, other natural resources)**

4.5.1 We recognise that offshore wind farm development could have both positive and negative impacts on the tourism sector and would welcome further research to quantify the costs and benefits in this and other areas of economic activity, particularly commercial and recreational fishing, ports and shipping.

#### **4.6 Cultural Heritage**

4.6.1 The major designations seem to have been considered properly. In due course, more detailed archaeological consideration will be required before any sort of detailed planning decision on a particular site can be made. The general approach is as follows. The impacts on sea-floor archaeology from construction of turbines and associated works will have to be considered. That archaeology includes not only the more obvious wrecks but also buried landscapes, etc. There is a need for assessment using sources such as local Historic Environment Records as well as the more national ones, then probably an evaluation by sonar and diver surveys, etc. Less obviously, but also of importance, there is a need to consider the potential impact of any associated works on land (support infrastructure, any new power lines, etc.) on archaeological remains, historic buildings and of elements of the historic landscape. These would have to be assessed and evaluated using the appropriate methods. It is also important to say that these exercises should be

used to inform decisions about locations of wind-farms, etc, rather than simply carrying them out once sites have been chosen.

## **5. CONCLUSION**

- 5.1 Recent press coverage has highlighted the potentially controversial nature of offshore development on the Dorset coast. We believe that if public understanding of the need for offshore development is to be developed, it is vital that the process of bringing schemes forward involves the communities affected and their elected representatives in local government. As detailed proposals come forward we are therefore keen to work with DECC, the Crown Estate, developers and other interested parties to ensure a robust assessment of the potential impacts, both positive and negative, and to apply the tests highlighted above as part of an ongoing SEA process and the assessment of individual schemes.
  
- 5.2 Dorset County Council and its partners in the Dorset Coast Forum recently submitted a successful Interreg bid for a project to develop a pilot marine spatial plan for an area of the Dorset coast around Weymouth Bay, part of which overlaps with the West Wight area identified for potential wind farm development. The bid will also enable the development of innovative GIS-based planning tools to facilitate the marine spatial planning process. DEFRA are supporting this work which we hope will provide useful lessons to shape the development of the detailed marine spatial plans promised by the Marine Bill. The project, Combining Sea and Coastal Planning in Europe (C-SCOPE) involves substantial research into seabed mapping, seascape assessment and other areas pertinent to the offshore licensing regime, and we would therefore be keen to work with DECC and other interested parties to discuss the development of, and share the conclusions from, this research as we believe it could usefully inform the offshore licensing process. If you would like further information on the project, please contact the project manager, Ken Buchan, Coastal Policy Manager at Dorset County Council on 01305 225132.

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**From:** Cora Seip - Markensteijn  
**Sent:** 23 April 2009 19:09  
**To:** sea.2009@berr.gsi.gov.uk  
**Cc:** Epost  
**Subject:** Offshore Energy SEA Consultation

Dear Sir, Madam,

On behalf of the Dutch Fisheries Organisation, I would like to react on the SEA of a draft plan/programme to enable further rounds of offshore wind leasing and offshore oil and gas licensing in UK waters.

The Dutch Fisheries Organisation is an umbrella organisation for the Dutch catching sector, including the representative organisations for the demersal and pelagic fleets.

First, we would like to comment on the site selection:

The North Norfolk Sandbanks are an important fishing ground for the Dutch fishing fleet. The area is especially important for the beam trawl fleet of Texel, Den Helder, Urk and Katwijk (approximately 16 vessels). The same goes for the Dogger bank, which is an even more important area for the Dutch fishing fleet. The area is important for almost the whole of the Dutch beam trawl fleet, and flag vessels (about 40-50 vessels). The importance of these areas for these vessels varies between 90% and 40% of their total income. The areas have been key fishing grounds for over 40 years. Furthermore, they are 'clean' areas to fish, meaning that the beam trawl fisheries in these areas have very little discards. As you may know, the reduction of discards is a high priority of the European Commission and our fishing fleet.

The area Hornsea is an important fishing ground for both flatfish fisheries and nephrops fisheries. The area is important for approximately 35 vessels from the northern ports (Texel, Den Oever, and Den Helder)

The fact that these areas are of importance to the Dutch (and Danish) fleet is not recognized in the Offshore Energy SEA Environmental Report.

We ask you to consider the Dutch fishing activities as activities of significant importance, and involve us in the further process.

The building of wind parks on the Norfolk Sandbanks, Dogger Bank, and the Hornsea area, and the subsequent exclusion of fisheries in these areas, will have a large economic impact on the Dutch fishing industry. This will not only affect the fishermen but also the trade.

Most likely, displacement of the fishing effort will take place, with increased fuel and labour costs, and a more uncertain income as a result.

We trust to be closely involved with the evolution of the management of the offshore wind leasing and offshore oil and gas licensing in UK waters that potentially affect the Dutch fishing industry. In the following stages, we want to be consulted, and are more than willing to provide you with additional information on the Dutch fishing industry.

With kind regards,  
Dutch Fisheries Organisation

Cora Seip

-----  
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**Contact**

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Date 14 April 2009  
Subject Comments on Offshore Energy SEA Consultation

**Our reference**

- 0693

**Your reference**

-

**Enclosure(s)**

-

Dear Sirs,

With pleasure we have reviewed the strategic environmental assessment (SEA) on offshore energy. I would like to compliment you with the extensive documented report. In general, we can agree on the findings in the report. However, there are a number of remarks I would like to make with regard to this SEA.

**Ecology**

1. We agree that two major issues are underwater noise and barrier effects.
2. In the assessment, the effect of underwater noise on fish larvae is only addressed in the context of seismic research. However, from the appropriate assessments which were made for 17 initiatives for wind farms in the Dutch part of the North Sea, and the report "the Development of a framework for Appropriate Assessments of Dutch offshore wind farms, (Prins *et al* 2008), it was concluded that a building method for the foundation of wind farms which uses pile driving could have a serious effect on fish larvae. This effect could result in a reduction of 3 – 9 % in the transport of fish larvae towards the Natura2000 coastal zones. This effect could add up with bird mortality due to collision on wind farms and become, accumulated, significant. This forces us to take drastic measures such as prohibiting pile driving in the season January – June. We would like to know if you have considered such potential effects as well in the UK.
3. I agree with your conclusion that local effects on bottle nose dolphins would need a project-specific assessment including recommendation concerning mitigating measures. Unfortunately, examples of effective mitigation measures are currently lacking as far as we know. We would like to learn more about these mitigation measures.
4. The assessment that overall the barrier effects and collisions are unlikely to have a significant effect on bird populations on a strategic level may not be true for the accumulated effect of multiple wind farms on a special protected area such as a Natura2000 area. Especially, effects of wind farms on the lesser black-backed gull in the Netherlands could accumulate to significant levels for certain colonies of this bird at the Dutch coast.

5. The conclusion that "the scale and consequences of environmental effects in adjacent territories due to activities resulting from will be less than those in the UK waters are considered unlikely to be significant" might be premature. At the least, coordination in building period might need to be arranged between neighbouring countries – if pile driving is issued, in order to reduce the combined effect of the development zone R3, the planned Belgian wind farms on the border with the Dutch EEZ and the Dutch ("Borsele") wind farms at the Dutch side of this border. Also the accumulated effects of the bird collisions due to the English, Belgian en Dutch windfarms may have environmental effects.
6. We have notified Brussels that the sea areas Doggersbank and Klaverbank fulfil the requirements of the Habitat directive. We expect these areas to be assigned as Natura2000 site and protected by management from 2013 onwards. This might have an effect on the assessment of off shore activities on the North sea which is not incorporated yet is this SEA.

**RWS Noordzee**

**Date**  
6 April 2009

**Our reference**  
-

### **Shipping**

7. We appreciate that a risk approach is used which is based on 'As Low as reasonable? practice' (ALARP).
8. We would like to share views on the use of wind farms by vessels under certain conditions. Until now, shipping of any kind (except maintenance) is not allowed.
9. We also would like to share views and seek cooperation on the research on radar and radio interference.

### **Flight safety**

10. We note the remark that the required free air space for helicopters flying on instruments may restrict the location of offshore wind farms developments, although in our opinion variations to the 6 nm zone can be agreed upon by applying adequate risk assessment and consultation with the field operator. In the Dutch case we assess the consequences of the limitation in accessibility of the platform, maintaining a requirement of 5 nm in the direction of the approach during instrument flight.

### **International cooperation**

11. Considering the location of probable future windfarm area in the Netherlands called "IJmuiden", which is adjacent to the UK seas and foreseen English windmill areas, we suggest to investigate the possibilities for further cooperation when it comes to detailed planning.

Looking forward to your response.

Yours faithfully,

Joris Geurts van Kesteren  
Head of Department of Regulation & Licencing for Water and Shipping Affairs  
Rijkswaterstaat  
Ministry of Transport, Public Works and Water Management

**E.ON UK Response to the UK Offshore Energy Strategic Environmental Assessment**

1. E.ON UK is one of the UK's largest retailers of electricity and gas. We are also one of the UK's largest electricity generators by output and operate Central Networks, the distribution business covering the East and West Midlands. In addition, our E.ON Climate and Renewables business is a leading developer of renewable plant in the UK. Whilst the majority of our comments to this document are from the perspective of an offshore wind developer, E.ON UK also has a team dedicated to the development of gas storage opportunities (E.ON Gas Storage). In addition we are currently part of the UK government's competition to bring forward a carbon capture and storage demonstration project at our Kingsnorth plant in Kent.
2. Tackling the three energy challenges facing the UK, namely the requirement for secure, clean and affordable energy supplies, will necessitate the considered development of the UK's offshore resources. Indeed, meeting the UK and international targets for greenhouse gas mitigation and renewable energy utilisation, will realistically require an altered offshore landscape, whether for the storage of essential gas supplies, the long term storage of carbon dioxide or the deployment of offshore renewable energy technologies.
3. As a principle we support the use of appropriate mitigation measures that will enable sustainable development to co-exist with the environment and other interests. Whilst this is reflected in some of the conclusions, this is not reflected on a consistent basis and is primarily what is at the heart of our concerns.
4. The response to the main areas discussed in the Environmental Report is set out below.

**Biodiversity, habitats, flora and fauna**

5. The analysis undertaken has indicated that single seismic or pile-driving sources are unlikely to have a significant disturbance effect on marine mammals. We therefore welcome the conclusion that there is no justification to place a prohibition on such activities and we agree that where there are potential impacts, these can be mitigated through an Environmental Impact Assessment. E.ON also agrees with the view that physical disturbance associated with activities resulting from proposed oil and gas licensing and wind farm leasing will be negligible in scale relative to natural disturbance and the effects of demersal fishing.
6. We note with concern however the position taken regarding the physical presence of offshore infrastructure and support activities and how they may potentially cause behavioural responses in fish, birds and marine mammals.

7. In particular, we take issue with the current assessment of the effects on inshore birds, which concludes that "based on available evidence, displacement, barrier effects and collisions are all unlikely to be significant to bird populations at a strategic level". We believe that the approach recommended in the report of incorporating a coastal buffer zone of 12 nautical miles (some 22km) is unwarranted, and propose that a reasonable approach to address this issue is to assess projects on a case by case basis. We recognise that some areas may not be appropriate for development but this should not result in a blanket ban. We therefore urge a reconsideration of this approach and instead suggest a soft constraint which can be managed through a formal Environmental Impact Assessment

### **Geology and sediments**

8. We agree with the view that sediment contamination is not a significant issue in wind farms or recent hydrocarbon developments. Indeed as noted in the report, the composition of planned discharges from wind farm and oil industry operations is regulated, with increasingly stringent controls applied in recent years.

### **Landscape/seascape**

9. As a responsible developer, we work very closely with stakeholders to ensure that any visual impact of our wind farm and other energy developments are mitigated through careful design and consultation. We are sympathetic to people's concerns and through careful design believe that this is not a major issue. Therefore identifying solutions is a more appropriate way to address any concerns, rather than introducing a generic guideline of a 12 nautical mile buffer zone for large (>100MW) wind farm developments.

### **Water Environment**

10. We agree with the assessment that significant contamination or ecological effects of drilling discharges are not expected from offshore wind farm developments.

### **Air quality**

11. From our experience of constructing and operating offshore wind farms in the UK, we do not believe that there are significant effects on local and regional air quality. We accept that where this may be a risk, appropriate mitigation measures should be considered via the normal Environmental Impact Assessment process.

### **Navigation**

12. We have significant concerns with one of the key conclusions of the report. E.ON does not accept that there is a blanket requirement for a prohibition on turbine location within a 1nm buffer of a primary navigation route. Part of our concern relates to the decision being based on unpublished MCA "OREI 1" primary navigation routes. More fundamentally however, any development as a principle should be

assessed on a case by case basis. We believe that with appropriate mitigation measures, sustainable development from the offshore wind industry can co-exist with the shipping industry, and that these industries should be treated equally in terms of their importance.

## **Conclusion**

13. We believe that there is a fundamental flaw in the analysis shown in table 5.18. It is claimed that with no relaxation of hard constraints such as a 1nm buffer for primary navigation routes and a 12 nm coastal buffer zone, up to 80GW could be developed.
14. Our assessment suggests that significantly less than 25GW could be developed under the Round 3 process, which would make it extremely difficult for the UK to meet the 2020 legally binding target for renewable energy.
15. For example, it is notable that 58% of the 25GW total is assumed to be delivered from the Dogger Bank zone. But the development of such a large proportion of the Dogger Bank area within the Renewable Energy Zone (REZ) seems at odds with the potential restrictions which might accrue should the area become designated as the result of an appropriate assessment. Equally, development of such a large proportion of the area would undoubtedly lead to significant cumulative effects.
16. We strongly recommend that these recommendations are reviewed and that a more balanced approach is taken as we have set out above.

## **Next steps**

17. There is an urgent need for the SEA to dovetail with the general timetable for awarding zones under the Crown Estate Round 3 process. It is therefore important to finalise the SEA in a reasonable timescale having ensured that a proper process has been followed.
18. As a potential developer in Round 3 we are also seeking comfort on the approach that would be taken when further information is provided from survey work that would be undertaken within a zonal development area. What will be the feedback loop into the SEA process? We would like to discuss this along with a number of other issues that we have identified and will be in touch shortly to arrange a meeting.

## **DECC SEA Offshore Energy – Comments made on behalf of Eastern Sea Fisheries Joint Committee**

### Section 5.7.5. Fishing interactions and Appendix 3 (Other users of the Sea) part h.13 Fisheries

These sections identified key issues relating to fishing interactions with OWF developments. Those of particular relevance to inshore fisheries (and therefore to Sea Fisheries Committees) include:

- Many inshore areas are of great local significance, but this is often not reflected in MFA landings statistics, logbook returns, VMS or overflight surveillance data;
- Loss of fishing grounds to other marine users is difficult for smaller inshore vessels to overcome, because of their limited range;
- Displacement of fishing activity, e.g. resulting from OWF development, has a greater effect in inshore fishing grounds, with potential adverse effects (increase effort and competition) in neighbouring areas;
- Local inshore grounds may be particularly important for coastal communities whose fishing fleets depend upon these grounds;
- The ability to fish within OWF sites depends on the fishing vessel operator's perception of risk, the gear type being employed, local hydrodynamics and ground type;
- Early [and continued] liaison with local fishermen is very important.

The Joint Committee would emphasise the importance of direct liaison between fishermen and developers, to ensure these issues are understood at the local and regional level. This is likely to be of more relevance to export cable routes (traversing inshore areas) than OWF sites themselves if Round Three sites will generally be sited offshore. However, as identified from the SEA Fisheries Stakeholder workshop (October 2008), inshore fishing vessels can fish waters up to about 25nm offshore, and the geographical area important for fish populations targeted by inshore vessels can extend far beyond the inshore fishing grounds.

The SEA Environmental Report (p.163) noted that *“At a strategic level, caution is required with regard to the siting of major expansion of offshore wind farms to ensure fishing activities and skills of local cultural importance in an area are not inadvertently lost, through the prevention or significant hindrance of fishing activity for a generation during the lifetime of the windfarms.”* The Joint Committee considers this point to be important, but would query how this caution will be applied at the strategic level. One possible solution is the creation of detailed fisheries maps using information provided by fishermen.

The need for fisheries mapping was identified at the October 2008 fisheries workshop (highlighted by representatives of various organisations including National Federation of Fishermen's Organisations, Scottish Fishermen's Federation, Thanet Fishermen's Association, Maritime and Coastguard Agency, and Sea Fisheries Committees); and was discussed at the recent FLOWW meeting (March 2009). A national review of fisheries mapping work could highlight the information already available and identify the gaps yet to be filled.

It was also noted at the Fisheries Workshop that dedicated monitoring of fishing activities in operational wind farms would inform the SEA on impacts to fisheries from future OWF developments. Some reports were available of fishing activities within existing OWFs but the information was limited. The Joint Committee suggests that a requirement could be placed on developers/fishermen/regulators to monitor and report fishing activity within OWFS. It is

noted that the use of VMS on smaller fishing vessels (<15m) would considerably help this task.

Two further points that were made at the Fisheries Workshop but were possibly omitted from the SEA Report were:

- Need to investigate opportunities for OWF developers to mitigate / compensate fisheries via “beneficial fisheries projects”;
- Cables through trawling areas must be buried.

#### Section 5.5.2.6 Electromagnetic Fields (EMF)

In the absence of the final COWRIE EMF Phase 2.0 report, the EMF summary provided in the Environmental Report was useful. It highlighted the remaining uncertainty over electrical and or magnetic field impacts on fish and other marine species; noting that the mechanism for impact is present but the actual potential for impacts to occur was not definite. It emphasised the need for further research, some of which would be conducted at existing OWF sites in the next 1-2 years, and the need for proportionate attention to the issue in localised areas important for key species such as elasmobranchs. Fishermen in the Joint Committee’s district have raised this issue, and the uncertainty remains a cause of concern for the Committee, given the large amount of inter-turbine and export cabling planned for the developments within or through the district.

#### SEA Report: comments on recommendations and monitoring

<b>Recommendation</b>	<b>ESFJC comment</b>
Preferred option: Alternative 3 “to restrict the areas offered for licensing or leasing, temporally or spatially”.	The Joint Committee considers offshore wind farm development should be gradual and appropriate, informed by outcomes of relevant research into its environmental impacts. However, given the inevitability that a massive expansion in offshore wind will be progressed rapidly, ESFJC supports the option to restrict areas for development because of socio-economic and environmental considerations.
“Potential for significant effects (on the regional distribution of features and habitats; population viability and conservation status of benthic species) is considered to be remote”	Local/regional effects must still be considered in individual environmental assessments, e.g. proposed Race Bank OWF area = regionally important crab breeding ground, that is understood to play an important role in sustaining the Norfolk crab fishery.
Recommendation that waters near the coast and certain especially important fishing areas offshore are avoided for future OWF siting	ESFJC agree with this recommendation.
Recommendation 2 “should be presumption against OWF developments which occupy recognised important fishing grounds, in coastal or offshore areas, where this would prevent or significantly impede previous activities”.	ESFJC agrees with this approach, but the wording leaves room for debate on what are “recognised important fishing grounds” and whether the presence of OWFs will “prevent or significantly impede previous activities” – especially in light of the paucity of spatial information, or historic records, on fishing activities.

Recommendation	ESFJC comment
Recommendation 3 “precautionary approach: avoidance of important ecological areas...”	Sentence unfinished? ESFJC would expect to say, “Precautionary approach... ..is required”.
Recommendation 4 – Large area required for massive expansion in OW energy, therefore locate bulk of new generating capacity outside of 12nm.	ESFJC agree with this recommendation; a presumption against inshore development is likely to benefit <i>inter alia</i> inshore fisheries, coastal seascape, and coastal birds.
Recommendation 5 “in order to minimise habitat change, and ensure areas are left fit for previous or other users, minimise the use of rock armour/ scour protections...”	ESFJC support this recommendation.
Recommendation 7 “need cross-industry coordination to facilitate (i) assessment of cumulative effects and (ii) implement temporal / spatial mitigation.”	ESFJC supports this approach; it is crucial that any system is set up properly and engages all developers. Could this be written in as a licence / leasing condition?
Recommendation 9 recognised many data gaps, including these relating to fisheries: (i) distribution of fish eggs and larvae, and their variability over time; (ii) finer scale distribution of fishing effort, gears and catches for <15m vessels; (iii) effects on fishing activity in and immediately adjacent to constructed OWFs.	ESFJC suggests that possible solutions include: (i) expansion and updating of Coull <i>et al</i> (1998)’s Fisheries Sensitivities Maps (possibly using information gathered in oil & gas/OWF/other environmental surveys); (ii) Nationally-coordinated fisheries mapping project; (iii) requirement on developers/fishermen/regulators to monitor and report fishing activity within OWFS. Use of VMS on smaller fishing vessels (<15m) would considerably help this task.
Recommendation 14 “locate OWFs in MCZs where their objectives are coincident, to reduce potential spatial conflict with other users of the sea.”	ESFJC would support this approach but note that each development must be assessed individually for its effects.
Effects monitoring - “existing monitoring activity is reviewed as part of the DECC SEA process and to date has been found adequate to understand the evolution of baseline conditions in respect of sediment contamination and biological effects across the SEA areas”.	ESFJC would <b>disagree</b> with this point, and considers that existing monitoring data is not adequate to show how biological baselines have changed since OWF construction. E.g. baseline surveys at individual wind farm sites are not believed to be sufficient to provide species population data: although the diversity of species is recorded, the baseline and monitoring surveys are not frequent or extensive enough to detect/ascertain causes of change in population abundance; in the context of mobile and naturally variable populations.

The Department of Energy and Climate Change  
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86-88 Guild Street  
Aberdeen AB11 6AR

Letter sent per e-mail to [sea.2009@berr.gsi.gov.uk](mailto:sea.2009@berr.gsi.gov.uk)

Date: April 20, 2009  
Subject: Offshore Energy SEA Consultation

Dear Madam or Sir,

Econcern / Evelop would like to thank DECC for the opportunity to share our views on the SEA as conducted by DECC. Econcern, being a BWEA member, also has separately provided input to the consultation response prepared by BWEA. The response presented in this letter is complementary to and further in support of the BWEA response.

The content of our response to the SEA consultation is considered confidential<sup>1</sup>. The fact that Econcern responded is not considered confidential.

Econcern's mission is 'a sustainable energy supply for everyone'. Econcern consists of operating companies Ecofys, Evelop, Ecostream, Ecoventures and OneCarbon. Together Econcern and its operating companies deliver unique projects, innovative products and services for a sustainable energy supply. Within Econcern, Evelop is responsible for the development of offshore wind energy projects.

Wind energy project development, construction and operation are core components of the implementation of our mission. We have been active in the renewable energy field for 25 years and have significant wind energy activities in 12 countries, onshore and offshore. Econcern currently operates the 120 MW Princess Amalia Wind Farm, the largest offshore wind farm in the Netherlands and is planning construction of first phase of the 330 MW Belwind Wind Farm off the coast of Belgium this year. In addition, we have a large portfolio of other offshore developments throughout Europe. In the UK, we are active both offshore and onshore. Offshore Econcern has been involved in the Scira project (Sheringham Shoal) until consented and is bidding for Round 3.

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<sup>1</sup> This letter shall be considered exempt from disclosure to any third parties under the FOIA. In the event a request is made to DECC by any third party to reveal any information originated by Econcern, whether under the Freedom of Information Act 2000 (FOIA) or not, Econcern requests DECC to timely notify Econcern in writing of any such request.

Offshore wind energy contributes to the reduction of CO<sub>2</sub> emissions, provides increased security of supply and brings economic development. In addition, wind energy generally causes less pressure on the environment in terms of waste, air pollution or heat disposal than nuclear or fossil fuel based electricity generation.

In this light, it would not be surprising had the SEA recommended a “presumption in favour” of offshore wind energy. This is however not the case. Although E-concern considers the SEA in general to be a valuable document which provides important information to improve our knowledge of UK marine environment characteristics and to support the considered selection of locations for offshore wind energy development in the UK waters, we feel constrained to respond to the SEA in particular in regard to the general “presumption against” offshore wind energy. As presented in the SEA recommendations, the presumption could be interpreted in the wrong way.

The evaluation of offshore wind energy should, in our view, be project specific and not take general presumptions as the starting point. Further, the evaluation should be done taking full account of the impact of the failure to develop offshore wind energy into account. We are concerned that otherwise the SEA recommendations will have a discouraging effect on decision-making. We presume that this is not the intention of the SEA. We would therefore recommend a more positive approach and suggest modifying the overall “presumption against” position into “yes, with appropriate consideration of alternatives” within the non-excluded areas. This approach would be more consistent with the existing regulatory instruments which allow the proper assessment of project specific conditions.

We have limited our response to specific recommendations as included under section 6.1 of the OES Environmental Report:

1. Regarding Recommendation 2: We acknowledge the importance of balancing potential negative effects on the environment and other users of the sea against the many benefits of offshore wind farms. We also recognise that each offshore wind energy project has unique characteristics. This is recognised in the existing consenting process. Alternative 3 (spatial exclusion) would not eliminate the requirement for EIA and stakeholder consultation for the non-excluded areas. In that respect Recommendation 2, as currently phrased, may unnecessarily be interpreted as a more general statement against licensing offshore wind farms. Recommendation 2 also appears to assume a fixed status quo, e.g. that there are no conceivable alternatives to existing commercial navigation routes or that fishing in existing grounds will continue uninterrupted and unaffected by other developments, for instance quotas and changes in EU fisheries rules.

2. Recommendation 3 states: "This precautionary approach dictates that unless suitable evidence indicates otherwise, avoidance (for the present) of areas known to be of key importance to waterbird and marine mammal populations, including breeding colonies, foraging areas and other areas essential to the survival of populations...". This recommendation may refer to the existing process for defining protected areas and the assessment of the impact on these areas (e.g. SACs or SPAs under the European Birds and Habitats directives). As stated in Recommendation 15, these sites are not intended to be strict no-go areas. The emphasis in Recommendation 3 on the application of a precautionary approach could be interpreted as an additional level of assessment effectively excluding development in these areas.
3. Recommendation 4 introduces the 12nm criterion. Although it is clear this should not be considered an exclusion zone, E-concern has concerns about this recommendation. It is in our view not possible and not necessary to introduce this 12nm criterion. Firstly because coastal areas and seascape are unique and difficult to compare or generalise. Secondly, we consider 12 an arbitrary number, that coincides with the territorial waters boundary. Each project should be considered in its own specific environment and the impact assessed accordingly. There is a clear economic advantage to near shore construction<sup>2</sup> that, in our view, should not be risked by the general nature of Recommendation 4.
4. Under Recommendation 4 it is mentioned that "Detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 or subsequent wind farm projects close to the coast can be assessed". In our view this is already the case. Environmental Impact Assessment and stakeholder consultation requirements are already in place. It is unclear if this recommendation adds a new layer of investigations and consultation or this refers to the existing consenting process.
5. In Recommendation 7, the OES Environmental Report mentions the requirement to coordinate seismic and piling activities to mitigate cumulative effects of noise. E-concern would like to point out that the construction planning of offshore wind farms is done well in advance and interruptions of the installation process can be extremely costly and may delay the delivery of the project considerably. Any coordination procedure related to e.g. seismic activities should take this into account.

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<sup>2</sup> The Carbon Trust, "Offshore wind power: big challenge, big opportunity. Maximising the environmental, economic and security benefits", October 2008.

In summary: Econcern suggests a clear balance between the positions taken in the recommendations of the OES Environmental Report and the main objectives of the draft plan/programme:

“... to enhance the UK economy, contribute to the achievement of carbon emission reductions and security of energy supply, but without compromising biodiversity and ecosystem function, the interests of nature and heritage conservation, human health, or material assets and other users.”

The emphasis in the Recommendations on the presumption against offshore wind farms may have a paralysing and unnecessary cost increasing effect on offshore wind energy development. Econcern’s experience in these matters indicates that each project is unique and with involvement of stakeholders potential issues can often be mitigated.

Yours faithfully,

Evelop International BV

Bob Meijer MSc

Project Manager Round 3

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22 April 2009



**Response to the Consultation on Offshore Energy Strategic Environmental Assessment (SEA), a draft programme to enable further rounds of offshore wind leasing and offshore oil and gas licensing in UK waters including the underground storage of combustible gas in depleted oil/gas reservoirs**

EDF Energy welcomes the opportunity to comment on the Offshore Energy Strategic Environmental Assessment (SEA) Consultation. We support the UK Government's ambition to move progressively to a low carbon economy and we believe that offshore wind farms will play a significant role in achieving this ambition.

We would like to draw your attention to key issues that we have raised in our response to the consultation which is appended to this letter.

The 2009 Offshore Energy SEA, 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 was extremely helpful in identifying potential areas for development. EDF Energy feel that this provided a good starting point for Environmental Impact Assessment (EIA) and it is unfortunate that the current SEA does not draw such conclusions.

In the 2009 SEA report, a proposal that highlights the lack of spatially-specific analysis is the proposal to create a "blanket" 12 nautical mile (nm) coastal "buffer" zone. We are concerned that the evidence base and the quantified reasoning for this measure have not been presented. We feel that it will be impossible to determine whether or not a particular development would – or would not – be acceptable within this zone. This approach is likely to impede the development of offshore wind generation.

Please do not hesitate to contact myself or David Acres on 020 3126 2326 if you have any questions.

Yours sincerely,



**Ravi Baga**  
**Head of Policy, Regulation and Environment,**  
**Energy Branch**

## EDF Energy Response to DECC's Consultation Offshore Energy Strategic Environmental Assessment

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. Our interests include offshore and onshore wind, nuclear, coal and gas-fired electricity generation, combined heat and power plants, electricity networks and energy supply to end users. We have over 5 million electricity and gas customer accounts in the UK, including both residential and business users. We are also part of the EDF Group, one of the world's largest energy companies.

EDF Energy is fully committed to tackling climate change. We support the UK Government's ambition to move progressively to a low carbon economy and to play a leading role in the global effort to address climate change.

EDF Energy believe that offshore wind farms play an important part in fuel-mix diversity for security of electricity supply in the UK. We welcome the opportunity to respond to the Department of Energy and Climate Change (DECC) consultation:- *Offshore Energy Strategic Environmental Assessment (SEA), a draft programme to enable further rounds of offshore wind leasing and offshore oil and gas licensing in UK waters including the underground storage of combustible gas in depleted oil/gas reservoirs.*

The objective of the SEA is clearly stated. However, the report fails to consider the positive environmental implications of current and future wind generation and does not analyse the implications on the environment of not deploying 25GW+ of Round Three offshore windfarms.

We have compared the 2009 Offshore SEA report with previous offshore wind SEA assessments, in particular the 2007 SEA on Offshore Wind Energy Generation: Phase 1 Proposals.

This previous assessment presented conclusions in the form of spatial mapping of the sum of ranked scores of socio-economic, ecological and visual constraints (see Figure 21 in Annex 2 of the 2007 SEA). This presentation was extremely useful in identifying the relative sensitivity of different offshore areas. It highlighted those areas where development would be most challenging and those areas with relatively few constraints. It provided a sound starting point for the environment impact assessment of a specific development proposals, as it provided information for each location.

In contrast, the current SEA under consultation does not draw spatially specific conclusions. It does provide an extensive description of the categories of impact, but does not address the relative risk that these will arise in any given area in practice.

**A spatially-based set of findings, along the lines of the 2007 SEA, would be an extremely useful addition to the current exercise.**

A significant development in this 2009 SEA report, which highlights the lack of spatially-specific analysis, is the proposal to create a "blanket" 12 nautical mile (nm) coastal "buffer" zone. The proposal states that projects over 100MW in size are to

be sited outside the 12nm limit to minimise the impact on the landscape/seascape. The reasoning behind this new constraint is vague. The headline explanation is that, by implementing the measure, the Government is:

“... recognising the relative sensitivity of multiple receptors in coastal waters ...”  
We are greatly concerned by the lack of detailed evidence to underpin this proposal. The SEA states that the zone is not intended to be an absolute exclusion zone. However, because the evidence base and the quantified reasoning for this measure have not been presented, it will be impossible to determine whether or not a particular development would – or would not – be acceptable within this zone.

We recognise the concern underlying this policy proposal. In some locations there is a particularly large challenge to balance the many activities, environmental factors and amenities in coastal waters. However, in other areas, the challenge is far more open to successful management. New uses can be accommodated because mitigation measures can resolve the potential conflicts.

Therefore, rather than take a “blanket” approach, the combination of factors should be mapped to identify those areas of most potential concern, following the approach taken in the 2007 Round 1 SEA.

**This is an important debate and decision, because a “blanket” zone approach will obstruct the development of offshore wind generation.**

Such a zone would greatly increase the uncertainty for developers, and therefore the project risk. As a result, many areas inside the zone that could be developed without significant impact will not be taken forward, as areas outside the zone will have inherently lower development risk. The lack of transparency over the basis of the zone will prevent developers from assessing the acceptability of a particular area of development.

From the perspective of UK renewable energy policy, the SEA recommendation is not consistent with the UK Government's ambition to meet its renewable energy targets in part from utilising its territorial waters around England and Wales. There is the potential to build an additional 20-25GW production capacity of offshore wind energy by 2020. Based on the Sinclair Knight Merz (SKM) report supporting the UK Renewable Energy Strategy (RES) consultation 2008, a capacity of 25GW for offshore wind by 2030 is consistent with the overall renewable energy strategy.

The 2009 SEA (Section 5.7.2) confirms that the buffer zone would remove around 60% of the candidate areas for offshore wind development. This is likely to be an underestimate of the actual impact of such a zone, as the near-shore sites are among the lowest cost locations for development (the water depth is generally shallower and transmission distances are shorter). In contrast to these significant adverse impacts on future renewable generation development, the SEA does not quantify the benefits that a buffer would deliver, so it is impossible to assess whether this measure is appropriate.

This 'buffer zone' presents further confusion by recommending that exclusion should apply for ">100MW", and in the conclusions section concludes that the 'bulk' should be located outside 12nm. 'Bulk' is an ill-defined term, and it is not clear whether this applies on a site-by-site or 'all of Round 3' basis. Denmark, a country with one of the longest records of operating offshore windfarms (Denmark, Horns rev, 2001, 14km offshore) are now recommending that windfarms are constructed

closer-to-shore on both economic and lack of visual sensitivity grounds. The SEA should be re-written on a scientific basis to clarify the inconsistencies associated with this conclusion as it presents potentially fatal uncertainty to developers, stakeholders, and decision makers alike. Rather than a blanket statement, appropriate assessments on the zones would be a more constructive way to inform the decision makers.

The Marine Bill will create a strategic marine planning system that will clarify European and Governmental objectives and priorities for the future.

**Measures such as zones of restricted development should be developed, determined and implemented by the new Marine Management Organisation (MMO), which is to be established under the Marine Bill.**

SEAs should provide information on environmental impacts and scope for mitigation on a spatially-specific basis, to support the MMO's decisions regarding marine policy.

On a particular point of detail, in our view it is a misconception that construction and operation of turbines necessarily adversely impact the near shore marine environment significantly, as is suggested in Chapter 5.4 of the SEA Environmental Report. The analysis in the SEA itself states that turbine bases will increase habitat heterogeneity and there would be negligible or no detectable impacts from changes in the hydrodynamic regime on marine communities or the seabed sediment. The SEA Report also states that marine communities will recover from temporary disturbance of sediments affected by turbine construction.

The SEA represents a good assembly of the issues surrounding various aspects of the environment associated with construction and operation of windfarms in the marine environment, and in particular with respect to Round 3. It is acutely evident that some of the viewpoints/conclusions clearly represent the "consultant's" opinion and level of understanding and does not necessarily reflect best international practice and understanding of the issues surrounding offshore windfarms.

The SEA takes the view on shipping that shipping sterilizes vast areas of seabed for development of windfarms. The SEA is being excessively cautious and tighter margins between shipping and turbines are perfectly adequate. The suggested spacing of Round 3 wind turbine developments is upwards of 1km, which would leave adequate space for most shipping.

The report mentions the potential for offshore windfarm to be beneficial to fish stocks, but it fails to expand on this in relation to international fisheries and locally significant fisheries. In combination with the 12nm 'constraint' this would seem to benefit non-local fishing communities (which rarely venture beyond 12nm).

The SEA does not give any precise siting constraints surrounding civilian and military radar. Limits for consultation with the relevant authorities should be identified in the SEA to avoid confusion.

The report presents a presumption against offshore wind developments which result in a significant detriment to tourism, recreation and quality of life without any

quantification of these factors. This is clearly a subjective issue and clarification should be provided as to how this will be assessed.

The SEA provides no defined mechanism or process to complete data sets that are incomplete. Development should not be used by stakeholders to obtain new data for unmapped areas, but should only provide data that is relevant and specific to inform the development in question.

The reported analysis of the environmental impacts comparing offshore oil and gas activities to windfarm activities is incomplete as it analyses only the emissions/climate change contributions from the construction/production of the respective energies. A complete analysis would include the impacts from use of the oil and gas (as it is almost exclusively consumed in the UK, not exported).

The SEA report contains a theme of presumption against renewable energy development that wherever spatial conflicts arise the offshore wind industry appears to be treated as lower priority than other industries.



**Offshore Energy SEA Consultation,**  
The Department of Energy and Climate Change,  
4<sup>th</sup> Floor Atholl House,  
86-88 Guild Street  
Aberdeen.  
AB11 6AR

Wednesday 22<sup>nd</sup> April 2009

Dear Sir / Madam,

**COMMERCIAL IN CONFIDENCE:**

**Department of Energy and Climate Change - Offshore Energy SEA Consultation –  
April 2009**

**Response from EDP Renováveis and SeaEnergy Renewables Limited**

EDP Renováveis and Sea Energy Renewables (EDPR-SER) are pleased to submit comments to The Department of Energy and Climate Change (DECC) in response to the recently published draft Offshore Energy Strategic Environmental Assessment (SEA) for consideration during this consultation period.

EDPR-SER has been set up to with the purpose of developing Offshore Wind Farms around the UK coast and initially to bid for zones under the Crown Estate's Round 3 tender.

EDPR-SER thanks DECC for the opportunity to provide comments and would welcome the opportunity to discuss further those aspects commented upon should DECC wish us to elaborate further.

Yours faithfully,

  
Daniel H Finch

Development Director

And Bid Manager Round 3

### **1. Acoustic Disturbance by Noise**

The SEA discusses effects of pile-driving of turbine foundations, resulting in high source levels.

Early investigation of the ground conditions, and therefore early structure design, would assist in mitigating noise wherever possible. Mitigation measures are extremely important, as are investigations in to dispersal of mammals, particularly distant from shore. As with other potential environmental impacts the use of control areas to monitor impact will be crucial.

We would be happy to discuss the learning's we have experienced, including further technological advancements we have been pursuing on the impact of noise during piling, directly with DECC as part of separate discussions.

### **2. Physical Disturbance of Seabed Habitats**

This section only mentions the possible disturbance of seabed habitats, but does not highlight the possible benefits associated with "Reef effect" and the protection from disturbance by others.

Details of this have already been highlighted by COWRIE on their website, which includes information on 'Life around the turbines'.

In addition, we would be happy to discuss areas of research we have been involved in, on this specific subject, as part of separate discussions.

### **3. Physical Presence of Offshore Infrastructure and Support Activities**

We would strongly disagree with stipulating that "a coastal buffer zone of 12 nautical miles (some 22km) is recommended, within which major wind farm development would not normally occur".

We recognise that the siting of offshore wind farms away from the immediate coastline reduces the impact on the environment. But the environmental impact cannot be solely related to a specific distance from shore. There are too many variables which are not taken in to account in an arbitrary 12nm restriction, including the scale of a project. Decisions must be taken on a case by case basis and there will be many locations, particularly on the east coast of Scotland, where developments may occur within the Territorial Waters.

Site by site analysis, using site specific environmental analysis and surveys (as part of the EIA process), will ensure that each potential development site is properly assessed.

The SEA is at risk of setting a dangerous precedent, that no wind farm around the coastline of Britain may be sited within 12nm. Despite suggestions to the contrary, this does have a significant impact on the Scottish Territorial Waters sites.

Furthermore, this 'limit' has possible ramifications of associating this distance with the Territorial Waters boundary.

#### **4. Landscape/seascape**

As detailed in point 3 above, we disagree with the stipulated coastal buffer zone of 12 nm, without undertaking appropriate analysis and stakeholder consultation.

Setting out a buffer zone, even if this buffer zone is 'not to exclude wind farms from being built closer to shore', sets a precedent prior to any analysis of further consultation being undertaken.

Each individual site should be assessed on a case by case basis.

#### **5. Other Users, material assets (infrastructure, other natural resources) - Fishing**

With regard to fishing in the UK, the SEA states that, "[...]it is recommended that waters near the coast and certain especially important fishing areas offshore are avoided for future wind farm siting". No definition is provided on these areas or how they are designated, and we do not agree that a blanket restriction would be appropriate without consultation.

In the past, we have worked closely and successfully with the fishing industry, and wish to continue in this relationship.

We would ask that the SEA considers and clarifies the above, prior to any publication.

#### **6. Other Users, material assets (infrastructure, other natural resources) – Military**

Discussion has been ongoing for some time with regard to Government consultation with the military, specifically the potential impact on military radar. The SEA states that further discussion is required with the Government, out with the scope of the SEA.

It is absolutely imperative that his consultation is undertaken and clear guidance provided on the siting of wind farms, to avoid serious impact on the scheduling of wind farms, in line with the Government's 2020 targets.

We would ask that the SEA outline this and call for action to be taken as a matter of urgency.

## **7. Interrelationships – Cumulative Impacts**

The recognition that there should be cross industry co-ordination to facilitate the assessment of cumulative impacts on several issues not least of which are visual impact and the effects of noise upon mammals is welcomed and has to be well managed.

The setting up of Control Areas and early base lining for studies should be undertaken at a national level and results be widely disseminated.

## **8. Interrelationships – Wider Policy Objectives**

We would re-iterate the requirement for the Government and various organisations/bodies to work closely, to ensure that planning, marine obligations and various guidelines interface fully with one another.

In addition, seamless policies must be implemented across all jurisdictions, to ensure there are no conflicts or delays.

## **9. Conclusions and Recommendations**

The precautionary approach dictating that “[...] *unless suitable evidence exists, areas known to be of key importance to waterbird and marine mammal populations should be avoided*” may be misused.

The SEA is non specific about “*key importance*” and does not allow the Appropriate Assessment process to consider the evidence generated through study as all wind development sites are required to do



ENGLISH HERITAGE

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

Our ref: DECC/SEA offshore

21<sup>st</sup> April 2009

Dear Sir/Madam,

**DECC Offshore Energy Strategic Environmental Assessment Future Leasing for Offshore Wind Farms, Licensing for Offshore Oil and Gas and Gas Storage**

Thank you for the invitation to comment on the Strategic Environmental Assessment of a draft plan/programme to enable further leasing for offshore wind and licensing for offshore oil and gas, including the underground storage of combustible gas in partially depleted oil/gas reservoirs. This response is not considered to be confidential.

Introduction

English Heritage is the Government's advisor on all aspects of the historic environment in England. We are a non-departmental public body established under the National Heritage Act 1983 to help protect the historic environment and promote awareness, understanding and enjoyment of it. Since our inception, English Heritage has been consulted on tens of thousands of planning, listed building, conservation area and scheduled monument consent applications. In the delivery of our duties we work in partnership with central Government Departments, local authorities, other public bodies and the private sector to conserve and enhance the historic environment; broaden public access to the heritage; and increase people's understanding of the past. We set out how we deliver these duties using our *Conservation Principles* as a framework for dialogue.

The National Heritage Act 2002 enabled English Heritage to assume responsibility for maritime archaeology in the English area of the UK Territorial Sea, modifying our functions to include securing the preservation of monuments in, on, or under the seabed, and promoting the public's enjoyment of, and advancing their knowledge of such monument. 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 only.

FORT CUMBERLAND, EASTNEY, PORTSMOUTH PO4 9LD

Telephone 023 9285 6735 Facsimile 023 9285 6701 [www.english-heritage.org.uk](http://www.english-heritage.org.uk)

*Please note that English Heritage operates an access to information policy.  
Correspondence or information which you send us may therefore become publicly available*



## ENGLISH HERITAGE

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 (Department for Culture, Media and Sport) 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 Committee's reporting year in March 2008 there were 46 sites designated in the English area of the UK Territorial Sea. Further information on the designated sites is available on the English Heritage web site: [www.english-heritage.org.uk/maritime](http://www.english-heritage.org.uk/maritime). We also offer the following explanation of what we consider to comprise the marine historic environment.

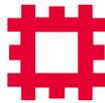
The nature of the marine historic environment resource is complex and diverse, comprising much more than the remains of ships and boats. Sites and landscapes that were submerged by sea-level rise; the remains of other types of vessel, such as aircraft; scattered material relating to ships and shipping (e.g. lost cargoes, anchors, and debris fields); evidence related to coastal activity (e.g. resource exploitation); the sub-tidal elements of coastal features (usually relating to exploitation of, or defence from, the sea); and sea-bed emplacements (such as trans-oceanic communication cables and pipelines) all have the potential to inform us of our collective past.

### Response to the SEA Environmental Report

We note that the conclusion to the SEA is for "Alternative 3" and with particular regard to future offshore wind farms "...the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km)..." Please note that, at present, there is no independent, public source of advice regarding the historic environment for the UK Continental Shelf adjacent to the English area of the UK Territorial Sea. Consequently, we have copied this response to DCMS should they wish to comment to you directly on this matter.

Table 4.1 (Environmental problems relevant to offshore oil & gas licensing and wind leasing) – we note that in the "implications" column that licensees should be "aware of areas of potential heritage value", but we wish to add that the licensee should also work to ensure, that where necessary, appropriate mitigation measures are implemented, in agreement with national curatorial advisors such as English Heritage.

Section 5.4.2 (Evidence Base) – we note the argument made regarding the potential for marine development projects to damage archaeological artefacts or other historic sites, but also how a correctly managed process of environmental evaluation can capture and place in the public realm additional information. We also note that while reference was made to the COWRIE 2008 publication on assessment of cumulative impact and the historic environment, reference should also have been made to the COWRIE guidance published in



## ENGLISH HERITAGE

January 2007 entitled “Historic Environment Guidance for the Offshore Renewable Energy Sector”.

Section 5.4.5 (summary of findings and recommendations) – in general we are prepared to concur, but we stress that “archaeological sensitivities” should be considered inclusive of access to the information generated and therefore the adequacy of the public archive is crucial; this matter should be considered particularly acute for marine development that occurs outwith of the UK Territorial Sea and thereby beyond the statutory remit of a public body, such as English Heritage’s National Monuments Record.

Section 5.16 (Alternatives) – in reference to cultural heritage we add that, in itself mitigation “...through preparatory survey work...” does not constitute sufficient mitigation. We therefore qualify this statement by adding that it is through commissioning archaeological interpretation of survey material (e.g. geophysical and geotechnical data), gathered in a manner conducive to this analysis, that delivers mitigation.

6.1 (Recommendations) – in recommendation No. 14 we noted the statement regarding “...the objectives of the conservation sites and renewable energy development are coincident...”, but add that any consideration of “conservation sites” should also consider the implications to historic environment features. We add that an additional recommendation should be included regarding the deposit in a public archive of all information generated in support of marine development projects located within the UK Territorial Sea or UK Continental Shelf.

Yours faithfully,



**Dr Christopher Pater**  
Maritime Archaeology Team

Cc Duncan McCallum (Policy Directory, English Heritage)  
Ian Oxley (Head of Maritime Archaeology Team, English Heritage)  
Stephen Trow (Head of Rural and Environmental Policy, English Heritage)  
Annabel Houghton (DCMS)

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Offshore Energy SEA Consultation  
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Aberdeen AB11 6AR

16<sup>th</sup> April 2009

Dear Sir/Madam

**Re: Offshore Energy Strategic Environmental Assessment Consultation**

We welcome the opportunity to respond to the Department of Energy and Climate Change consultation on the Environmental Report for the Offshore Energy Strategic Environmental Assessment (SEA).

We support the use of the SEA process to help inform offshore energy licensing and leasing decisions by fully considering the environmental implications of the proposed plan/programme.

The Environment Agency is committed to helping the UK meet its target of sourcing 15% of energy from renewable sources by 2020 in a sustainable way. We support low-carbon based energy generation which results in positive impacts on climate change, air quality and biodiversity.

We are pro-actively engaging with industry and Government to help deliver sustainable renewables through efficient regulation, helping identify opportunities and constraints, and developing advice on best practice.

Government policy should seek to deliver sustainable offshore energy projects, through ensuring compliance with environmental legislation, avoidance of unacceptable environmental impacts, and delivery of significant greenhouse gas emission savings.

**Our key messages**

We strongly support the ambitious target of generating 15% of the UK's energy from renewables by 2020.

We would like to see the SEA process effectively inform the licensing and leasing decisions so that the most sustainable options are chosen and any mitigation measures are effective.

The SEA should consider the environmental implications of the potential exploration, development and energy production activities, particularly with reference to the requirements of European Directives and associated UK Regulations. This should lead to DECC taking forward a plan/programme that meets environmental outcomes through a better informed selection process based on sound evidence and clearly defined environmental objectives.

We generally agree with the approach used for the SEA. However, we have a number of recommendations to ensure that the SEA process achieves the objective of creating a sustainable outcome for the development of offshore energy projects.

We will continue to work with Government to ensure that energy policy reduces greenhouse gas emissions and does not cause unacceptable environmental impacts.

**We recommend that:**

**1. All offshore energy projects comply with environmental legislation**

Government should facilitate this process through working with others, including ourselves, to deliver a combination of direct, project-specific advice and information on best practice design and siting of offshore energy facilities.

**2. Cumulative impacts are fully considered**

The Offshore Energy SEA must be considered within a wider policy context. Links must be made to the emerging National Policy Statements and their Appraisals of Sustainability, the Severn Tidal Power feasibility study and SEA and planned Energy White Paper. Cumulative environmental impacts need to be considered in the light of all these potential future developments, including impacts on biodiversity. Particular regard should be made to the potential cumulative effects at a project level of clusters of licensed activities, and related impacts of tidal or wave energy installations, or offshore carbon repositories. This needs to be considered both for offshore activities and related on-shore development.

**3. Effective mitigation measures are implemented**

The preferred option of restricting the area offered for leasing and licensing spatially will 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 need to be fully considered. Informed decisions must be made based on sound data and evidence to result in the best environmental outcome.

**4. Positive environmental impacts and improvements are optimised**

Opportunities should be identified for the leasing and licensing activities to provide environmental improvements, and not just mitigation of adverse effects. These opportunities should be sought both offshore and onshore.

**5. All relevant environmental objectives required under the Water Framework Directive and Marine Strategy Framework Directive are fully considered**

We are pleased to see the links to the Marine Strategy Framework Directive requirement for Good Environmental status, and the Marine Bill regarding marine planning. More emphasis needs to be made on meeting environmental objectives required under the Water Framework Directive.

**6. The SEA refers to the inventory that is used by Defra to demonstrate compliance with the international air quality legislation**

The EC National Emissions Ceiling Directive and the Gothenburg Protocol set national limits to be achieved in 2010 for nitrogen oxides, sulphur dioxide and volatile organic compounds.

We would like to see the SEA processes reflect good practice as detailed in Government and our own guidance. We recommend considering our SEA best practice guidelines:

<http://www.environment-agency.gov.uk/research/policy/32903.aspx> which provide practical advice on carrying out SEA, and our SEA and climate change guidance for practitioners:  
[http://www.environment-agency.gov.uk/static/documents/Research/seaccijune07\\_1797458.pdf](http://www.environment-agency.gov.uk/static/documents/Research/seaccijune07_1797458.pdf).

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

Thank you for considering our recommendations and comments.

Yours faithfully



**Tony Grayling**  
**Head of Climate Change and Sustainable Development**

Environment Agency, Millbank Tower, 25th Floor, 21/24 Millbank, London, SW1P 4XL

Offshore Energy SEA Consultation,  
The Department of Energy and Climate Change,  
4th Floor Atholl House,  
86-88 Guild Street,  
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Monday 20<sup>th</sup> April 2009

Dear Sir / Madam,

**COMMERCIAL IN CONFIDENCE: Department of Energy and Climate Change Offshore Energy SEA Consultation.  
Forewind Response**

Forewind is pleased to submit comments to The Department of Energy and Climate Change (DECC) in response to the recently published draft Offshore Energy Strategic Environmental Assessment (SEA) for consideration during this consultation period.

Forewind is a four-way joint venture company comprising of Airtricity, NPower Renewables, StatoilHydro and Statkraft, and has been formed as a response to The Crown Estate's Round 3 offshore windfarm programme.

Forewind welcomes the publication of the DECC Offshore Energy SEA in helping to assess the likely environmental constraints and data gaps/information requirements for offshore wind energy in UK waters. Forewind recognise that the SEA forms a framework which will support future considerations for offshore projects requiring EIA and the associated licence applications. Therefore it is important that any conclusions are clear and concise, and that the assumptions used in making these conclusions are transparent. Where there is any conflict or disagreement in the methodological approach applied to the SEA, Forewind believes that this should also be stated plainly in any final document to ensure that the SEA high level approach does not unnecessarily exclude areas where more detailed studies and analysis can show that these are acceptable.

Forewind has divided its response into clear sections, outlined by the following headings:

- Environmental Information and Data Gaps;
- SEA Screening Criteria used for Spatial Mapping;
  - i. Constraints which are inconsistently reported in the SEA and/or should be revisited in terms of existing practical examples.
  - ii. Criteria where an alternative approach to determining hard constraints is recommended.
- Other Issues; and
- Main Messages from Forewind.

These sections outline and examine the points which raise concern for Forewind and their likely impacts on future offshore renewable energy developments. Forewind raises questions regarding outcomes of the SEA and encourage DECC to take into consideration the concerns put forward within this response.

In summary, Forewind would like to draw attention to the following main conclusions –

- The 12nm coastal buffer needs to be based on more evidence to ensure it is applied for the correct reasons and is not restrictive to future offshore wind energy development and hinder the achievement of 2020 aspirations.
- The navigation and shipping guidance should be supported by further data to ensure that the large generalisations made are appropriate.
- The 6nm buffer zone surrounding oil and gas infrastructure should be assessed on a site by site basis and this should be outlined within the SEA.
- Forewind would like to reiterate that it is appreciative of the opportunity to provide feedback to DECC on the Offshore Energy Strategic Environmental Assessment and looks forward to receiving the final document later in the year.

Forewind would like to thank the Department of Energy and Climate Change for the opportunity to provide comments and looks forward to receiving the final SEA this summer.

Yours sincerely,

**Forewind.**

Forewind has conducted an extensive and detailed screening exercise for the Round 3 bid process, based on the zones offered for bidding, at a significantly more detailed scale and analysis than for the SEA. Accordingly, Forewind has uncovered differences between the recommendations of the SEA and the results obtained from the screening of the zones. Within the below paragraphs, Forewind has outlined these discrepancies.

Forewind believe that the SEA would benefit from a clear statement advising on the limitations of the assessment and that fundamentally all detailed assessments for the development of offshore energy installations will need to be undertaken at a site specific level.

### **Environmental Information and Data Gaps**

The SEA report identifies a number of subject areas where baseline information is limited and Forewind would advise that these will need to be enhanced to support future marine spatial planning and project-specific consenting. These include:

- Seabed topography and texture. For some areas there is excellent data, for example from multibeam mapping undertaken by the MCA, BGS and the SEA programme, but the UK lacks a coordinated programme to marshal such data, to identify priority gaps and to find ways to fill them;
- Recent information on the distribution of fish eggs and larvae, and variability in space and time;
- Detail of bird migration patterns, and variability in space and time including flight heights in different weather conditions;
- An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs;
- Ecology of most marine mammal species and in particular important areas for breeding, foraging and resting.
- Finer scale distribution of fishing effort, gears and catches for smaller vessels (<15m);
- Precision on the offshore distribution of shipping (AIS data coverage typically only extends 80km from shore); and
- Effects on fishing activity in and immediately adjacent to constructed wind farms.

It would be beneficial for the SEA to expand on how these data gaps may be filled, and who would take a lead role in funding and managing data gathering exercises.

### **SEA Screening Criteria used for Spatial Mapping**

- Constraints which are inconsistently reported in the SEA and/or should be revisited in terms of existing practical examples**

#### **Navigation**

##### **1nm buffer around primary shipping routes as identified by the SEA using 2007 AIS data**

Within the SEA, analysis of Automatic Identification Systems (AIS) data identifies primary navigational routes for shipping based on data taken in 2007. A 1nm buffer is then suggested to be applied to the routes based on the

‘high’ to ‘medium’ risk threshold, as defined in the shipping route template in Annex 3, Template for assessing distances between wind farm boundaries and shipping routes of Marine Guidance Note 371. The SEA suggests that a larger buffer may be required where *‘additional factors such as traffic density and tidal set increase local risk’*.

Forewind is concerned that the data set analysed for the SEA consists only of 4, one week periods – a significantly short ‘snapshot’ in which to characterise an area and make informed judgements. Forewind would like to lobby for a longer duration data set (for example one year of full data) to be collected and used to inform the SEA recommendations – at the moment there is a risk that the small amount of data collected could be anomalous within a much larger dataset.

Forewind would also like a clear justification of the method of analysing the AIS data. It appears from a comparison that the SEA has applied a lower threshold of density during their analysis than is standard within the offshore wind industry for EIA navigation risk assessment and given in guidance from Anatec. Forewind would normally consider over 4 vessels a day to be significant. This results in wider shipping lanes that would be necessary for safe transiting around a wind farm site. In addition once a 1nm buffer is applied to the route, it exacerbates the differences.

Forewind would like to draw attention to page xvi of the non-technical summary, which states that “windfarm siting should be outside areas important for navigation (these are mapped in the Environmental Report)”. Forewind believes that this could potentially create complete exclusion areas for windfarm development and would like to lobby for this paragraph to be rephrased.

Forewind would promote the periodical review and refinement of shipping lanes to ensure an accurate view of the actual shipping activity is always maintained.

Page 159 addresses the possibility for a 24 month survey period for ship traffic to include seasonal variations. If such time period is needed, this activity will be amongst the most time critical paths for development and consequently should be initiated early by the developers. It is therefore necessary to have early clarifications of the need for shipping surveys and discussions with relevant stakeholders. Forewind would like to see clarification in the SEA as to why this surveying has been put forward, given the electronic surveillance systems in place (AIS).

Section 6.1, states that “there should be a presumption against offshore windfarm developments which impinge on major commercial navigation routes or **cause appreciably longer transit times**”. Forewind would like further clarity as to what “appreciably” longer means. In addition, any calculation of the percentage impact on transit times should look at impact on the entire journey, not just the impact on the affected journey section. For instance, if the presence of an offshore wind farm causes a vessel on a 40 hour journey to take an additional 2 hour over a previously 5 hour section, this should be a  $2 / 40 = 5\%$  impact, not a  $2 / 5 = 40\%$  impact on the transit time.

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## Coastal Buffer

### **Presumption that the bulk of windfarms should be sited outwith 12nm of the UK coast.**

The SEA identifies an area, extending to 12nm from the coast, where development of offshore windfarms of over 100MW in size are typically prohibited for a variety of reasons including impacts on landscape and seascape, coastal fishing, tourism and recreation and coastal ecology. Although Forewind is aware that development within this 'coastal buffer' area is not excluded *per se*, Forewind has concerns about the potential disadvantageous effect it could have on development around the coast (i.e. in fostering a 'presumption against development' without proper assessment).

Forewind would initially like to indicate its feelings of unease over the arbitrary 100MW windfarm figure. Within the SEA non-technical summary, page xiv, it notes that for reasons of landscape/seascape, windfarms larger than 100MW in size should be sited outwith 12nm from the coast. Forewind would like to see within the SEA a reasoned justification to this 100MW figure as it believes that a threshold of numbers of turbines (rather than MW) would be more appropriate for landscape/seascape issues.

Forewind is apprehensive of the concept of a 12 nautical mile limit "buffer zone" as it may have the potential to be used with detrimental effect for developers. Forewind believe this should be challenged strongly to prevent it becoming a barrier to development of offshore wind farms within the UK and a clear statement that this does not apply to development in Scotland.

Forewind would like to see further evidence based justification as to why the buffer has been set to 12nm. The SEA clearly states that development both within and outwith the 12nm limit would be subject to further, site specific detailed information gathering, which would need to be assessed. This surely negates the requirement of having any buffer at all. Forewind would like to see a clear statement in the SEA that the coastal buffer has to be dealt with on a case-by-case basis.

Forewind would be further satisfied if the SEA put forward that development outside this area was less contentious given the fact that developers would, as a result, be avoiding the areas which result in the highest adverse impact. Forewind would suggest that this be developed further within National Policy Statements.

The 12nm coastal buffer gives the potential for visual impact assessment, for those sites closer than 12nm, to become both more onerous and more subjective. This 'buffer' area needs to be better specified and in such a way that it is appropriate and not unnecessarily restrictive.

Although the SEA report states that in an 'international' context, Belgium and the Netherlands have adopted wind farm zones beyond 12nm from the coast; there seems limited justification for application of the same buffer extent around the UK coastline. Human activities and features of conservation interest within the UK are generally concentrated along the coastline, significantly inshore of the proposed buffer zone, rather than out to 12nm.

## **Oil and Gas Platforms**

### **Presumption that windfarms should be sited no closer than 6nm to oil and gas infrastructure.**

Forewind considers the SEA approach to oil and gas infrastructure buffer zones is overly cautious and does not reflect existing and accepted practice. Forewind requests that this 'hard' constraint be reviewed and re-assessed.

Forewind understands that there is a fundamental safety need, as indicated by the CAA, to maintain a 'buffer' area around oil and gas infrastructure due to helicopter access requirements in reduced visibility situations (when automated Instrument Landing Systems cannot be utilised). Currently, the default 'buffer' zone is set to 6nm. Within section 5.7.2 of the SEA, the 6nm is assumed, and has been applied, as a hard constraint, regardless of any precedence which has been set during Round 1 and 2. For example, RWE npower renewables Limited (NRL) have consented the Gwynt y Môr, Round 2 windfarm, having agreed a 2.8nm buffer to BHP Billiton's Douglas Platform. This large, manned gas platform is accessed continuously by helicopter however the potential issue was resolved through detailed technical assessment and extensive consultation. In addition to this, NRL's Triton Knoll site, which is currently progressing through the consenting phase, is within 3 and 5nm of the Amethyst B1D and A1D platforms respectively. Lastly, Airtricity's consented site West Rijn, offshore of the Netherlands, is located within 0.3nm of the unmanned P15-F platform, within 3.6nm of the unmanned P15-G platform and within 4.4nm of the manned P15-C central production platform. This has resulted in an additional 45km<sup>2</sup> (or approximately 225MW) to the Development Areas than would be achievable using the SEA mapping constraints.

The net result of this 'hard' constraint is to also reduce the possibility for co-existence between the offshore windfarm industry and oil and gas facilities. If this is to be the case, it will put enormous significance on the wind farm overlap guidelines currently being drawn up by BERR/DECC/BWEA. Round 3 developers will not be able to accept a risk that future oil and gas licensing rounds could impose licences contiguous with planned or consented offshore wind projects.

Forewind, whilst recognising the importance of maintaining safe access (principally relating to helicopter movements) feels it would be appropriate to adopt a less conservative approach to oil and gas infrastructure within the SEA, acknowledging that development closer to oil and gas infrastructure can be (and has been) achieved through successful consultation between developers and platform owners

### **ii. Criteria where an alternative approach to determining hard constraints is recommended**

Forewind considers the following constraints within the SEA should be revised as follows -

Bathymetry - Forewind consider 50-60m depth a soft constraint based on assumptions that there is likely to be an engineering solution in developing in these deeper waters.

MoD PEXA Areas - Consultation with the MoD may resolve conflicts with PEXA.

## Other Issues

### **Regional Seas**

Throughout the report, analysis of UK waters is broken down into Regional Sea areas. Therefore Section 6 (Recommendations and Monitoring) would be significantly improved if there was a section giving the key issues and recommendations by Regional Sea area.

### **Recommendation 1 – Page 213 – DECC to ensure offshore wind minimises potential sterilisation**

The SEA has been instigated due to the Government's commitment to meeting its European and National renewable energy and energy consumption goals for 2020 and beyond, by enabling some 25GW of additional offshore energy generation capacity by 2020. Given this clear and strong backing from the UK government for the offshore wind industry to significantly expand and hence help to achieve the government's targets, the phrasing of recommendation 1 appears unduly negative and obstructive. DECC is explicitly recommending to ensure that offshore wind developments "**minimise potential sterilisation of areas for other industries**". However the whole report and spatial constraint mapping of section 5.7.2 has outlined how existing industries are effectively sterilising large areas of the most economically viable seabed from development by offshore wind. Surely this recommendation should also, or preferably only, stipulate that **DECC and other government departments should mandate other sea users to minimise potential sterilisation of areas for the offshore wind industry**, in order to facilitate the offshore wind industry achieving DECC's legal obligations.

### **Recommendation 2 – Page 213 – presumption against offshore wind development in particular areas.**

If this recommendation is read literally it can be interpreted such that any windfarm which e.g. interferes with a radar system (item c in the recommendation) should be avoided. Forewind would like to raise its concerns over this blanket recommendation and the potential if Forewind applies for an Agreement for Lease, for an identified windfarm project, it could be rejected by the Commissioners (i.e. The Crown Estate) should it interfere with radar systems.

Forewind propose that a section of general text is added in the SEA at this point using words to the following effect; "In particular, if adequate solutions are not found after discussions between developers and stakeholders, there should be a presumption against...".

### **Recommendation 19 – Page 216 – Round 1 and 2 extensions should be seaward side and require site specific evaluation since significant new information is now available.**

Forewind believes the basis for this recommendation is not discussed elsewhere within the SEA. Although it might follow on from discussions regarding distance of windfarms from shore but since this is subjective and open for discussion on a site-by-site basis, it is not necessary to address Round 1 and 2 issues in a separate recommendation (Recommendation 2 and 4 should suffice). Furthermore, several Round 2 sites are further from shore than the recommended 12nm, and therefore the reasoning behind a general rule of extensions on the seaward side does not necessarily apply.

### **Recommendation 22 – Page 216 – in certain key areas of marine mammal sensitivity, operational criteria should be established to limit cumulative pulse noise.**

Forewind would like DECC to be more specific regarding this recommendation. If a "key area of marine mammal sensitivity" encompasses several zones, Forewind would have concerns over would there be a first-come-first-

served principle to ensure that noise limits are exceeded. For example, several zones coincide within a “key area”, and were all being developed concurrently by separate developers (who could potentially be working to similar construction timetables and thus have a high likelihood of piling during similar periods), this could lead to onerous conflicts. Forewind therefore would welcome further work on alternative mitigation solutions to alleviate the potential subsea noise impact to fish and marine mammals

Discussion surrounding the potential impact on marine mammals and fish from piling activities is currently limited to evidence from monopile foundation installation. However, Forewind believes it should be borne in mind that, as water depths for projects increase to greater than 30m and as turbine sizes increase to 5MW or greater, the technical limitations of monopile foundations will mean that this foundation type is no longer technically or commercially feasible. It is therefore probable that the majority of the planned 25GW of offshore wind will not be installed on monopile foundations. This has the following impact on noise issues:

- a. For jacket, tripod or tripile foundations, the structure will be piled to the ground with multiple smaller and shorter piles than would be used for a monopile foundation. Diameters of piles are likely to be significantly less than in the evidence stated and therefore the maximum source noise and piling duration would be less than considered in the report. Numbers of piles could be increased with a subsequent impact on mitigation methods.
- b. For Gravity Base Structures, piling operations would not be required at all, and hence it is unlikely that subsea noise impacts would be considered as a material consideration.

### **Marine Conservation Zones and SPAs**

The potential for new Marine Conservation Zones and offshore SPA designations could have a significant impact on the proposed Round 3 zones, yet there is insufficient clarity in the SEA over whether key stakeholders such as the JNCC have been engaged and a “best-guess” indication of where these designations are likely to be included in the GIS mapping of hard and soft constraints. Forewind would recommend further information being provided in the SEA regarding this issue and indication as to whether key stakeholders have been consulted.

### **Wake Effects**

In Section 2.7 of the report, there is a discussion of experience and understanding of the effects of the wakes from wind turbines. However the conclusion is that this may lead to greater separation. Forewind would recommend the SEA also notes that there is also the possibility that it may lead to reduced separation.

### **Evolution of Baseline Environmental Impacts**

Within Section 4.4, there is an excellent discussion on the potential evolution of the baseline for environmental impacts. Forewind recommends this discussion be mentioned in the rest of the report. Further information should be gathered on the described potential effects on fish stocks, birds and marine mammals, and these should be adequately modelled in all impact assessments. Offshore wind farms will have a material role in reducing the described impacts, but also some of the consequences of climate change may, for example, significantly reduce commercial fishing activities, and hence reduce the impact of offshore wind farm developments on such activities.

### **Scour Effects**

Section 5.4.2 contains a long discussion on the potential for scour effects around monopile turbine foundations. Predicted scour around turbine structures is reasonably well understood and evidence from the Forewind

partners from existing projects indicate that scour around foundation structures has not transpired to be a major issue. However Forewind believes it is likely that the majority of foundations for future offshore windfarm developments will be jacket, tripod, tripile or gravity base types. It would be more appropriate to look at the evidence for scour around similar oil and gas installations to assess the likely overall impact from the plan/programme. Scour around gravity base structures could be a key issue, and Forewind recommend that it should be addressed in the report.

### **Grid Reinforcement**

Section 5.9.1 details the potential environmental impacts from the required grid reinforcement activities required to allow the construction of 25GW of offshore wind. Forewind believes this is valid, but should be compared with a baseline of the additional grid reinforcement activities required for the additional generating capacity from non-renewable sources which would be required if the plan of 25GW did not go ahead was applied. For instance, if no offshore wind was built, the UK would need major additional generation capacity regardless, to replace the nuclear and coal fired power stations coming offline in the next 10-15 years. The additional gas fired, coal fired and nuclear plant would also require a major grid reinforcement exercise, with associated environmental impacts.

### **Bird Data Collection**

Section 6.1 states that “developers need to be aware that access to adequate data on waterbird distribution and abundance is a prerequisite”. Forewind agrees that adequate data is required, but it should not be excessive. The bird survey standards required for a Round 2 project area may not be the same as required for a large Round 3 zone. Forewind suggests a characterisation approach across the Zones with more detailed study within the wind farm areas located for offshore.

### **Main Messages from Forewind**

The SEA addresses several issues which potentially could be viewed as hard constraints, e.g. distances from coastline, oil and gas platforms, navigation routes etc. There are circumstances where it is possible to construct wind farms within these constraints without severe negative consequences for other stakeholders. Consequently the SEA should be clearer that a site-by-site discussion between developers and affected stakeholders must take place to identify and assess the impacts from the actual windfarm development plan.

In regard to this, during the meeting between Forewind and DECC at their offices on 27<sup>th</sup> March 2009, DECC expressed that their intention is to open up site-by-site discussions and that the draft SEA should not be read as defining any exclusion zones. Forewind would recommend that this is more explicitly stated within the SEA report.

The 12nm coastal buffer needs to be based on more evidence to ensure it is applied for the correct reasons and is not unnecessarily restrictive to future offshore wind energy development and hinder the achievement of 2020 aspirations.

The navigation and shipping guidance should be supported by further data to ensure that the large generalisations made are appropriate.

The 6nm buffer zone surrounding oil and gas infrastructure should be assessed on a site by site basis and this should be outlined within the SEA.

Forewind would like to reiterate that it is appreciative of the opportunity to provide feedback to DECC on the Offshore Energy Strategic Environmental Assessment and looks forward to receiving the final document later in the spring/summer.

# Forth Ports PLC

## Marine Department

### UK Government Offshore Energy Strategic Environmental Assessment Consultation

- The AIS data at the scale presented appears to be insensitive to actual usage and therefore believe more appropriate scale maps and longer time frames of AIS should be presented with particular focus on Round 3 sites. This is particularly important where maybe there is an in-combination effect with the Scottish Territorial Waters wind projects.
- When analysing marine traffic, the size and manoeuvrability of vessels should be considered.
- The analysis of AIS data only over a 4-week period at the beginning of each quarter lacks the sensitivity to identify the variable nature of ship routing driven by prevailing weather conditions that may significantly alter the approach taken by a vessel.  
In adverse weather conditions, obstructions (e.g. wind farms) may require vessels to be involved in additional manoeuvring around these restricted zones, affecting the safe manoeuvring characteristics and safe passage.
- We note reference to 12 nautical miles and buffer; but also what has to be born in mind that substantial traffic crosses the North Sea from Scandinavia / Baltic and Benelux Regions and therefore due consideration must be applied to direct access to Ports from these regions as well as coastwise traffic.
- A3h.2.3 – Anchorage and Places of Refuge
  - We are unclear what is meant by ‘Anchorage and Places of Refuge.’
  - We are unclear what is meant by the term ‘Harbour of Refuge.’
  - It would appear that there is no mention under Table A3h.1 of areas available between Bridlington and Fraserburgh (for e.g Rivers Forth and Tay.)

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### **Fred.Olsen Renewables Ltd Offshore Energy SEA Consultation Response**

Fred. Olsen has been involved in the wind power sector since the mid 90's with a presence in Norway, Sweden, UK, Ireland and Canada. In addition, Fred Olsen Renewables Limited (FORL) currently has 178MW of operational wind projects, a further 273MW consented in the UK, and 1100MW consented just off the Irish coast; this makes FORL a major player in the wind energy sector, including offshore. FORL are members of BWEA, SRF, IWEA and NOW Ireland and FORL staff are active on a number of the industry working groups.

FORL's commitment to the offshore wind industry is demonstrated through its involvement in an expanding portfolio of projects and initiatives; FORL are joint owners of the consented Codling Wind Park offshore wind farm (1100MW), off Ireland and has recently been awarded an Exploration Agreement by The Crown Estate for a 415MW offshore project within Scottish Territorial Waters.

FORL is participating in The Crown Estate's Round 3 Tender process and welcomes the opportunity to comment on Government's UK Offshore Energy Strategic Environmental Assessment (SEA). Our response includes a number of general comments followed by specific responses to the recommendations made in the Environmental Report. As a renewable energy company we have not responded to those recommendations which relate specifically to the oil and gas licensing, as we do not have extensive knowledge of this sector.

FOR looks forward to working with Government to realise it's plan/programme for an additional 25GW of renewable energy from offshore wind.

### **General comments on the SEA Environmental Report Recommendations**

FOR welcome the SEA report's strategic view and the overarching conclusion that *"...there are no overriding environmental considerations to prevent the achievement of the ..... wind elements of the plan/programme"*. We acknowledge that the SEA is intended to identify potential mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea, but at the same time FOR believes that the UK Government's 2020 renewable energy targets are of such strategic national importance that a

presumption in favour of renewable energy development should be written into the National Policy Statement (NPS) for Renewable Energy, and reflected in other key NPS', especially the Marine Policy Statement.

We understand that Government will respond to the consultation in June 2009, stating its final conclusions; FOR hopes this report will give clarity to the responsibilities and timescales for taking forward the final recommendations, as these will require considerable resource.

FOR's interpretation of the SEA report in its current format is that there should be a presumption against renewable energy development wherever spatial conflict arises with other sea users, areas of high nature conservation and cultural heritage value. As part of a developing industry that is committed to delivering a substantial contribution of Government renewable energy targets we are concerned that the offshore wind industry appears to be treated as a lower priority than other marine industries, especially oil and gas, gas storage and potentially carbon capture. At the same time the report notes the future development of marine spatial planning but unless the importance of the offshore renewables industry is explicit in National Policy Statements we are concerned that this presumption against development will continue and be reflected in emerging marine spatial plans. Given the current technological and economic considerations of the offshore wind industry it is important that the preference for no development within Territorial Waters does not set a precedent for future leasing rounds. From a UK marine planning perspective FOR are concerned that this conclusion and recommendation contradicts the approach currently being considered in a separate SEA within Scottish Territorial Waters.

Realisation of the positive environmental benefits of offshore renewable energy development brought through climate change mitigation should receive a much higher prominence, along with the potential for innovative technological and mitigation solutions to enhance biodiversity and achieve sustainable development. Furthermore, the potential socio-economic contribution to the UK economy is not fully recognised.

### **Comments on the individual SEA Report Recommendations**

*1. In areas with high renewable energy generation potential DECC should ensure decisions on renewable energy leasing and licensing for oil & gas (including natural gas storage) are coordinated to minimise potential sterilisation of areas for other industries. This recommendation extends to maintaining options for potential future geological storage of captured carbon dioxide.*

FORL fully support a co-ordinated approach to development but are concerned that this recommendation suggests that, even in those areas which offer the best development potential for renewable energy generation, that there is a presumption in favour of other activities so as to reduce sterilisation. In particular we note that this is extended to maintaining options for potential future carbon capture. We understand that future licensing/leasing of carbon capture and storage will require a separate SEA so we are concerned that future decisions may conflict with the offshore renewables programme. This introduces significant uncertainty for offshore wind developers and needs to be clarified and articulated through the forthcoming suite of National Policy Statements.

The resolution of spatial conflicts should be based on a clearly defined set of principles for marine spatial planning (MSP) which will enable Government to meet targets and optimise sustainable development in the marine environment. At present it appears that spatial conflicts between different energy sources will

favour hydrocarbons, gas storage and the potential for carbon capture and storage. Carbon capture and storage is likely to lead to substantial development of new seabed infrastructure in the future and it is not clear how this could impact upon the offshore wind programme and specific projects.

Further more, where there is future conflict for oil and gas exploitation, compensation is offered as mitigation for conflicts and this continues to be a cause for concern with offshore wind developers.

*2. The draft plan/programme for an additional 25GW of offshore wind farm (OWF) generation capacity will require wind farm development on a massive scale. In advance of a formal marine spatial planning system being in place for the UK, the leasing and consenting of OWFs must ensure the minimisation of disruption, economic loss and safety risks to other users of the sea and the UK as a whole. In particular, there should be a presumption against OWF developments which:*

- a. impinge on major commercial navigation routes, significantly increase collision risk or cause appreciably longer transit times*
- b. occupy recognised important fishing grounds in coastal or offshore areas (where this would prevent or significantly impede previous activities)*
- c. interfere with civilian aviation including radar systems*
- d. could potentially jeopardise national security for example through interference with radar systems or significant reductions in training areas*
- e. result in significant detriment to tourism, recreation and quality of life*

FOR is concerned that the SEA excludes large areas of development potential on the basis that they will impinge on major commercial navigation routes. The main evidence presented appears to be based on data that we consider not to be sufficiently statistically robust for conclusions to be drawn on a national/strategic scale. FOR endorse the view that human safety must remain of paramount importance but we also feel that further work is necessary on the key issues before the presumption against development in these large exclusion zones becomes a precedent. There needs to be much greater transparency as to how the unpublished MCA data was used and analysed for the purposes of the SEA and its recommendations.

In relation to fishing interests we are concerned that this presumption is based on existing fisheries interests and that the evidence base is not extensive. Patterns of fisheries activity may change in the future due to the impact of climate change on fish ecology. We note the potential significance of transboundary issues and that off the east coast foreign/non-UK fleets dominate the fishing activity. We are concerned that data for these areas will be difficult for developers to acquire, and we would like to see increased effort from DECC to engage with the relevant fishing organisations from other member states than is apparent in the SEA. The potential for protracted consultation and negotiation with other member states could considerably delay the development of areas far offshore as well as increase costs to projects in these areas.

FOR would like to see some assurance that the relevant Government departments will work together to bring forward technical solutions relating to civil aviation and military radar, whilst maintaining the integrity of national security, and this should be reflected in the relevant National Policy Statements.

There are relatively few studies that have considered in detail the socio economic impacts of offshore wind farm development on local communities; we are concerned that the SEA presents a presumption against development in those areas which it considers tourism and recreation to be major activities, assuming

the impacts to be negative. The experience to date is that offshore windfarms have been welcomed as a positive contribution to local coastal communities. Developers put considerable effort into the assessment of potential visual impacts of offshore wind through the EIA process and although in general it is more acceptable that large scale developments are best sited further offshore, each project should be considered on its own design merits, and that in many cases development of a scale proportional to the seascape is not a visual intrusion. The reduction in carbon emissions afforded by the development of offshore renewables, and its contribution to the energy supply, should be promoted as a positive benefit on the quality of life.

*3. Until there is a firmer base of information available to inform adaptive management, in respect of ecological receptors a precautionary approach to siting is recommended since the offshore wind industry is relatively young, with appreciable technological development expected in for example, turbine size, rotation speed, spacing and potentially rotational axis. This precautionary approach dictates that unless suitable evidence indicates otherwise, avoidance (for the present) of areas known to be of key importance to waterbird and marine mammal populations, including breeding colonies, foraging areas and other areas essential to the survival of populations.*

We are concerned that the precautionary principle continues to be used as an easy alternative to difficult decision making and can cause un-necessary delay in the consenting process. The offshore wind industry may still be considered immature but it has already contributed significant amounts of environmental data to the UK marine community and statutory advisors, either through baseline studies and the EIA process, or through post construction monitoring. All this data is available to the consenting authorities and advisory bodies, and along with an increasing amount of data from other European projects which should be used to inform an adaptive management approach. We believe that there is now a substantial amount of data to enable a more pragmatic approach to be taken on decision making during the consenting process.

Regulators and advisors have developed a considerable amount of the experience and knowledge from both Rounds 1 and 2 to inform adaptive management decisions, and developers wish to work with them to provide more innovative solutions and mitigation measures to potential impacts. We agree that the technology will develop considerably over the next decades and that development further offshore will require a large data gathering and zone assessment programme by developers. We acknowledge that there is a general paucity of quality spatial and temporal data for areas furthest offshore and that the location of these preferred areas for development will require significant investigation through environmental surveys. Investigation of these large area will require new approaches to data collection and developers would welcome greater guidance from statutory consultees to deal with, for example, cumulative and in combination issues to enable the "contextualisation" of individual projects within a larger development area. The changes in the planning regime through the IPC promise a clearer and more streamlined route to consenting so it is increasingly important that the lessons learnt from previous rounds of development.

*4. Reflecting the relative sensitivity of multiple receptors in coastal waters, this report recommends that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km). The proposed coastal buffer zone is not intended as an exclusion zone, since there may be scope for further offshore wind development within this area, but as mitigation for the potential environmental effects of development which may result from this draft plan/programme. The environmental sensitivity of coastal areas is not uniform, and in certain cases new offshore wind farm projects may be*

*acceptable closer to the coast. Conversely, a coastal buffer in excess of 12nm may be justified for some areas/developments. Detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 or subsequent wind farm projects close to the coast can be assessed. Marine spatial planning proposals are under consideration in Parliament, which would give coastal regulators and communities further opportunities to have a say in the way the marine environment is managed, in addition to the existing routes for consultation as part of the development consent process.*

FOR notes that this SEA recommendation does not place an exclusion on development near the coast and that development will have to justify site specific plans through the Environmental Impact Assessment (EIA) and consenting process. We acknowledge that the largest scale development is best sited away from coastal waters of greatest environmental sensitivity but Rounds 1 and 2 of the UK offshore wind programme have demonstrated that development of a scale proportionate to the nature of the environmental setting is achievable with minimal impact, intrusion and disturbance.

FOR are, however, concerned that even though the 12nm recommendation is not intended as a complete “*exclusion zone*” and that “the bulk of” offshore wind should be beyond the territorial limit, the terminology is open to interpretation and may be construed as a precedent and strong presumption against any development. Those opposed to renewable energy projects will undoubtedly use this 12nm recommendation as a reason to object to all projects within territorial waters. The 12nm buffer zone recommendation therefore creates increased difficulty for several of The Crown Estate’s Zones within its plan/programme of development for Round 3.

FOR therefore do not agree that there is a strong enough argument to justify a recommendation which suggests a ‘blanket’ presumption against development in UK territorial waters, given that there is considerable resource in these areas and that the physical characteristics of the area make offshore wind economically viable.

FOR note the reference to forthcoming plans for the development of marine spatial plans (MSP) through the Marine Bill but are concerned that at present this adds another layer of uncertainty to the development process going forward, as it is not clear as to how Government intends to develop its marine spatial planning framework. UK Government has indicated that it will designate Marine Conservation Zones to comply with its international obligations for a network of marine protected areas by 2012. FOR is unclear as to how these areas will be selected and what impact they will have on offshore windfarm projects within Round 3 timescales.

FOR have development interests in Scottish Territorial waters and even though the UK Offshore Energy SEA did not cover this area we are concerned that this recommendation will directly contradict Scotland’s plans for offshore wind and will cause considerable confusion amongst stakeholders, especially where proposed developments are close to the Scotland/England boundary. It does not provide for the “joined-up approach to marine planning” being promoted through the UK and Scotland Marine Bills.

*5. To minimise habitat change and to ensure areas developed as a result of the current draft plan/programme are left fit for previous or other uses after decommissioning, the volumes of rock used in cable armouring, foundation scour protection and pipeline protection must be minimised and there should be active promotion of alternative protection methods through the consenting process.*

FOR acknowledge that environmental considerations are an important part of the design phase of project development and that potential impacts need to be mitigated. However, we are concerned that alternative engineering solutions to minimise environmental impacts could also compromise human safety, security of assets and the economics of a project. The requirements for foundation scour protection and cable armouring will depend on site characteristics investigated as part of the environmental survey programme, so FOR would welcome additional guidance on alternative protection methods and wish to know whether DECC will be undertaking research into this issue to assist developers.

FOR acknowledge that decommissioning should leave seabed areas fit for other uses in the future and will continue to work with Government and The Crown Estate to ensure that decommissioning plans for offshore windfarms meet statutory requirements and prevent sterilisation of the seabed for future uses.

*6. For areas (zones and blocks) which contain good examples of habitats/species on the Habitats Directive Annexes, developers should be made aware that a precautionary approach will be taken and some areas with relevant interests may either not be leased/licensed until adequate information is available, or be subject to strict controls on potential activities in the field. Similarly, developers should note that DECC will continue to conduct Appropriate Assessments/screenings to consider the potential of proposed leasing/licensing and subsequent activities to affect site integrity.*

FOR remain concerned about the over reliance on the precautionary principle (see response to recommendation 3). FOR are also uncertain as to how and when Appropriate Assessments (AA) will be undertaken, and who will be responsible for completing them, as the SEA is based on a UK plan/programme yet developers are bidding for Zones which are part of The Crown Estate's plan/programme. We would appreciate clarity on this matter at the earliest opportunity.

*7. The effects of noise on marine mammals particularly from piling and seismic survey remain an issue of debate. A range of mitigation measures are available and their adoption is normally required through consenting. However, there is a need for cross-industry coordination of what noisy activities are planned, where and when, to facilitate the assessment of cumulative effects and implementation of temporal/spatial mitigation actions. The approach would require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the future MMO.*

FOR welcomes the SEA conclusion that "neither regional nor local prohibitions on activities associated with offshore wind development are justified by acoustic disturbance considerations and that project specific assessments will be required." However, FOR is concerned that the SEA recommends that within certain key areas of marine mammal sensitivity operational criteria are established to limit cumulative pulse noise "dose". It suggests that this can be achieved through the regulatory framework if initially developed voluntarily. In particular, FOR is not clear as to how noise effects from installation activity, seismic activity and other sectors' activity would be dealt with on a voluntary approach and how this would be translated into licence application and delivery; FOR are aware that there is still considerable debate amongst specialists as to the significance of underwater noise on marine mammals and consider a web based forum to be sensible in concept, but limited in reality.

FOR believe that any cross industry co-ordination should involve all industries that operate in the marine environment, including military activity and shipping, not just offshore renewables, oil and gas.

*8. Although there has recently been significant survey effort in coastal waters, the lack of modern data on waterbirds in offshore areas is noted. Developers need to be aware that access to adequate data on waterbird distribution and abundance is a prerequisite to effective environmental management of activities for example in timing of operations and oil spill contingency planning.*

FOR fully support the need to gather bird data as part of the environmental management process and acknowledge that The Crown Estate's Zonal approach will enable a wider assessment, allowing individual projects to be 'contextualised' for a better analysis of cumulative and in combination effects. We recognise that further survey work has been undertaken for the purposes of the SEA but that this has been very limited over the most distant offshore areas under consideration as development zones. FOR are concerned therefore that conventional survey techniques might not be wholly suitable for data collection over very large offshore areas and would welcome greater guidance from the statutory conservation advisors with regard to acceptability of more innovative survey techniques (such as high definition cameras currently being developed and tested). We would also like to see more resource going into the development and updating of the ESAS database. We also believe that even though the large proportion of sensitivities occur within coastal waters that development in carefully selected locations and of an appropriate size and scale can be accommodated without significant environmental impact in these areas. FOR are concerned that this recommendation is likely to contradict the situation in Scottish waters and therefore makes transboundary decision making, stakeholder engagement and marine planning more complex.

*9. There remain a number of subject areas for which the information base is limited and will need to be enhanced to support future marine spatial planning as well as project specific consenting. These information gaps include aspects of the natural world and human uses, with regional context and long-term trend data notably lacking. These gaps include:*

- *Seabed topography and texture. For some areas there is excellent data for example from multibeam mapping undertaken variously including by the MCA, BGS and the SEA programme, but the UK lacks a coordinated programme to marshal such data, to identify priority gaps and to find ways to fill them*
- *Recent information on the distribution of fish eggs and larvae, and variability in space and time*
- *Detail of bird migration patterns, and variability in space and time including flight heights in different weather conditions*
- *An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs*
- *Ecology of most marine mammal species and in particular important areas for breeding, foraging and resting*
- *Finer scale distribution of fishing effort, gears and catches for smaller vessels (<15m)*
- *Precision on the offshore distribution of navigation (AIS data coverage typically only extends 80km from shore)*
- *Effects on fishing activity in and immediately adjacent to constructed wind farms*

FOR agree that there are significant data and knowledge gaps at both strategic and regional levels. However, there exists a wealth of data from numerous marine sectors and this needs to be made available for development purposes. It is not clear who has the responsibility to fill these gaps for the purposes of marine spatial planning. FOR would welcome clarity on the process and timescales and how this might impact on the proposed development timetables to enable industry to meet the 2020 targets.

*10. In areas of cold water coral reefs and other vulnerable habitats and species, physically damaging activities such as rig anchoring and discharges of drilling wastes (from hydrocarbon or renewable energy related activities) should be subject to detailed assessment prior to activity consenting so that appropriate mitigation can be identified and agreed which may include no anchoring and zero discharge.*

FOR have no comment to make on this recommendation.

*11. For the area to the west of the Hebrides (covered in SEA 7) it is recommended that 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. This is in view of the paucity of information on many potentially vulnerable components of the marine environment, and other considerations. Once further information becomes available, the possible licensing/leasing in these areas can be revisited.*

FOR have no comment to make on this recommendation

*12. Potential applicants for licences in the 26th and subsequent oil and gas licensing rounds should be reminded that the expectation for facilities design will be for zero discharge of oil in produced water.*

FOR have no comment to make on this recommendation

*13. The Department has a central role in UK energy and climate change response policies; in recognition of the national and international focus on climate change and curbing fossil fuel emissions, DECC should seek and give consideration at both the oil and gas licensing and project consenting stages to CO2 emission reduction proposals e.g. capture and storage (rather than venting) of CO2 from gas treatment offshore.*

We agree with the recommendation that all activities should seek to reduce carbon emissions in order to combat climate change and contribute to UK targets for carbon reduction. FOR note that carbon capture issues are not considered within this SEA and are likely to be subject to a separate SEA. FOR consider it important that national policies do not favour carbon capture over offshore renewable energy and that this is reflected in National Policy Statements and within marine spatial planning consultations.

*14. Efforts are (or will be) underway to identify offshore Marine Conservation Zones / Marine Protected Areas e.g. under the Marine Strategy Framework Directive, OSPAR and the Marine and Coastal Access Bill. Where the objectives of the conservation sites and renewable energy development are coincident, preference should be given to locating wind farms in such areas to reduce the potential spatial conflict with other users.*

FOR support the need for adequate protection and management of habitats and species of national importance but wish to see greater visibility as to the site selection process for MCZs, and greater guidance from the statutory conservation advisors with regard to the potential nature and level of development permissible within MCZs. FOR believe that MCZs must only be designated where there is a robust scientific evidence base and that socio-economics have been fully taken into consideration. In our opinion MCZs should not be based on landscape/seascape considerations as these are typically subjective opinions. FOR consider that offshore windfarm sites can help achieve management objectives within MCZs.

FOR agree that stakeholders should be involved in the consultation and designation process including adequate representation from all marine industries.

We have some concerns over the timetable for selection and designation as this is likely to coincide with the period when developers are undertaking extensive environmental surveys across the R3 Zones which could cause delays to development plans.

*15. Similarly, as part of the Natura 2000 initiative, further offshore SACs and extensions to SPAs are being identified. Such sites are not intended to be strict no-go areas for other activities and a number have been mooted in areas with significant potential for offshore wind farm development. Wind farm developers should be aware that SAC/SPA designation may necessitate, subject to the conclusions of any appropriate assessment, suitable mitigation measures so as to avoid adverse effects on a designated site or species.*

FOR fully acknowledge that the development process must comply with the requirements of the Habitats Directive but are of the view that offshore windfarm development, in certain areas designated as offshore SACs or extensions to SPAs can be accommodated without significant impact and that innovative, cost-effective mitigation measures could make a positive contribution to the fulfilment of conservation objectives. FOR are concerned however that there will be a significant reliance on developers to bring forward data that could then be used to identify and designate Natura areas which then exclude development.

*16. Gas storage projects need an EIA under the requirements of the EIA Directive. However, it is unclear at present under which UK regulations EIA for such projects would be undertaken, and early resolution is desirable in light of the drivers for increased UK gas storage capacity.*

FOR would welcome clarity as to the regulatory framework for gas storage and also an indication as to how future projects will influence marine spatial planning and potentially impact proposed offshore wind development areas.

*17. The Offshore Vulnerability Index (OVI) to surface pollutants developed by the JNCC should be reviewed in the light of results from recent aerial and boat based bird survey data, and updated if necessary. Consideration should also be given to whether the development of UK-specific individual waterbird species sensitivity indices and mapping of a Wind Farm Sensitivity Index (WSI) in UK waters would be useful in support of site selection and consenting.*

FOR recognises that WSI could be a useful tool to inform aspects of site selection and consenting, but is one of many tools that could be used. Population Viability Analysis models for specific species could prove of more value and should be further investigated and developed. Cowrie has already undertaken work in this area but further work should be undertaken and made available to developers. FOR would welcome indication as to who would be responsible for taking forward such work and to what timescale so as to assist the Round 3 development programme.

Given the large scale of development that needs to be realised to meet the 2020 targets FOR consider that that seasonal restrictions on windfarm operation will have significant impact upon the economic viability of projects and must therefore be considered to be unrealistic as a consent condition.

*18. The existing initiatives to develop waterbird Population Viability Analysis for sensitive species should be progressed, including, if necessary, research to improve the accuracy of inputs to the models.*

See response to agree Recommendation 17. FOR wish to see the development of a range of standardised tools to assist in the EIA and decision making process. Such methodologies need to be agreed between developers, conservation advisors and key NGOs at the scoping stage.

*19. The potential for capacity extensions to existing Round 2 wind farm leases requires careful site specific evaluation since significant new information on sensitivities and uses of these areas is now available (see also recommendation 2 above). As a general rule it is recommended that any such site extensions are to the seaward rather than the landward side. Round 1 sites are closer to the coast and it is anticipated that the majority would not be extended; any application for this would also require detailed site specific evaluation.*

FOR believe that site extensions should be based on detailed site by site analysis. Given that a growing amount of monitoring data is available from operational windfarms regulators should be able to make informed decisions on such applications. At present FOR is not aware of any scientific evidence to suggest that extensions to Round 1 projects should not be considered. This will also be dependent on discussions with The Crown Estate as landowner.

*20. Siting and consenting processes for offshore wind farms must remain flexible to allow for technological innovation, including in mitigation measures.*

FOR agree with this recommendation. The Zonal approach offered by The Crown Estate in Round 3 provides greater flexibility in identifying suitable projects at individual site level, but this must be matched by flexibility within the consenting route through the IPC so that multiple project submissions can be made. FOR would welcome greater clarity on the IPC process and requirements.

*21. The information collected by offshore renewables and oil industry site surveys and studies is valuable in increasing the understanding of UK waters. The initiatives such as the UKDEAL, COWRIE and UK Benthos databases to ensure that such information is archived for potential future use should be continued and actively promoted during the consenting processes. Similarly, there should be encouragement for the analysis of this information to a credible standard and its wider dissemination.*

The offshore renewables industry is a leader in this field as it has already been a significant provider of marine environmental data through Round 2 and this is being extended to Round 3 through The Crown Estate's lease requirements. At present the data is being made available through Cowrie. The Crown Estate has indicated that in the future information will be made available through it MaRS initiative and we support the co-ordination that is occurring between government departments and The Crown Estate to make data available to the wider marine community.

*22. It is recommended that in certain key areas of marine mammal sensitivity, operational criteria are established to limit the cumulative pulse noise "dose" (resulting from seismic survey and offshore pile-driving) to which these areas are subjected. This could be implemented within the existing regulatory framework for activity consenting, but will require a mechanism to facilitate the exchange of information, for example through a web-based forum hosted by DECC, JNCC or the MMO when established, with suitable links to all parts of the UK.*

Please see response to Recommendation 7. The full economic impact of temporal and spatial restrictions on construction and operation must be taken into account as this could substantially impact upon project viability.

*23. To assist developers and the achievement of conservation objectives, DECC and others in Government should encourage the adoption of consistent guidance across the UK on the implementation Habitats Directive requirements, for example disturbance of European Protected Species (Annex IV species).*

FOR support this recommendation and suggest that this inter-agency work is identified as a priority following this SEA consultation.

Submitted by Carolyn Heeps  
for and on behalf of Fred. Olsen Renewables Limited

## Global Marine Systems Submission to the Offshore Strategic Environment Assessment Report Consultation

### Contact details

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### 1.0 Executive summary

1.1 Global Marine Systems (GMS), a market leader in the laying of subsea cable and related engineering services for over 150 years, is delighted to respond to the Department of Energy and Climate Change (DECC) Strategic Environment Assessment (SEA).

1.2 Our area of expertise within an offshore windfarm project is in the installation, burial and eventual maintenance of both the inter-field cables (the power cables which connect the grid of turbines to each other) as well as the export cables, which connect the entire array of turbines back to land and the power grid itself.

1.3 We firmly believe that the development of offshore wind power is core to the UK's future wellbeing and economic and environmental security.

1.4 The coastal geography of the UK and the ambitious targets set out by the Government present a real opportunity for the UK to take a lead in the development of offshore wind. In addition, as the Strategic Environmental Assessment demonstrates, there is scope for enough offshore wind farms to power the equivalent of almost all the homes in the UK, and make a significant contribution to renewable energy targets.

## 2. About GMS

2.1 Global Marine Systems, a British company, has been involved in laying subsea cable and related engineering services for over 150 years. Global Marine Systems is the privately owned merger of what once were the marine divisions of British telecommunications companies British Telecom and Cable & Wireless.

2.2 Global Marine Systems has two core business units, Telecommunications and Energy. The Energy unit has a focus on the installation and maintenance of subsea power cables and related engineering services. As part of this unit we have, over the past eight years performed a significant amount of work in the offshore windfarm market. Global Marine has been a key service provider on such projects in the UK as the Kentish Flats and Barrow offshore wind farms. We have also successfully completed projects throughout Europe such as Horns Rev, and we are currently completing the world's largest offshore wind farm, Horns Rev 2.

2.3 Specifically, our area of expertise within an offshore windfarm project is in the installation, burial and eventual maintenance of both the inter-field cables (the power cables which connect the grid of turbines to each other) as well as the export cables, which connect the entire array of turbines back to land and the power grid itself.

2.4 As a result of our unique record in delivering these projects, we believe that we are a leader amongst a very small group of companies in the industry who have meaningful experience successfully executing work such as this. We are one of a small group of British companies with demonstrated expertise in this specific area and a viable business currently operating in this strategically critical market.

## 3.0 Offshore Wind Farms

### Scope for Offshore Wind Farms

- There is a wider scope for between 5,000 and 7,000 more offshore wind turbines around the UK's coastline.

### Environmental Impacts of Offshore Wind Farm Connectivity

- Scour effects (localised erosion and lowering of the seabed around a fixed structure) are small in scale and local in extent.
- The potential for significant effects, in terms of regional distribution of features and habitats, or population viability and conservation status of benthic species, is considered to be remote.

3.1 We welcome the Department of Energy and Climate Change (DECC) Strategic Environment Assessment of the UK's shores, which recommend that there is scope for between 5,000 and 7,000 more offshore wind turbines around the UK coast. DECC estimates that this would be enough to power the equivalent of almost all the homes in the UK and would make a significant contribution to renewable energy targets.

3.2 In addition we welcome the Government's commitment to 20% of electricity supply to come from renewable sources by 2020, and an 80% reduction in carbon emissions by 2050. Investment in non-polluting electricity generating sources is not only critical to meeting the UK's carbon reduction targets but also has the potential to form the basis of a major future growth area for UK plc.

3.3 In order to reach the Government's targets, we firmly believe that the development of offshore wind power is core to the future wellbeing of both the environment and the UK's economy.

3.4 As recently set out in the Government Low Carbon Industrial Strategy, the transformation to a low carbon society presents a valuable opportunity not only to convert industry to a low carbon philosophy, but also to develop the skills sector that will support it. The creation of highly skilled, highly sought jobs is critical to the UK's low carbon industry. We have developed world-leading training facilities for our industry within the UK and believe that educational, government, and business interests should be aligned in a common and realistic effort to meet future skills needs in the low carbon economy of the future.

3.5 As a market leader in the installation and maintenance of subsea power cables and related engineering services, GMS has a wealth of experience in minimising the environmental impacts of offshore wind farm connectivity. We are deeply aware and sensitive to the potential damage that can be inflicted by poorly planned and constructed subsea cabling.

3.6 One flagship project helping to address these issues is the Beatrice Wind Farm Demonstrator Project (Beatrice) - a €41 million project involving the installation of two demonstrator wind turbines adjacent to the Beatrice oil field, 25 km off the east coast of Scotland.

- Using our vessel Sovereign, Global Marine installed the two main cables, each comprising a power and fibre optic cable which connect the five megawatt turbines to Talisman's Beatrice oil platform
- The company needed to pay particular attention to the surrounding environment to ensure that the cable laying installation and noise did not upset the sea life and bird life in this coastal region, in line with the procedures outlined in Talisman's Environmental Impact Study.

This cable installation will enable Talisman to provide part of the power for the Beatrice oil field, using energy generated from the turbines. It will also remotely control and monitor the turbines' performance from Beatrice.

3.7. Despite the growing market for offshore wind, we are seeing some major entrants to the installation market make the decision to drop out. Due to the extremely complex nature of these projects as well as the need for a demonstrated track record of expertise in the laying of subsea cables in difficult environments with sensitivity and awareness of environmental issues We believe this speaks directly to the highly skilled, highly engineered nature of this type of work, more of which should be being created here in the UK.

## **4.0 Conclusion**

4.1 We firmly believe that the development of offshore wind power is core to the UK's future wellbeing and economic and environmental security.

4.2 We look forward to continuing our work in the renewable sector across the UK and helping the Government reach its renewable deployment and carbon emissions reductions targets.

4.3 We hope that this outline of our experience in the adoption of offshore wind farms is helpful to your Strategic Environmental Assessment. We would be very happy to meet with you to share our experiences of supporting and engaging in the UK's energy market.

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Our ref: AMN/23/26 part 2 AM  
Your ref:

22 April 2009

Dear Mr O'Carroll

**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 DECC's UK Offshore Energy plan which was received in the Scottish Government's SEA Gateway on 30 January 2009.

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. It therefore focuses on the environmental assessment, rather than the contents of the plan.

**General Comments**

I welcome that the comments we provided on the Scoping Report on 29 January 2008 have been taken into account during the preparation of the Environmental Report. The Environmental Report is well presented and it is clear that a great amount of effort has gone into the assessment. I am content with the assessment for our historic environment interests and have set out some detailed comments on some sections of the Environmental Report in an annex to this letter.

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 8924 should you wish to discuss this response.

Yours sincerely

Alasdair M<sup>c</sup>Kenzie  
Strategic Environmental Assessment Team Leader

## Annex: Detailed comments on the Environmental Report

For ease of reference, the comments in this annex follow the same order as the Environmental Report.

1. The non-technical summary provides a clear overview and summary of the environmental assessment and I welcome the summary of the key findings for the effects of the plan on the historic environment.

### Introduction

2. The introductory sections provide a clear overview of the background to the plan and its contents. I note that the focus of the assessment has been on future oil and gas exploration and offshore windfarm developments. As you will be aware, the Scottish Government will be carrying out its own SEA for offshore windfarm developments within their territorial waters.

### Overview of the Draft Plan/Programme & Relationship to other Initiatives

3. I welcome the inclusion of Scottish Historic Environmental Policy (SHEP). It would have been useful to highlight how this initiative has played a role in shaping the assessment findings and plan recommendations. Simply for information, Scottish Ministers have recently consulted on policy on the Marine Historic Environment and it is intended that Ministers' finalised policies on these matters will be included in later versions. The Marine elements of SHEP were published for consultation between March and May 2008. A copy of the analysis report can be found here: <http://www.historic-scotland.gov.uk/index/about/consultations/closedconsultations.htm>

### Scoping

4. I welcome the revision to the SEA Objective indicator as suggested at scoping. I agree with the identification of the potential for direct (physical) effects upon submerged archaeological remains in section 3.6 (e.g. through anchoring). You may wish to also include the potential for (indirect) effects upon the setting of historic environment features (in addition to visual intrusion). This will be of particular relevance for those historic environment assets situated on the coastline.

### Relevant existing environmental problems & likely evolution of the baseline

5. I agree with the environmental problems identified for the historic environment and implications arising from the plan (potential effects from drilling, piling, cabling etc) and the likely evolution of the baseline.

## Assessment

6. Simply for information, box 5.1, under potential effects to known or postulated archaeological heritage should refer to cultural heritage as opposed to bitopes. While the historic environment has been considered during the assessment process it would of been helpful to summarise the findings for this topic within the Environmental Report, disentangling the issues associated with landscape/seascape effects – focusing on those effects for the historic environment receptors. I welcome the commitment to the development of mitigation measures in line with existing guidelines for seabed developers.
  
7. I note the recommendations presented in section 6 and would query why historic environment factors are not represented here, particularly within recommendation 2. This would seem a good opportunity to highlight the need to consider environmentally sensitive and appropriate locations for development.



Offshore Energy SEA Consultation,  
The Department of Energy and Climate Change,  
4th Floor Atholl House,  
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AB11 6AR

Wednesday 22 April 2009

Dear Sir / Madam,

**COMMERCIAL IN CONFIDENCE: Department of Energy and Climate Change  
Offshore Energy SEA Consultation.  
Inch Cape Offshore Wind Farm Response**

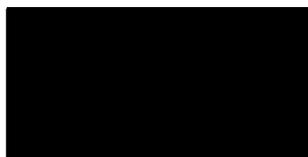
Inch Cape Offshore Wind Farm Limited (ICOWFL) is pleased to submit comments to The Department of Energy and Climate Change (DECC) in response to the recently published draft Offshore Energy Strategic Environmental Assessment (SEA) for consideration during this consultation period.

ICOWFL is a company set up to develop the Inch Cape OWF awarded exclusivity through the Crown Estates Scottish Territorial Water licensing round and comprises a joint collaborative effort between RWE Npower Renewables Limited (NRL) and SeaEnergy Renewables Limited (SERL).

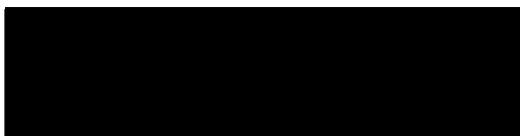
ICOWFL thanks DECC for the opportunity to provide comments and looks forward to receiving the final SEA this summer.

Yours faithfully

Inch Cape Offshore Wind Farm Limited



Jamie May For NRL



Daniel Finch For SERL

Inch Cape Offshore Wind Farm Limited

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# OFFSHORE ENERGY SEA CONSULTATION

## 1. Introduction

- 1.1 This response is submitted by Inch Cape Offshore Wind Farm Limited (ICOWFL), a project awarded Exclusivity by The Crown Estate under the Scottish Territorial Waters Licensing Round, being jointly developed between RWE Npower Renewables Limited (NRL) and SeaEnergy Renewables Limited (SERL).

## 2 Consideration of the SEA Applied Coastal Buffer

- 2.1 The SEA consistently identifies the coastal buffer as an area which should not be seen as an exclusion zone. However, the SEA does in fact treat it as such in identifying the areas of potential development where the coastal buffer zone has been used to remove English and Welsh territorial waters entirely and hard constraints to further diminish the resource within the UK REZ. Of primary concern is the effect by association that Scottish Territorial Waters (STW) sites may have the same spurious constraints placed upon them.
- 2.2 The following sections provide a view on the sensitive receptors and constraints lying within the 12nm 'buffer' zone as identified in the SEA in order to provide a clear view on the applicability of this generic and intuitively applied mitigation measure to illustrate the limitations this imposes on offshore wind development under the Scottish Territorial Water Licensing round.

2.3

## 3 Coastal navigation routes, port access and safety

- 3.1 The SEA Environmental Report identifies AIS data to inform the spatial mapping of areas of importance for coastal navigation, port access and navigational safety.
- 3.2 However, in the SEA these are augmented with MCA 'siting not recommended' areas derived from unpublished (and officially unavailable) OREI 1 primary navigation routes.
- 3.3 The effect of this is to sterilise wide expanses of the sea area around the UK, substantially over and above those areas which can be demonstrated to be heavily used by shipping as derived from the vessel tracking data (AIS).
- 3.4 The assessment process based shipping constraints should be based upon analysis of vessel densities, thus providing potential for identifying sites for offshore wind farm development within potentially less critical areas for shipping.
- 3.5 The Crown Estate MaRS based approach appears to support this familiar assessment process in that Scottish sites accommodate known shipping routes on the understanding that there is potential for flexibility around the less dense vessel route areas.
- 3.6 Whilst shipping density is cited within the SEA as playing a role in the determination of constraint areas, the default position seems to have taken the worst case MCA's 'clearways' approach.
- 3.7 If taken at face value, the approach taken by the SEA could seriously jeopardise development of sites in the Firth of Forth area.

- 3.8 The need to apply a buffer zone of 12nm to protect navigational routes, lanes, port access or even navigational safety seems out of line with the measures already in place in the assessment of project location and historical practice and due processes already undertaken in consenting Round 1 and Round 2 offshore wind farms.
- 3.9 Close liaison with the MCA, Trinity House and the Chamber of Shipping through the established Nautical and Offshore Renewables Energy Liaison (NOREL) Group, provides a forum for marine industries and Government to discuss matters of mutual interest related to navigational safety.
- 3.10 This, coupled with formal Navigation Risk Assessments (NRA's) that assess the implications for actual vessel usage of sea areas obtained through AIS data and site-specific surveys (including smaller vessels), provides the appropriate level of rigour in considering the likely effects of siting a wind farm in a given sea area.

#### **4 Inshore fisheries**

- 4.1 Using the 12nm buffer to `protect` inshore fisheries may be valid in some areas, where an established inshore fleet exists, but in other zones and Scottish Territorial sites this is not necessarily the case. The buffer therefore seems over-precautionary.
- 4.2 Overall, it is suggested that the potential importance of areas for both fishing and offshore wind would suitably be negotiated during the feasibility and pre-development phase, rather than being provided for by applying a blanket (effectively exclusion zone) measure.

#### **5 Aviation/ civilian and military radar interference**

- 5.1 The application of the 12nm buffer zone to provide for mitigating sectoral conflicts in this instance is again questionable.
- 5.2 Firstly, the buffer zone would negate the potential development of areas within several Round 3 zones and STW sites, which are clearly outwith any consultation or radar interference area from known installations; and secondly, there is a range of activity ongoing which is attempting to mitigate wind turbine effects on radar coverage which may provide for development in areas currently subject to potential conflict between the two sectors.<sup>1</sup>

#### **6 Recreational yachting, sea use and coastal tourism**

- 6.1 A buffer zone, if any is to be applied, extending to some 8-13km as has been employed previously would seem to provide for appropriate levels of protection for high-usage areas and it seems likely that extending this area to 12nm from shore will do little to increase this level of safeguarding.
- 6.2 The exclusion of offshore wind farm development within the 12nm area would indeed provide for safeguarding of recreational activities around the UK coastline, but the area protected is significantly greater than that subject to high recreational use.

---

<sup>1</sup> For example NATS (2008). Mitigating the effects of wind turbines on NATS En-Route Ltd (NERL) operations. Unpublished report, 13pp.

## **7 Landscape/Seascape**

- 7.1 On the basis of the Landscape Institute and IEMA Guidance (2002), the appropriate distance for wind farm development from the coast will vary dependant on site specific conditions. In addition to the nature of the site, the potential environmental effects will be dependant on the nature of the proposed development.
- 7.2 Despite this acknowledgement that the nature of the scheme, including turbine number, arrangement and size will affect the likely effects of the scheme, the report proposes a universal 12nm buffer applicable to all of the Round 3 zones (and indirectly STW sites).
- 7.3 Clearly the coastal area of the Firth and Tay regions varies in character and quality, distance from proposed developments, and density of potential receptors and so it is difficult to see how a rigid buffer zone could ever be appropriate. There seems to have been no assessment of the effects of turbines between 13km and 22km from the shore, therefore there are concerns that the recommendations in the report are not founded on evidence based assessment.

## **8 Seabirds and waterbirds**

- 8.1 The assessment of impact on bird interests arising from offshore wind farm developments is routinely undertaken to ensure that sufficient protection of feeding, roosting, foraging, breeding areas and migration routes are provided for in the final selection of a development site.
- 8.2 The current Round 3 process (and the implied association of the STW process in the Firth of Forth in relation to Zone 2) provides for a more holistic strategy in assessing potential effect on birds through the zonal approach to development, allowing more regional assessment of environmental sensitivities in the selection of specific sites.
- 8.3 Applying an expansive buffer zone does not automatically provide for protection at the site-specific scale and leads to unnecessary sterilization of potential projects and resource areas.
- 8.4 On the basis of the accepted requirement to collect a comprehensive baseline dataset to inform assessment, it is therefore considered appropriate to deal with individual zones and the location of wind farm sites within the zone on a case by case basis.
- 8.5 Applying a catch-all mitigation measure which serves to potentially reduce the potential of Scottish Territorial waters sites, seems counter-intuitive when the appropriate assessment will be conducted on the specific conditions and qualities of the zone itself.

## **9 Overall comments**

- 9.1 Overall, ICOWFL does not consider it appropriate for the Environmental Report to set a broad buffer zone around the UK in relation to future wind farm development, particularly, the implied conflict it creates with the development of Scottish Territorial Sites.
- 9.2 Although specifically stated as not representing an exclusion zone, the adoption of a set distance from the shore within this document is likely to encourage the use of this figure in future during the development of National

Policy Statements, in stakeholder consultation and the determination of consents for offshore wind farm projects.

- 9.3 The proposed buffer zone does not take into account the fact that development in closer proximity to the coast may be acceptable, particularly taking into account mitigation strategies such as careful consideration of the number, arrangement and height of turbines.
- 9.4 Rather than balancing the relative benefits and costs of developing offshore wind resources against the existing marine interests, the Environmental Report adopts a precautionary approach whereby existing activities and interests automatically take precedence over the development of offshore wind projects often based upon intuition as opposed to evidenced based rationale.
- 9.5 It is therefore considered that the UK Offshore Energy SEA Environmental Report undermines and substantively weakens the position of ICOWFL and that of other Scottish developers to successfully progress its development in STW.



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Email: [sea.2009@berr.gsi.gov.uk](mailto:sea.2009@berr.gsi.gov.uk)  
FAO: Kevin O'Carroll – Head of Environmental Policy Unit

22 April 2009

Dear Kevin,

**The Environmental Assessment of Plans and Programmes Regulations 2004  
Regulation 13 Consultation Procedures  
DECC Offshore Energy Strategic Environmental Assessment Programme  
Consultation on the Environmental Report for Offshore Energy SEA**

Thank you for your consultation of 26<sup>th</sup> January regarding the Offshore Energy SEA.

This letter is a joint response from JNCC, CCW, NE and SNH, outlining a summary of the key points of interest which are common to JNCC and the country agencies. JNCC's more detailed comments are provided in the annexes attached to this letter, and the country agencies are providing their detailed comments individually.

The Joint Nature Conservation Committee (JNCC) is the statutory advisor to Government on UK and international nature conservation, on behalf of the Council for Nature Conservation and the Countryside, the Countryside Council for Wales, Natural England and Scottish Natural Heritage.

The Countryside Council for Wales (CCW) 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. CCW aims to make the environment a valued part of everyone's life in Wales.

Natural England (NE) conserves and enhances England's natural environment, for its intrinsic value, the wellbeing and enjoyment of people and the economic prosperity that it brings.

Scottish Natural Heritage (SNH) is a statutory advisor to Scottish Government. SNH's role is to look after Scotland's natural heritage, help people to enjoy and value it, and to encourage people to use it sustainably.

Summary of key points

Overall we welcome the important overview of relevant environmental data that the SEA represents. Where we have concerns regarding either the content or interpretation of the environmental data, these are provided in detail in our individual agency comments. Our main comments seek to ensure that we maximise the opportunity presented by the SEA

process to anticipate and address key environmental risks with a view to enabling the draft plan/programme to be achieved as efficiently as possible. We have identified 5 key points:

1. Overall Conclusion - We support the main 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. We also agree, subject to important caveats, that the environmental data presented in the SEA provides no conclusive evidence that overriding environmental considerations will prevent the achievement of the plan/programme. However we do have concerns with respect to the evidence base and with some of the interpretation. In our view there are significant environmental risks that need to be effectively managed to ensure the plan/programme can be delivered. We are not convinced that the recommendations as currently presented are sufficiently robust to ensure that environmental risks will be adequately addressed. We provide more detailed comments in our individual agency responses that are intended to ensure that these risks are addressed in a reasonable and proportionate manner.
2. Mammals - We welcome the suggestion of how to address potential cumulative effects to marine mammal populations resulting from the combination of oil & gas licensing and the construction of offshore windfarms. However, we think the SEA fell short of adequately assessing whether the plan/programme could have significant impacts on the populations of cetaceans of concern as a result of those potential cumulative effects. Such an assessment would better inform the need and characteristics of possible measures. In addition, recent amendments to the Offshore Marine Regulations (2007) and to JNCC's guidance mean we are no longer confident the main conclusion that "it seems improbable that significant effects as regulated by the Regulations will occur" is valid. We are also concerned that the SEA has not identified all the key areas of marine mammal sensitivity. Detailed comments on these issues are provided within agency specific responses.
3. Birds - In our view there is significant uncertainty with respect to the likely impacts of implementing the plan/programme on birds. For example, locations of marine SPAs have yet to be finalised. We believe the evidence base for likely cumulative impacts at the strategic/population level needs to be improved and that the recommendations could more clearly reflect this need.
4. Recommendations - The recommendations contained in Section 6 of the Environmental Report are key to ensuring the plan/programme is effectively achieved. We provide, in our respective agency responses, comments where we believe there are gaps in the recommendations or where existing wording could be improved. As a general principle we believe that recommendations that seek to address uncertainty by improving the evidence base should take precedence over those that apply the precautionary principle, unless there are overriding reasons, for example concerning cost/benefit. We are also surprised the recommendations are not presented in any logical manner. A more logical sequence would help the recommendations to be better understood and implemented.
5. Implementation - A critical issue for the draft plan/programme is that the recommendations are implemented effectively. We believe some of the recommendations will need to be managed through an implementation plan. We recognise the challenges this presents and are keen to continue to work collaboratively with DECC, Crown Estate and industries to facilitate a successful outcome.

Finally, we offer a number of observations on the current SEA process, which we recommend are considered during implementation and for subsequent strategic assessment of marine energy development.

6. Assessment of Alternatives - The plan considered in this SEA includes only selected elements of the energy generation infrastructure that might contribute to the achievement of UK carbon reduction targets; potentially significant elements sit outside the plan and therefore the SEA (e.g. the Severn Tidal Power Project and other wave & tidal stream development). As stated in our comments on the scoping of the SEA in February 2008, we are concerned that by considering only selected elements of offshore energy generation, DECC have limited the assessment of alternatives and therefore risk failing to bring forward the technologies or mix of technologies that are least damaging to the environment.
7. Spatial Planning and the SEA – Spatial planning is becoming an increasingly important tool for understanding and delivering marine management. We believe that to implement the recommendations effectively spatial planning will be essential. We are aware of the approach taken by The Crown Estate to identify areas that may be suitable for development as part of Round 3. Developing this approach further, in collaboration with the agencies to address environmental risks will be welcomed.
8. The SEA Recommendations and Resourcing – Implementation of the SEA's recommendations will provide more precise outputs on the identification and agreement of areas suitable for development (as outlined above). As part of this process engaging statutory advisors at a strategic level should streamline the level of commitment required at the project level. This would help address the potential for bottlenecks in the energy consenting process.

JNCC and the country agencies are committed to enabling the successful implementation of the draft plan/programme. We welcome the considerable amount of work that has been undertaken to date under the SEA process to enable understanding of the environmental impacts. We look forward to continuing to work with DECC and other stakeholders to help address our comments as part of the Offshore Energy SEA process, and to subsequently facilitate the implementation of the recommendations.

More detailed comments from the JNCC on the SEA are provided in the attached annexes and by the country agencies in their responses. Should you have any specific queries with regard to this response please get in touch with Lucy Greenhill or myself in the first instance.

Yours sincerely,

Finlay Bennet

Attached: Annex A – Specific comments on Marine Mammals, Birds and Benthos *p.4*  
Annex B – Additional General Comments *p.11*  
Annex C – Specific Comments on the Recommendations and Monitoring *p.14*  
Annex D – Comments on Appendices *p.18*

## Annexes - JNCC Specific Comments

### Annex A - Specific comments on Marine Mammals, Birds and Benthos

This annex contains JNCC's detailed comments relating to the marine mammals, birds and benthos sections of the Environmental Report.

#### **A1. Marine Mammals**

##### A1.1 Assessment of the risk of significant impacts at the population-level

The impact assessment carried out in the SEA concluded that the potential acoustic effects most likely to be significant are those of pulse sources associated with seismic survey and pile-driving, a conclusion that JNCC agrees with. However, whilst the assessment followed a rationale that we found adequate (page 90), we found it fell short of adequately assessing whether the planned years of seismic survey exploration together with the construction of offshore windfarms could have significant impacts on the populations of cetaceans of concern. We think that this is mainly because:

- a) the existing evidence on the effects of the construction of offshore windfarms on harbour porpoises was not incorporated in the assessment,
- b) the PCAD<sup>1</sup> framework, which is currently recognised as the best way to assess the potential impacts to marine mammals from noise at the population level, was not even mentioned in the SEA report, and;
- c) the possible scenarios of windfarm construction were not explored in the context of the effects on marine mammals.

These are discussed in more detail below:

##### *a) The potential effects of construction on harbour porpoises*

The SEA estimation of spatial ranges affected by pile-driving and seismic focussed on using quantitative thresholds for injury (SPL in Southall *et al.* 2007) and the (US) National Marine Fisheries Service thresholds for "harassment". JNCC would have liked to have also seen a consideration of Sound Exposure Levels in the assessment of risk of injury. In addition, the assessment of disturbance is based on TTS onset for single pulses. While this general approach is welcomed and partially informs mitigation measures to avoid injury we are not so confident that the approach was wholly adequate to assess the spatial ranges to which disturbance may extend. JNCC does not consider that the TTS-onset ('measurable transient effect on hearing') for single pulses can be used as a disturbance criterion for multi-pulsed sounds such as those produced by pile driving and seismic. Multi-pulsed sounds will have more than a transient effect on the animals (see Southall *et al.*, 2007 and JNCC Guidance 2009) and therefore using this threshold would not be precautionary. The sound level threshold for behavioural disturbance as a result of multi-pulsed sounds will lie below the single pulse threshold for TTS-onset. Therefore the estimated ranges for behavioural responses (Table 5.1) should be re-calculated based on lower levels for each of the species of concern. It is expected that these ranges will be greater than those estimated here. Harbour porpoises in particular seem sensitive to a wide range of sounds at very low exposure Received Levels (~90 to 120 dB re: 1 µPa). All recorded exposures exceeding 140

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<sup>1</sup> PCAD – Population Consequences of Acoustic Disturbance (NRC 2005. Marine Mammal Populations and Ocean Noise: Determining when noise causes biologically significant effects. National Academies Press, Washington, D.C.)

dB re: 1 µPa induced profound and sustained avoidance behaviour in wild animals of this species. This behavioural response, if recurrent in subsequent days/weeks would be likely to constitute a significant effect on local abundance and distribution under the disturbance regulations.

We think that the SEA should consider the evidence from the Danish studies (Tougaard *et al.*, 2006a and Tougaard *et al.*, 2006b<sup>2</sup>) in the assessment of the risk of disturbance. The monitoring studies associated with the construction of these windfarms showed a significant avoidance reaction to the pile driving noise for an area of at least 15km around the noise source. Even if this effect was short-lived and the animals returned to the area once piling had ceased (around 7 hours from the onset of piling which lasted for 70 minutes for each monopile); over the whole 5 month construction period it resulted in a displacement of animals from an area larger than 600 km<sup>2</sup>, for roughly 17% of the time. This effect would constitute non-trivial disturbance under the UK regulations (hence an offence), even though it would be unlikely to result in significant impacts at the population level. However, Tougaard *et al.*, 2006a highlights that it could become problematic if two or more windfarms are constructed close to each other at the same time. The authors warn of potential effects of several plans for windfarms being realised within a short time span in an area such as the German Bight (their example). The windfarm where this evidence was gathered, Horns Reef, was the largest windfarm in the world at the time with 80 turbines of 2MW each. In UK waters alone, the current programme of Round 3 aims to produce 25GW of energy, which could potentially result in the installation of 2500 turbines of 10MW. This could represent 30x the scale of development in Horns Reef.

The scale of the proposed developments in the North Sea (UK and neighbouring North Sea countries) with regards to the potential impacts on the harbour porpoise (and potentially seals and minke whales) cannot be taken lightly and strategic planning should be put in place to prevent the potential for displacing large numbers of animals from significant portions of the population's natural ranges, particularly in the central/southern North Sea (where most windfarms are currently planned) for large periods during the years of construction. JNCC would therefore like to see the SEA make recommendations on how/if the current programme could be achieved without causing this effect.

#### *b) Population-level assessment and the PCAD framework*

The only current framework to assess the potential impacts of noise at the population level is the PCAD framework – Population Consequences of Acoustic Disturbance (NRC 2005). JNCC recognises that it is a very difficult assessment to make and fraught with uncertainty; however PCAD provides the conceptual guidance for such an assessment. There are recent developments in knowledge that would allow at least having an idea of whether such predicted displacement of large numbers of porpoises could be of concern to the population. The results of such assessment would then inform whether certain restrictions would be needed at the strategic and regional level. Some degree of expert judgement would have to be employed, with uncertainty addressed through reasonable conservative assumptions.

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<sup>2</sup> Tougaard, J., Carstensen, J., Wisz, MS Jespersen M, Teilmann, J. Bech NI, Skov, H. S., 2006a *Harbour Porpoises on Horns Reef - Effects of the Horns Reef Wind Farm*. Final report to Vattenfall A/S. **Roskilde, Denmark**. Also available at: [www.hornsrev.dk](http://www.hornsrev.dk).

Tougaard, J., Carstensen, J., Teilmann, J., & Bech, N. I. 2006b *Final Report on the Effects of the Nysted Offshore wind farm on harbour porpoises*. Technical Report to Energi E2 A/S. NERI, Roskilde (Also available at <http://uk.nystedhavmoellepark.dk>).

Other natural and anthropogenic pressures on population conservation status would also need to be considered. Knowledge of previously 'licensed disturbances' that are relevant to the populations should also be used in the assessment.

c) *Regional and strategic scenarios of windfarm construction*

The SEA presents an analysis of past pile driving hammer strikes per regional sea, and undertakes a prediction of shot and hammer activity associated with the proposed licensing round. This is welcome and does provide a perspective of the scale of the plan/programme. The use of different Y-axis between figure 5.10 and 5.11 (estimated number of pile-driving hammer strikes for constructed and consented windfarms) does mirror the huge difference in scale of the proposed programme with relation to what has previously taken place. However, we find it difficult to relate the measure of the predicted hammer strikes to the evidence on displacement of harbour porpoises, the type of assessment we think is lacking, as mentioned above.

Even though we recognise that the lack of definition of the actual programme brings difficulties, we believe that different temporal and spatial (and even technical) scenarios of construction could be worked through at a strategic (within a population natural range) and regional sea level. These would be useful, in addition to the hammer strike estimate, to assess the extent to which there is the potential for displacing large numbers of animals from significant parts of some regional seas and from the population's natural range for a significant proportion of the next 10 years. These scenarios would be based on how long pile-driving could go on for, where and when, alternative construction methods in some areas and the resulting potential displacement and numbers affected. If certain scenarios could result in significant effects for the population (at favourable conservation status), then the scheduling, the placing, the foundation method and the available techniques for reducing noise at the source (Nehls *et al.*, 2007)<sup>3</sup>, could be considered and adapted to reduce such risk.

#### A1.2 Assessment of the Risk of a Disturbance Offence

The approach taken in the SEA generally followed the JNCC's draft guidance on deliberate disturbance (March 2008), which addressed the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in 2007) and the Offshore Marine Conservation (Natural Habitats, &c.). These Regulations have since been amended in January 2009, to remove the concept of 'significant groups,' and therefore the guidance has been revised (publication imminent).

The fact that the disturbance offence now applies to any animals rather than 'significant groups', means that the SEA conclusions that "single seismic or pile driving sources are unlikely to have a significant disturbance effect" and "it seems improbable that (...) significant effects, as regulated under the Habitat Regulations and Offshore Marine Regulations, will occur" are now not appropriate. The SEA should be reviewed to take into account the 2009 amendments and follow the JNCC Guidance of 2009.

The risk of a disturbance offence will now depend very much on the scale of such activities and the species usage of the area where the activity takes place in. The guidance states that while the disturbance resulting from individual seismic surveys lasting for 4-6 weeks would not be likely to constitute an offence, the pile-driving in the construction of large offshore windfarms, which could last for many months, could constitute offence if likely to significantly displace animals. It is likely that individual developments could be exempt from such prohibitions through the issuing of 'wildlife licences', but one should not pre-empt

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<sup>3</sup> Nehls *et al.* (2007) Assessment and costs of potential engineering solutions for the mitigation of the impacts of underwater noise arising from the construction of offshore windfarms. COWRIE report

conclusions without undertaking project-specific licence assessments (3 tests, see JNCC Guidance) and considering the potential cumulative effects of a series of exemptions.

JNCC recognises that the Effects Threshold Level (ETL) concept would be a practical measure to use, however it does not allow for an estimate of the numbers likely to be affected by the injury or disturbance. These estimates will be an essential component of the information provided by developers to allow regulators to assess whether a wildlife licence can be granted or whether the granting of the licence could be detrimental to the maintenance of the populations at Favourable Conservation Status in their natural range. Additionally, keeping a record of the number of animals potentially affected is also essential to estimate the fraction of a population potentially being exposed to injury or non-trivial disturbance in any given year in order to avoid the risk of population-level effects. This is because the larger the proportion of a population that could be affected, the larger the risk of population-level effects.

### A1.3 Potential Cumulative Effects

JNCC acknowledges that the UK provisions for species protection from disturbance might not be sufficient to deal with all the potential cumulative effects. Whereas it is now possible to regulate and keep a record of activities with the potential to cause non-trivial disturbance (that with the potential to be biologically significant, as defined in the regulations), the potential for a risk of cumulative effects to individuals and populations from multiple exposures to trivial disturbance remains unknown and therefore unregulated. An assessment should be undertaken of whether marine mammal populations in UK waters are being affected by additional cumulative effects of unregulated disturbance. JNCC recommends that this should be the starting point of a possible wider strategy of reducing particular types of noise where/if needed.

In the interim, and as a precautionary measure, JNCC considers that the concept of a pulse noise dose for certain areas could be considered further, and we suggest that placing limits on noise exposure to individuals and populations might be the most useful starting point to develop such a concept. This exposure dose would take into consideration species sensitivities and patterns in distribution and could inform the pulse dose. Simply placing limits on pulse dose without a reasonable biological justification would be likely to result in poor support and cooperation from industry and would not adequately protect species from disturbance.

### A1.4 Areas of Sensitivity for Marine Mammals

JNCC welcomes the identification of key areas of marine mammal sensitivity to inform the potential management of noise. However, it is not clear from the SEA report how these areas would be used in the planning of where to place activities. Would these be areas to avoid or areas where exposure to noise would be capped, or both? Agreeing on the objective of such list of areas will be crucial to whether it can add any value to the protection of particular species or groups of species or whether it risks adding another complex layer of assessments or measures for little benefit. For example, it might be precautionary to limit noise exposure in areas where several species occur in high numbers on a regular basis and where the noise produced by each consented activity on its own would not reach disturbance offence thresholds (hence falling through the regulatory process). Conversely, in areas where windfarms are to be constructed and only harbour porpoises and minke whales are known to frequent the area, then JNCC deems the existing regulations and related assessments (in particular the FCS test) as sufficiently robust to ensure the protection of a species and its populations.

JNCC is also not convinced that all the key areas of marine mammal sensitivity proposed are justified by the evidence presented. The list of areas, and evidence supporting it, should be reviewed. For example, the Dogger Bank is listed as a key area for harbour porpoises, but the information provided in the annex and environmental report mentions (correctly) that according to latest census (SCANS II) the whole of the southern North Sea has higher densities for this species, compared to the northern north sea and particularly with the 1994 census (SCANS) – and not the Dogger Bank in particular. If particular measures are to be associated with such 'key sensitive areas' then the identification of those areas will be quite crucial. Wrongly identifying areas would risk displacing noise to a wider area, or prolonging its duration in the long-term.

JNCC would also like to see the SEA recommend that all areas where coastal bottlenose dolphins are known to occur frequently be avoided or that a limit on potential exposure is agreed in order to avoid chronic exposure or significant displacement. For this purpose we recommend adding the following areas to the list of those identified as key areas of marine mammal sensitivity: coastal areas from the Firth of Forth to the North of England, coastal areas from Cardigan Bay to Liverpool Bay, waters off Cornwall and around the western isles of Scotland; the latter two are areas where small groups appear to be semi-resident.

## **A2. Birds**

The SEA concludes that “based on available evidence, displacement, barrier effects and collisions are all unlikely to be significant to bird populations at a strategic level”. Later it is stated that these effects are unlikely to be significant to birds at a population level (p127). It is unclear what is meant by a “strategic level,” and we have presumed that significant strategic effects implies having some form of population level effect?

Our principal concern with the SEA conclusion that there is unlikely to be a significant effect on birds, is the lack of available evidence in the form of synthesised post-construction monitoring reports from the UK. Available evidence is not appropriate for assessment of the impacts of the draft plan, due primarily to differences in scale and site characteristics. We provide further analysis and our own interpretation of the available evidence for displacement, barrier effects and collision risks. Our comments focus on identifying weaknesses and assumptions in the existing evidence base that require further work in order to manage the environmental risks they represent.

### **A2.1 Displacement effects of renewable developments**

Specific to disturbance and displacement effects, there have been very few post monitoring studies which have increased our understanding of the likely effects as a result of renewables developments. We know that post-construction studies have demonstrated that disturbance and displacement effects do occur and that these are not restricted to the immediate vicinity of the windfarm area and can extend into a buffer zone of effect. For example, the monitoring from Horns Rev showed avoidance by common scoter and auks of areas up to 4km from the windfarm site (Drewitt and Langstone, 2006). In addition, the general consensus towards the assessment of direct and indirect habitat loss effects upon seabirds from offshore windfarms is dependent upon the assumption that all birds within the area are displaced. Although this approach is the 'worst case' scenario it is the current assessment approach advocated in Maclean *et al.*, (2008). So if the SEA followed the assessment approaches advocated i.e. that all birds are displaced from windfarm licence areas, and that these die upon displacement, can the conclusion be reached at this stage that effects will not be significant?

Furthermore, one of the key issues which we consider was not given enough consideration, is that displacement effects will affect different species in different ways, and will largely be dependent upon the availability and suitability of feeding habitats to which they are displaced. For example, species with very specific habitat requirements are likely to be more vulnerable to the effects of displacement than habitat generalists. Therefore, in our view, it is not really appropriate or possible to state that displacement effects are not likely to be significant [for all species] at a strategic/population level unless the differences in ecological requirements between species are more fully understood.

### A2.3 Barrier effects

There is an urgent need for more detailed research to assess the impacts barrier effects can have on species survival and populations sizes. Until the results of such research become available any assessments made as to the significance of barrier effects, such as those made within this SEA are open to question. We would expect recommendations be made to propose research into developing a better understanding of the significance of barrier effects from renewable developments.

### A2.4 Collision risk

The outputs of collision risk modelling are, as expected, highly dependent upon the parameters that are used within any given model. Factors such as 'avoidance rates' are key to assessing when impacts are likely to be significant upon seabird populations, or upon SPAs.

We are surprised, given the uncertainty that exists in methods to assess the collision risk for offshore seabird/geese, that the SEA has made a statement that there are not likely to be any significant effects associated with collision risk (at the 'strategic' level). Work is needed to address uncertainties that are inevitable when modelling data sets and interpreting their results. We emphasise the need to consider data as it is collected to ensure that assessment (and monitoring techniques) are continually developed to be fit for purpose. In our view, an important area for improvement not explicitly picked up by the recommendations would be the use of monitoring data to inform refinement of modelling assumptions.

### A2.5 Use of a coastal buffer

The main outcome of the analysis on birds is to recommend a coastal buffer. Recommendations also need to recognise the value of having an evidence-based approach to bird sensitivities. For example, there is a possibility that impacts on birds in a particular area might be greater beyond the 12nm limit compared to within. We request emphasis instead on the need for studies of the use of the marine environment by birds, to highlight areas of importance such as feeding grounds, and the use of this information to influence location-specific decisions.

### A2.6 Cumulative effects

Assessing the cumulative effect on birds at the project level will be essential and the SEA should consider how to enable the assessment and management of these effects more strategically. For example, are there broad scale surveys which are required which will provide a better basis for project level assessment?

### A2.7 Offshore Vulnerability Index (OVI) and Data Needs

These comments overlap with those addressing Recommendations 8 and 17, below. We agreed that the OVI needs to be updated in consideration of the publicised changes in seabird numbers, distribution and breeding success. However, when incorporating new data, analysis is needed to ensure that the OVI model remains valid considering the varying methods used for data collection, e.g. the inclusion of aerial survey data. In our view industry and/or government should contribute to the required updating, including the cost of filling in any survey gaps.

Recognising the financial and time constraints of resurveying through an ESAS programme comparable to that which provided the data to inform the OVI, it may be more realistic to commission targeted ESAS surveys. Rationalisation of the spatial extent of the OVI, and therefore prioritising the data needs, may be possible by targeting areas where oil activity is prevalent, considering the risk of oil spills from drilling and production activities. We recognise that pollution arising from shipping presents a greater risk, however this approach would greatly reduce the target survey area, and the OVI data is used routinely in the management of impacts arising from oil industry activities, and not purely during incident response.

### **A3. Benthos**

#### A3.1 Justification of Evidence

Several conclusions reached in this Section are unsupported by reference to relevant scientific literature. For instance, on page 104 it is stated that “*Sabellaria* reef is probably relatively tolerant of indirect disturbance, with high potential for recovery,” a statement which we may agree with but sufficient evidence needs to be presented to demonstrate how conclusions have been drawn.

#### A3.2 Impacts on Reefs (Page 104)

The SEA identifies fishing and aggregate extraction as those activities that have the potential to directly damage *Sabellaria* reefs. Renewable and oil and gas activities can also directly impact *Sabellaria* (and other biogenic) reefs if no appropriate mitigation measures are implemented, and this should be clearly stated within the SEA. We would also like to highlight that marine aggregate extraction activities in UK waters are subject to strict licence controls, and dredging permissions will only be issued if the proposed extraction activities are not considered to result in unacceptable environmental impacts. In this respect, operators are advised to apply mitigation measures to avoid direct damage to reef features in the first place.

The SEA only assesses the potential impacts on *Sabellaria spinulosa* reefs. Consideration should also be given to physical disturbance to other biogenic reef habitats such as *Lophelia pertusa* reefs.

## **Annex B- Additional General Comments**

This Annex provides additional, more general comments.

### **B1. Natura 2000 and Appropriate Assessment**

The probability of Appropriate Assessment being required for proposals that may adversely affect qualifying interests is recognised by the SEA, e.g. offshore wind proposals in the Dogger Bank (p155). However, the SEA does not reach any explicit and/or systematic conclusions on whether or not the plan/programme itself is likely to have a significant effect on specific qualifying interests of offshore Natura 2000 sites. Should it be considered necessary by the competent authority, JNCC is willing to work with DECC to ensure a robust audit trail for all qualifying features in the offshore sector is completed with respect to the overall plan/programme.

#### **B1.1 'Appropriate assessments' to address disturbance of coastal bottlenose dolphin populations**

JNCC does not consider that an 'Appropriate Assessment' is necessary or is the most adequate process to deal with the issue of disturbance of coastal bottlenose dolphins outside SACs. We consider that the disturbance regulations, which apply throughout the natural range of Annex IV species (e.g. all cetaceans) in UK waters, are the key framework to protect cetacean populations from non-trivial disturbance. The Appropriate Assessment process is of added value, but only relatively to avoiding significant disturbance to the species within the protected sites. The exception to this would be for activities outside the SAC that could have a significant effect on the site relative to the contribution this makes to the conservation status of the associated bottlenose dolphin population.

#### **B1.2 Future Designations of N2K sites**

A particular concern of JNCC's with respect to offshore sites is the fact that the boundaries of future offshore SPAs and a number of SACs have yet to be identified. In order to avoid an outcome whereby the plan/programme has unintended impacts on sites not yet identified, our view is that the recommendations flowing from the SEA need to address this risk in a reasonable manner. We are especially keen to ensure the SEA provides a framework that will enable developers to successfully progress project proposals within timescales that may include further evaluation during consenting if new N2K designations are proposed. Our comments, particularly on birds, should be considered in this context.

### **B2. Round 3 and the SEA (Section 2.4.3)**

The draft plan/programme will require further rounds of offshore windfarm leasing. Crown Estate's Round 3 proposals have been developed, however there is only passing reference to them in Section 2.4.3 of the Environmental Report and it is clear that Round 3 is not integrated with the SEA. Ideally, Round 3 proposals would have resulted from the outputs of the SEA, incorporating recommendations and spatial analysis, thereby providing the essential next step towards achieving the aims of the plan/programme. It would benefit all stakeholders if the SEA clarified the iterative process by which the SEA's recommendations will be accounted for in the development of Round 3. If adequate integration was not achieved at this time, the SEA could also provide recommendations on how future leasing rounds should be fully integrated into the SEA process.

### **B3. Supporting innovation of new technology (Non-Technical Summary)**

We note the observation in page ii of the Non-Technical Summary that the technology for offshore windfarms is continuing to evolve both in terms of structural options and techniques to monitor and mitigate environmental impacts. We recognise that market drivers are the principal reason for technological development, but highlight that regulators have a role to play in this. There is an opportunity for Government to collaborate with industry and research groups to facilitate innovation and ensure that new technological development are focused towards enabling environmental benefits, including at a strategic level.

An example relates to the uncertainties with respect to the impact of noise on marine mammals. These would be likely to be significantly addressed if pile driving was not required during installation, i.e. if alternative base structures were used such as gravity-base foundations. By being suitable for depths greater than 60m, alternative foundations may also increase options with respect to marine spatial planning, as this may increase the seabed area available for development of offshore windfarms. We would support a more explicitly focused recommendation for industry and government to seek ways to collaborate in order to enable development of new technologies that more effectively address environmental risks.

### **B4. Web-based Forum for Information Management**

Although in principle the JNCC supports the development of a web-based forum for exchanging information on noise production and recording wildlife licences (mentioned throughout the report; including Recommendations 7 and 22), we would not have the resources to do this. Further, at this stage of the plan developing a web-based forum might not be a priority, and the primary focus should be on working with industry through scenarios of construction and undertake an assessment of potential cumulative effects based on these.

This relates to the wider need for facilitated data exchange and information management (reference also to Recommendation 9), and new initiatives should be developed with consideration for, and in co-ordination with, UK-wide data management policy and processes such as those covered by the Marine Environmental Data Information Network (MEDIN). Perhaps the SEA could provide a more direct recommendation about the needs of data management/sharing across the marine planning community?

### **B5. Biodiversity Indicators (Section 3.5 - SEA Objectives)**

The SEA proposes as a biodiversity indicator, *“For selected ‘valued ecosystem components’ no loss of diversity or decline in population (measures as % of relevant biogeographic population) attributable to offshore oil and gas and wind farm activities and promotion of recovery wherever possible”* (Table 3.1). It is unclear what the SEA has considered to be “valued ecosystem components”. Furthermore, no recommendations are presented for how biogeographic populations of these “valued ecosystem components” could be estimated and subsequently monitored. If referring to protected species such as EPS, impacts should be assessed against Favourable Conservation Status (which in certain cases is related to % of the population), however, at the current state of knowledge, measuring the % of the relevant biogeographic populations for some species will be very difficult, if not impossible.

Finally, it will be very difficult to measure an indicator capable of distinguishing impacts attributable to offshore renewable and oil and gas activities from stresses caused by other anthropogenic impacts and natural changes.

## **B6. Relevant existing environmental problems (Section 4.3)**

Table 4.1 (titled '*Environmental problems relevant to offshore oil and gas licensing and wind leasing*') is not clear, and we would welcome clarification of who is responsible for addressing these implications and how they will be delivered through the SEA Recommendations. For example, consider the problem "*vulnerability of seabirds and coastal water birds to pollution and disturbance from shipping and industry,*" where the implication is to: "*Review areas to be licensed for oil and gas or offshore wind activities and ensure awareness so that potential activities do not exacerbate problem.*" What do statements such as these mean, who is responsible for ensuring awareness, and how will this be delivered? We suggest that reference be made to the recommendations, and greater detail provided as to whom should be responsible for addressing these.

Again in Table 4.1, it is not clear how the proposed measure of "*Maintain awareness of research developments. Review potential blocks to be offered and ensure licensee awareness so that potential activities do not exacerbate problems,*" would be of any value to address the issue of "*Marine mammal sensitivity to disturbance, contaminants and disease.*" The statement is general and provides no helpful indication of what could be done to prevent disturbance, contamination and disease in marine mammals.

## **B7. EMF (Section 5.5.5)**

The final paragraph on page 127 recommends that the research needs with respect to electromagnetic fields should be reviewed in the context of the DEFRA reviews of Round 1 and Round 2 monitoring. JNCC agree with this comment. It is not clear that this recommendation has been captured in section 6 of the report on Recommendations and Monitoring.

## **B8. Next Steps – Section 7**

As part of the next steps it would be helpful if a vision for future SEAs of the offshore energy sector is provided. For example, if it is the intention to continue the integration of energy sources into single SEAs, how will future SEAs address wave and tidal?

## **Annex C – Specific Comments on the Recommendations and Monitoring**

This section provides detailed comments on Section 6, Recommendations and Monitoring.

### **C1. SEA Recommendations**

#### **C1.1 Ownership of the Recommendations**

JNCC welcomes the impact based approach contained within the SEA. In order to ensure that industry receives the maximum benefit from this approach it would be helpful if the implementation of the recommendations relates back to each of the oil and gas, carbon capture and storage and offshore wind sectors. The interpretation and recommendations relate mostly to offshore wind. This is understandable given the need to enable this new technology to meet targets set within the draft plan/programme. It does however mean that at a superficial level the other industries appear somewhat overlooked. For the recommendations to be effective it will be essential that there is clear ownership for their implementation, whether by government departments, agencies or by industry.

#### **C1.2 Implementing the Recommendations**

We welcome the provision of the broad range of recommendations as an outcome of the SEA process. It is our view that to be effective, the recommendations need to be incorporated into a sufficiently resourced implementation plan that can be effectively monitored and reviewed.

#### **C1.3 Presentation of the Recommendations**

The 23 recommendations could be presented in a manner that would enable clearer cross-referencing. The provision of a rationale that enables the recommendations to be considered in a more logical order than is currently apparent would facilitate an effective overview of their purpose and scope. For example, we have identified 3 main categories for the recommendations:

- The majority are concerned with addressing environmental risk by managing uncertainty (3,4,6,7,8,9,11,17,18,19,21 & 22);
- four principally relate to spatial planning (1,2,14,15);
- six to best practice/mitigation (5,10,12,13,20 & 23);
- recommendation 16 relates to clarifying statutory process.

For the recommendations concerned with addressing environmental risk, a number recommend improving the evidence base whilst others provide a rationale for applying the precautionary principle. JNCC consider that prioritising the recommendations would enable environmental risks that could potentially jeopardise implementation of the draft programme/plan to be more effectively managed. In that context those risks that can be addressed by an improved evidence base should be a priority for action. Ideally, future iterations of both spatial planning and best practice/mitigation recommendations will more effectively take account of environmental risk as uncertainty is addressed. The need for precautionary recommendations will be progressively minimised unless there is consensus that the benefits of a precautionary approach outweighs the costs/benefit of addressing uncertainty.

It may also be possible to summarise the recommendations within a table that clarifies to which sectors of offshore energy they relate and how they are to be implemented, resourced

and monitored. A more structured approach would help increase confidence that the recommendations can be acted upon and prioritised with a view to effective implementation.

#### C1.4 Recommendations arising from Supporting Evidence

The SEA describes the conclusions of several COWRIE studies without attempting to critically review those and come up with the specific recommendations from those studies that should be endorsed by the SEA Programme. For example, the SEA describes in section 5.3.4. the recommendations by Diederich *et al.*, (2008) for monitoring the potential impacts of windfarm construction on marine mammals, but it is not clear whether the SEA is recommending their adoption. The same comment applies for the description of the Nehls *et al.*, (2007) study on the effectiveness and costs of potential engineering solutions for the mitigation of the impacts of underwater noise arising from the construction of offshore windfarms. It would be useful if the SEA derived clear recommendations or endorsement of the studies reviewed.

#### C1.5 The Recommendations – Specific comments

- Recommendations 3 – In JNCC’s view, industry and regulators would benefit from clarification on the use of the precautionary principle, including how it is incorporated into ‘adaptive management,’ to effectively manage environmental risk. It would be helpful to develop some criteria that would enable decisions about when the precautionary principle should be used. Further, and more specifically, a reference here to the report section detailing the “areas known to be of key importance” is necessary.
- Recommendation 4 - Regarding the recommendation for a 12nm buffer zone around the coast, the value of an evidenced based approach to EIA of individual proposals should be acknowledged. JNCC would be concerned if this precautionary recommendation undermined an evidence based approach or if it resulted in proposals being located in offshore areas where they resulted in greater impacts. In addition, the 12nm buffer zone appears to be inconsistent with the licensing round currently being progressed in Scottish coastal waters and with Rounds 1 & 2.
- Recommendation 6 – JNCC recommend that in the final sentence “DECC” should be replaced with “relevant competent authority”, given that DECC will not be the consenting authority for all projects e.g. offshore wind over 100MW. We consider that further clarity on the consenting process would be valuable to industry, particularly detailing timescales for consenting, the role of the IPC and how appropriate assessment fits within the overall process for consenting (including the time required for any public inquiries).
- Recommendation 7 – We support the cross-industry co-ordination indicated in this recommendation but whilst willing to provide what support we can to enable this to happen, JNCC do not currently have the resources to host a web based forum (see related comments in B.4, above).
- Recommendation 8 – We are also concerned about the lack of recent data on waterbirds in offshore areas. However, in the current format this recommendation does not offer any viable solution as to how up-to-date waterbird data in the offshore environment can be obtained. It puts the onus on developers to obtain this information. Whilst it may be appropriate for renewable developers to collect ornithological data for the purposes of their baseline prior to a development,

individual oil and gas companies are not normally expected to collect seabird survey data before any developments.

Further, the current wording of this recommendation does not highlight the need for a collaborative approach between industry, Crown Estate and/or government to contribute to the collection of offshore seabird information. Offshore developers will inevitably focus on relatively localised areas of search, and if there is limited spatial coverage it is not always possible to make a valid comparison with the immediate vicinity. There is an opportunity for survey effort to be focused on spatial and temporal gaps such as those which have been identified through the SEA gap-analysis process. We would support proposals to fund organisations that can carry out European Seabirds At Sea (ESAS) type surveys. A priority should be to acquire data in areas of potential developer interest that have old or insufficient data.

- Recommendation 9 – We agree that there is a need to enhance datasets that will support future marine spatial planning. Government should consider the coordination of the several existing databases e.g. MEDIN & UKDMOS, its resource implications and an implementation strategy as a priority.
- Recommendation 11 - Regarding areas to the west of Hebrides, it is not clear what is being proposed to address the paucity of information or what criteria might be used to decide when sufficient information has been collated.
- Recommendation 14 – Whilst acknowledging the potential to reduce spatial conflict we consider it is also important to balance this against potential adverse impacts of co-locating renewable energy developments and Marine Protected Areas. There is a significant challenge in providing a robust evidence base that the objectives of both uses are coincident. The risk of a renewable energy development helping to meet conservation benefits of certain conservation features but potentially damaging others also needs to be recognised. There may be some Marine Protected Areas that are unsuitable for renewable energy development due to the particular conservation objectives for the site.
- Recommendation 15 – Although we are in agreement that with robust evidence, it is likely that developments can proceed in protected areas (and that future SPA/SAC designations can be made without significant effect on developing projects), there may be areas where development is deemed not suitable following an Appropriate Assessment, and this should be explicit here.
- Recommendation 17 – (This response has some overlap with A2.7 and that given to recommendation 8). JNCC agree that the Offshore Vulnerability Index (for the oil industry) should be updated in light of aerial and boat based survey data. Incorporating aerial seabird information into the ESAS database (which was used to develop the OVI) is possible providing that there is an accurate method developed for this (which in principle can be developed). Clarification of who would undertake a review and the allocation of resources is required.

With respect to the development of a Wind Farm Sensitivity Index there are particular challenges that need to be addressed, particularly the uncertainties involved due to the lack of data and the science of impact assessment. Such an index conceivably has the potential to inform temporal decisions such as construction timings, and determining when periods of shut down may be appropriate to mitigate collision risk (during migrations), but the level of detail needed for this would be equivalent to EIA resolution studies and therefore would be better assessed at this stage. Primarily,

JNCC consider that emphasis should be on improving baseline knowledge, potentially through regional level assessments, to highlight key species of concerns for siting decisions and in respect of consenting decisions.

- Recommendation 21 – Regarding increased understanding from site surveys and studies, it is not clear how the costs of carrying out this useful piece of work will be met.
- Recommendation 22 – JNCC welcome the consideration of approaches to address the potential for cumulative effects of noise on marine mammals. However, the proposal to establish operational criteria in key sensitive areas needs careful consideration and might only be useful in certain situations. Clarity would be welcomed on how this would add value and could be achieved through the current regulatory framework, as proposed. (See B4 for comments on the web-based forum).
- Recommendation 23 – Regarding the Habitats Directive, we agree that the adoption of consistent guidance should prove helpful. In that context it will be important to note the technical differences in devolved Scottish statute. Guidance to industry on if/how these technical differences will affect their management of environmental issues would be helpful.

## **C2. Monitoring (Section 6.2)**

A concern of ours relates to monitoring of impacts of windfarm construction. JNCC's understanding is that not all the monitoring recommended in relation to previous SEAs and windfarm licensing rounds has been carried out. The monitoring review of FEPA conditions for offshore wind developments currently being carried out by CEFAS should provide a useful update. There is a risk that lack of monitoring could result in delays to future projects because of continued uncertainties with respect to potential impacts, which may result in unnecessarily precautionary recommendations. In line with government initiatives to streamline the consents regime, the monitoring of construction impacts of built windfarms needs to be coordinated and focused to address these important areas of uncertainty. This needs to be more explicitly addressed as either a recommendation or in the monitoring section, under effects. Effects monitoring could more explicitly seek to address the risk of unforeseen environmental outcomes.

## **Annex D – Comments on Appendices**

This Annex contains a number of points relating to some of the Appendices of the Environmental Report.

### **D.1 Appendix 3a.2 – Benthos**

The text in this section seems disjointed and the clarity of the Regional Sea sections might have been improved if the same structure had been followed for each. Although a wealth of useful information is provided, it would be helpful to provide maps where survey results are summarised showing the area discussed, to facilitate understanding.

We have noted several inaccuracies in the text, some of which are summarised below. We recommend that the Appendix is checked thoroughly before finalising.

Specific comments:

D1.1 In some of the Regional Sea sections, benthic habitats and communities are described separately for “offshore” and “nearshore” areas. In a regulatory context, the offshore area comprises waters beyond 12nm. It is unclear whether the SEA uses the same definition. We therefore recommend clarifying what is meant by “offshore” and “nearshore”.

D1.2 Page 19 (A3a.2.4.2): Both the Braemar and Scanner pockmark areas have been approved by the UK Government for designation as SAC. They were submitted to the EU Commission in August 2008 and are currently candidate SACs.

D1.3 Page 21, paragraphs 2 & 3 (A3a.2.5.1): These paragraphs describe statistical analyses undertaken to characterise the epifaunal communities in the North Sea but do not provide any environmental information. It remains completely unclear which are the characterising species of the epifaunal communities of Regional Sea 2.

D1.4 Page 21 (A3a.2.5.2, Offshore sandbanks): CEFAS, BGS and Envision Ltd. on behalf of JNCC have recently completed an information gathering exercise that provides better resolution of the geomorphological and biological baseline of the Dogger Bank dSAC<sup>4</sup>. This new information should be taken into account prior to finalising the SEA document. Copies of the report are available on request from JNCC’s Marine Protected Site Team ([offshore@jncc.gov.uk](mailto:offshore@jncc.gov.uk)).

D1.5 Page 25 (A3a.2.6.1) & Page 26/27 (A3a.2.6.2): Information from the Eastern English Channel Marine Habitat Map project (James *et al.*, 2007) should have been used and referenced as an additional source of information for the Section covering Regional Sea 3<sup>5</sup>.

D1.6 Page 56 (A3a.2.12.3, Banks and seamounts): We consider that more information on the Hatton Bank should be provided within the final report. A comprehensive summary on the environmental baseline of the Hatton Bank can be found in the SAC Selection Assessment document for the Hatton Bank dSAC ([http://www.jncc.gov.uk/pdf/HattonBank\\_SelectionAssessment\\_1.0.pdf](http://www.jncc.gov.uk/pdf/HattonBank_SelectionAssessment_1.0.pdf)).

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<sup>4</sup> Diesing, M, Ware, S., Foster-Smith, R., Stewart, H., Long, D, Vanstaen, K., Forster, R. and Morando, A. (2009). Understanding the marine environment – seabed habitat investigations of the Dogger Bank offshore draft SAC. Joint Nature Conservation Committee, Peterborough. JNCC Report No. 429, 89 pp., 5 Appendices.

<sup>5</sup> James, J.W.C., Coggan, R.A., Blyth-Skyrme, V.J., Morando, A., Birchenough, S.N.R., Bee, E., Limpenny, D.S., Verling, E., Vanstaen, K., Pearce, B., Johnston, C.M., Rocks, K.F., Philpott, S.L. and Rees, H.L. (2007). Eastern English Channel Marine Habitat Map. Sci. Ser. Tech Rep., Cefas Lowestoft, 139: 191pp.

D1.7 Page 57 (A3a.2.13.1, *Sabellaria* reefs): References should be provided for the ecological functioning and distribution of *Sabellaria spinulosa* reef (paragraph one & two of this section).

D1.8 General: It should be noted that both Natural England and the JNCC will be commencing consultation (on behalf of Defra) on the designation of a series of new SACs. Information on these sites will shortly be available (end of April 2009) on the Natural England and JNCC websites. We consider that the final SEA report should consider these new potential conservation sites.

## **D2. Appendix 3b – Geology, Substrates & Coastal Geomorphology**

D2.1 Page 266 (A3b.3.5, Reefs): The SEA correctly identifies Pobie Bank as an area containing potential Annex 1 reef habitat. Please note that JNCC are currently reviewing the results of a contract that analyses existing data from surveys conducted on Pobie Bank.

D2.2 Page 271 (A3b.3.9, Sandbanks and sandwaves): The SEA states that “The covering of sandy sediments in shallower <20m depth areas to the south west and its associated benthic fauna ... falls within the Annex I classification”. Please be aware that the 20m depth contour does not define the shallow sandbank feature for which the Dogger Bank dSAC is recommended. The 20m depth contour has been used by JNCC, following European guidance, as an indicator to help identify areas which may qualify under Annex I of the Habitats Directive as ‘Sandbanks which are slightly covered by seawater all the time’. Such sandbanks can extend beneath 20m below chart datum where these areas are part of the feature and host its biological assemblages - and this is the case for the Dogger Bank dSAC. We would welcome if this paragraph could be amended considering the above comments. This also applies to other sections of the SEA where reference is made to the 20m contour.

D2.3 Page 274 (A3b.4.3 & A3b.10.1, Reefs and seabed features): We note that the SEA refers to Johnston *et al.*, 2002 as the main reference for the spatial distribution of potential Annex I habitats in UK waters. Please be aware that since publication of this report substantial progress has been made with regard to the identification of Annex I habitat, and we consider that this should be acknowledged in the SEA. Up-to date information on the marine SAC work programme can be found at JNCC’s website and Committee Papers (follow links at <http://www.jncc.gov.uk/page-1445> & <http://www.jncc.gov.uk/page-2671>). Within the Eastern English Channel, the Median Deep is no longer under consideration as potential SAC for Annex I reef habitat (<http://www.jncc.gov.uk/pdf/comm06n09.pdf>) but the Wight-Barfleur reef is currently classified as an Area of Search (AoS) containing potential Annex I geogenic reef habitat ([http://www.jncc.gov.uk/PDF/comm\\_08P14a.pdf](http://www.jncc.gov.uk/PDF/comm_08P14a.pdf)). Within the Rockall Trough & Bank Regional Sea, the Anton Dohrn and George Bligh area are currently classified as offshore AoS for bedrock reef. Hatton Bank has now been formerly advised to Defra as dSAC.

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**From:** Kate Eldridge  
**Sent:** 07 February 2009 15:03  
**To:** sea.2009@berr.gsi.gov.uk  
**Subject:** Offshore Energy SEA Consultation

Dear Sirs,

I am in very much favour of the aims to reduce the UK's CO2 emissions and improve our energy security so we are not as reliant on foreign countries/companies for our energy requirements.

I support offshore wind energy and the plans to enable further rounds of offshore wind farm leasing in the UK Renewable Energy Zone and the territorial waters of England and Wales with the objective of achieving some 25GW of additional generation capacity by 2020. I agree that there should be buffer zones to take into account local wildlife but the target of 25GW should still be met. As the UK's target is 15% of energy from renewables by 2020, will 25GW be enough, taking into account energy use reductions, renewable energy generation from onshore wind and solar power?

With regard to offshore oil and gas, I would prefer that the UK made use of its own oil and gas reserves rather than relying on other countries, however, I do not agree that the UK should be committed to a prosperous oil and gas industry. The industries should be winding down as the UK improves energy efficiency and derives greater proportions from renewables. In relation to gas storage, I agree that resilience of supply should be maintained to prevent gaps during cold times.

Many thanks  
Kate Eldridge  
Hazel Grove

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**From:** Renata.Gavelkova  
**Sent:** 27 February 2009 12:27  
**To:** sea.2009@berr.gsi.gov.uk  
**Subject:** Odp: UK Offshore Energy - Strategic Environmental Assessment

Good afternoon,

on behalf of the Ministry of the Environment of the Czech Republic, we appreciate that you've provided us the opportunity to participate in the SEA process in UK. The Department of environmental impact assessment, unit of SEA came to the conclusion that draft plan/programme to enable further leasing for offshore wind and licensing for offshore oil and gas, including the underground storage of combustible gas in partially depleted oil/gas reservoirs can't has a significant effect on environment in the Czech Republic. Therefore, **the Czech Republic doesn't wish to comment** on the Environmental Report or the draft plan/programme in question.

Best regards,

Renata Gavelková  
Department of environmental impact assessment  
unit of SEA  
Ministry of Environment of the Czech republic  
Vršovická 65, 100 10 Praha 10



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RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ÉCOLOGIE, DE L'ÉNERGIE,  
DU DÉVELOPPEMENT DURABLE ET DE L'AMÉNAGEMENT DU TERRITOIRE

Commissariat Général au Développement Durable

Paris, le **20 AVR. 2009**

Service de l'Économie, de l'Évaluation  
et de l'Intégration du Développement Durable

Sous-direction de l'Intégration des Démarches  
de Développement Durable dans les Politiques Publiques

Bureau de l'Agriculture, de l'Industrie et des Infrastructures  
Énergétiques

La Commissaire générale au développement  
durable

au

Département Britannique de l'Énergie et du  
Changement Climatique

Référence : IDDPP3 / IDDPP3-09-44-YA\_Avis programme UK\_v3.doc  
Vos réf. :

Affaire suivie par : Yvan Aujollet  
yvan.aujollet@developpement-durable.gouv.fr  
Tél. 01.40.81.85.83 - Fax :

Objet : Avis sur le Plan/programme offshore britannique (art 7 directive 2001/42/CE)

La directive 2001/42/CE relative à l'évaluation des incidences de certains plans et programmes sur l'environnement (transposée par ordonnance n°2004-489 du 3 juin 2004) prévoit l'évaluation de l'impact environnemental d'un certain nombre de plans et programmes afin d'intégrer les impacts environnementaux dans la conception même de ces plans et programmes.

Conformément à l'article 7 de la directive 2001/42/CE, le Département anglais de l'Énergie et du Changement Climatique a saisi par message électronique (copie en annexe), le 27 janvier 2009, les États membres de l'Union Européenne pour qu'ils émettent un avis **avant le 22 avril 2009** sur un projet de Plan/Programme marin de prospection off-shore (éolien, pétrole, gaz et stockage de gaz) dans les eaux côtières et territoriales britanniques.

Dans ce cadre, vous trouverez ci-joint l'avis établi par les autorités françaises en charge de l'évaluation environnementale.

L'examen du dossier que vous m'avez fait parvenir m'amène à formuler plusieurs remarques.

### 1. Cartographie

D'après les cartographies contenues dans ce plan, les zones de prospection jugées favorables aux projets éoliens, pétroliers et gaziers se limitent actuellement à la mer territoriale britannique. Ces éléments ne présentent pas de difficulté particulière au regard de nos préoccupations nationales.

Néanmoins, la zone énergie renouvelable (ERZ) définie par l'« Energy Act 2004 » qui s'étend de 12 à 200 milles pourrait susciter des inquiétudes, liées notamment à l'impact que les futures installations éoliennes offshore sont susceptibles d'avoir sur le trafic maritime et les rails de navigation. L'ERZ, qui s'appuie sur les limites du plateau continental, devrait permettre avec l'évolution des techniques d'implantation la mise en place de parcs éoliens dans une zone où le trafic maritime est particulièrement dense.

**Présent  
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Or, les effets des champs d'éoliennes sur les instruments de radionavigation des navires sont loin aujourd'hui d'être techniquement maîtrisés. Les préconisations définies par les autorités britanniques en la matière ne permettent que d'atténuer les effets de masquages et les phénomènes de doubles échos produits par les champs d'éoliennes sur les écrans radars.

Si dans un futur proche, les autorités britanniques envisageaient l'implantation de parcs éoliens en ERZ dans une zone de fort trafic maritime, il conviendrait dès lors d'être vigilant sur les impératifs de sécurité maritime.

## 2. Impact sur les zones sensibles des eaux marines françaises (sites Natura 2000, convention OSPAR)

En application des directives communautaires « Habitats-faune-flore » et « Oiseaux », les Etats-membres se sont engagés à constituer un réseau cohérent de sites Natura 2000 en mer d'ici mi-2008. La France a donc lancé un processus lui permettant de proposer un ensemble cohérent de sites à l'automne 2008, sur la base des meilleures informations scientifiques disponibles. Ainsi, suite à la circulaire du 20 novembre 2007, les préfets ont mis en consultation 100 projets de sites Natura 2000 en mer. Parmi les 100 propositions, 76 sites Natura 2000 en mer (29 Zones de Protection Spéciales et 47 propositions de Site d'Importance Communautaire) ont été notifiées à la Commission européenne le 31 octobre 2008 (voir <http://www.natura2000.fr/>), 4 projets de sites nécessitent l'élaboration d'une proposition commune (désignation et gestion) avec le Royaume-Uni (« Ridens et dunes hydrauliques du Détroit du Pas de Calais ») et l'Espagne. D'autres projets de sites en mer sont également en cours de préparation en vue d'un envoi prochain à la Commission européenne (voir <http://www.aieres-marines.fr/>).

En ce qui concerne les sites Natura français (4 potentiellement) à proximité des sites britanniques, le document proposé devra faire l'analyse des impacts susceptibles d'affecter de manière significative les habitats et espèces ayant justifié la désignation des sites par la France.

Il a été noté que le document britannique s'est engagé à effectuer une évaluation des incidences Natura 2000.

Natura 2000, dans une logique de développement durable, vise à concilier les enjeux de développement économique avec la préservation de milieux naturels remarquables. Ce dispositif n'interdit donc pas, a priori, le maintien, le développement ou l'installation d'activités économiques. Il prévoit par contre que tout projet de travaux ou d'aménagement est soumis à une évaluation de ses incidences écologiques. S'il s'avère que le projet ne porte pas atteinte à l'intégrité du site, il peut être autorisé. Dans la négative, le projet sera soumis aux conditions fixées par l'article L.414-4 du code de l'environnement.

De plus, les programmes ou projets situés hors d'un site Natura 2000 peuvent rentrer dans le champ de l'obligation de réaliser une évaluation d'incidence dans la mesure où ils sont susceptibles « d'affecter de façon notable un ou plusieurs sites Natura 2000, compte tenu de la distance, de la topographie, de l'hydrographie, du fonctionnement des écosystèmes, de la nature et de l'importance du programme ou du projet, des caractéristiques du ou des sites et de leurs objectifs de conservation ».

## 3. Avis sur les impacts du Plan-Programme offshore sur le transport des sédiments et la géomorphologie des fonds marins

L'examen de l'appendice "3b- Geology, substrates and coastal geomorphology" et du rapport environnemental du document conduit, au regard des éléments présentés, à considérer que les impacts majeurs du Plan-Programme offshore sur le transport des sédiments et la géomorphologie des zones sous marines auront lieu lors de la phase d'installation des infrastructures offshore. Ils seraient, selon certaines observations, comparables aux effets produits par les vagues lors d'une très forte tempête et les bancs de sable affectés seraient stabilisés en moins de 5 ans (entre 1 et 5 années).

Néanmoins les modalités de montage des infrastructures et des mesures de mitigation (« scour protection in the form of gravel, rocks, sandbags, gabions, pre-formed concrete blocks and fronts mats ») sont de nature à réduire les impacts négatifs de l'implantation des infrastructures sur la géomorphologie des fonds marins et les transports de sédiments.

Durant la phase d'exploitation, des modifications très localisées des bancs de sédiments seront ensuite observées (formation de « bedform tail » au pied des piles). Globalement les effets sur les bancs de sable de ces activités offshore sont considérés comme mineurs voire négligeables et cela en comparaison des activités de pêche dont le effets négatifs sur les fonds sédimentaires sont largement supérieurs.

Par ailleurs, la préconisation du choix de l'alternative 3 (« to restrict the areas offered for leasing and licensing temporally or spatially ») est celle qui en terme d'impacts sur la géologie et de sédiments a le moins d'impact (« potential minor negative impact on topic »).

**Au regard des impacts ponctuels dans le temps et l'espace, on peut en déduire implicitement qu'aucun impact sur les transports de sédiments à l'échelle de la Manche et de la Mer du Nord n'est attendu et que le Plan-Programme offshore n'aura dans sa phase d'exploitation que des impacts très localisés en ce qui concerne cet aspect.**

#### 4. Conclusion

Le rapport environnemental (p. 213) conclut en disant que la troisième de trois alternatives envisagées au départ semble préférable.

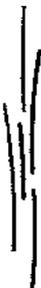
Par contre, l'évaluation stratégique n'a pu conclure qu'à une série de recommandations faute de travailler sur un plan et programme qui auraient pu mieux localiser les zones pressenties.

Ainsi, s'il est a priori souhaitable que la plupart des recommandations soient effectivement suivies, il reste une incertitude des projets qui rendront d'autant plus nécessaires les procédures de consultations transfrontalières des projets sur l'impact futur lors de leur élaboration.

P/0 La Commissaire générale  
au développement durable



MARIE-FRANÇOISE



Copie :

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- Monsieur le Directeur des Affaires Juridiques

- Monsieur le Directeur Général de l'Aménagement, du Logement et de la Nature

- Direction de l'eau et de la biodiversité
- Direction de l'habitat, de l'urbanisme et des paysages

- Monsieur le Directeur Général de la Prévention des Risques

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- Monsieur le DIREN de Basse-Normandie, déléguée de façade Manche Mer du Nord

- Messieurs les DREAL Bretagne et Nord-Pas-de-Calais.

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## **Offshore Energy SEA Consultation**

### **NATS En Route Ltd (NERL) response to UK Offshore Energy Strategic Environmental Assessment**

NATS En Route Ltd (NERL) recognises the benefits of wind turbines in addressing the UK's commitment to reduce carbon emissions and is committed to work with all stakeholders to secure a better environmental future. Indeed, as a company, we have become the first Air Navigation Service Provider to set environmental targets both for our own estate and for the ATC service we provide to our customers.

NATS has pledged that our estate will be carbon-neutral by 2011 and that by March 2020, we will have co-operated with the industry in reducing ATM CO<sub>2</sub> emissions by an average of 10% per flight (against a 2006 baseline). In this area our immediate priorities are to increase environmental awareness within our air traffic operation, identify priority areas for improvement across our network whilst continuing to deliver emissions benefits now and planning for the delivery of longer term opportunities.

NERL provides air traffic services across the UK and surrounding high seas airspace as well as across the north-eastern quadrant of the North Atlantic. To do this, it relies on a communication, navigation and surveillance (CNS) infrastructure as well as associated data processing systems. Our licence requires NERL to safeguard the CNS facilities it

operates, not only for its own air traffic services but for the benefit of the UK as a whole.

The primary concern for NERL remains aviation safety and NERL is continually striving to improve safety levels whilst meeting future ATM demands. In this respect NERL has made significant investments to ensure that these levels are maintained and this includes replacing and upgrading all of its current radars. NERL is mindful that windfarm developments can impact our CNS infrastructure, particularly our Primary Surveillance Radar (PSR) which can be affected in the following ways:

- The windfarms can return the transmitted signal and are processed as an object. This is displayed as clutter.
- The characteristic of the rotating blades defeats moving target processing and for large windfarms the resultant tracks can appear as real targets.
- If the windfarm is large, the radar receiver can become saturated and the performance of the system becomes degraded.
- The windfarm can shield aircraft operating behind the site at low level.

NERL has produced a Policy Paper which sets out in more detail, the impact of windfarm generated clutter on the safety of our Air Traffic Service, the desire to pursue a strategic UK technical solution to the problem of clutter on PSR (known as the 'Raytheon solution') and a set of criteria which a developer would need to address should they wish to pursue a site specific solution to a potential impact.<sup>1</sup> With Raytheon NERL is keen to ensure that the development and introduction of the solution is of benefit to our business by being both cost and performance neutral.

With respect to the Government's 2007 White Paper to meet the energy challenge and specifically off-shore windfarm developments, NERL is pleased that the DECC/SEA authors have recognised the impact of wind

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<sup>1</sup> [http://www.nats.co.uk/text/248/nats\\_and\\_windfarms.html](http://www.nats.co.uk/text/248/nats_and_windfarms.html)

turbines on aviation and surveillance radar and that these concerns have been captured in the consultation. Specifically within the Round 3 off-shore programme, we have assessed that some zones in the plan will have a technical and operational impact and at an early stage NERL has been actively engaged with Crown Estates to achieve a common understanding of the impact. We are both working towards a suitable mitigation that will enable renewable energy development whilst ensuring NERL continues to provide a safe and efficient air traffic service.

NERL welcomes the opportunity to respond to this consultation. Following our review of the SEA report, we would like to highlight what we believe to be a number of errors and would also be grateful for clarification on a number of points:

#### General

- Clarification of the use of NATS and NERL throughout the document. It could be easier to simply refer to us as NERL.
- Whilst the majority of our concerns are related to primary surveillance radar it should be noted that developments closer to the UK land mass have equal potential to degrade communication, navigation and secondary surveillance radar performance. These areas are included in the maps.

#### Specific

- The draft plan/programme does not include the territorial waters of Scotland and Northern Ireland (ref Non-Tech summary page ii). It should be noted that NERL comments made with respect to the offshore SEA would be relevant for these zones as well.
- The report makes reference to the CAA position on 6nm zones in and around offshore oil/gas operations. There is no mention of protection for the airspace routes joining the platforms to the mainland, which are

not seen by NERL primary surveillance radars and are often flown at turbine height. Helicopter operators would almost certainly have a view on the safety of their operations in the vicinity of these routes but we are not sure whether they or the Civil Aviation Flight Operations department have had a chance to respond to this consultation.

- Page xviii of the Non-Tech summary refers to "Area wide mitigation solutions for potential radar interference may be possible but require pilot studies and trials". Investment would also be required for these solutions.

#### Appendix 3 – Environmental Baseline page 441 A3h.3 Aviation.

- In the second paragraph wind-turbines and turbine motion do not generate an electromagnetic signal.
- In the third paragraph and the aviation related constraints map, there seems to be both 15km & 17km stated as the consultation area.
- In the fourth paragraph the reference to the Raytheon Solution should read "NERL and its radar sensor provider Raytheon have identified a number of potential solutions to mitigate the effects of wind-turbines on its en-route primary surveillance radar systems. This work has been proposed as a research and development programme under the Aviation Plan (ref BERR website) and is pending confirmation of funding availability (as of March 2009)."
- In the fourth paragraph we are not clear on the reference to 'output stage radar data'. Suggest that this is deleted.
- NERL have provided technical line of sight maps to the SEA author and the Crown Estates indicating the areas where our primary surveillance radar network will see turbines at different tip heights up to 200m. These maps provide technical line of sight from our primary surveillance radar network and zones where there is an operational impact to en-route air traffic control. These will shortly be available on the NATS web site.<sup>2</sup>

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<sup>2</sup> [http://www.nats.co.uk/text/248/nats\\_and\\_windfarms.html](http://www.nats.co.uk/text/248/nats_and_windfarms.html)

Once again thank you for providing us with the opportunity to comment on your report.

If you require clarification of any of the issues or comments we have raised in our response then our NERL safeguarding experts ([natssafeguarding@nats.co.uk](mailto:natssafeguarding@nats.co.uk)) would be more than happy to continue dialogue and provide input to any future activities.

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## OFFSHORE ENERGY SEA CONSULTATION

### 1. Introduction

The Department for Energy and Climate Change (DECC) is undertaking a public consultation on the Offshore Energy SEA Environmental Report of a draft plan/programme to enable further rounds of offshore wind leasing and offshore oil and gas licensing in UK waters.

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.

Consequently, the NFFO has considerable interest in the SEA as it relates to fisheries and particularly with respect to the future leasing of offshore wind farms.

### 2. Fisheries Displacement and Associated Impacts (Environmental Report, 5.7.1)

The SEA provides commentary and recommendations relating to the interactions with fishing activity in the Environmental Report (5.7.1, 5.7.3, 5.7.4, 5.7.5, 6.1) and the Appendix (A3h.13).

The report recommends there:

*“should be a presumption against Offshore Wind Farm developments which... occupy recognized important fishing grounds in coastal or offshore areas (where this would prevent or significantly impede previous activities) (Environmental report p213).”*

The NFFO welcomes the recognition that in principle important fishing grounds should be avoided. The report recognises that:

*“Inshore fisheries may be particularly vulnerable to spatial exclusion as these smaller vessels are unable to travel further afield to fish new grounds.” (Appendix 3h, p286)*

The NFFO support this statement, which highlights a very significant element of fleet vulnerability, and welcomes the recommendation to apply a coastal buffer of 12nm (Environmental Report 5.7.3 and 6.1) that will help to address this. However, the report does not mention other factors that can also affect vulnerability to displacement. These, for instance, include the distribution of the fisheries affected. Shellfish grounds tend to be limited in their distribution and the use of static gear (e.g. pots, static nets) in particular can limit opportunities to relocate to alternative fishing grounds as static gear may not be compatible with existing activity in the area. The availability of alternative grounds may be further limited by market access or regulations in force.

Navigation around structures to reach fishing grounds will also have operational impacts upon local fishing fleets, particularly if located in the coastal zone, although the proposed coastal buffer zone would help to limit this effect.

A displaced local fleet potentially places at risk the continued viability of the fishing port with its constituent port facilities and onshore businesses dependent upon the landings of the local fleet concerned. This would have knock-on effects to the local economy and the social fabric and skills base of affected coastal communities.

The report recognises that:

*“exclusion in some areas is likely to result in negative effects on other fishing grounds through displacement of effort.” (Environmental Report p163)*

To provide clarification to this statement, displaced effort can have environmental implications if activity is displaced from important fishing grounds to areas where environmental impacts are greater or effort is concentrated onto remaining accessible areas, leading to local resource depletion. Greater conflict with other fishing fleets can also occur as a result of displacement.

### **3. Spatial Constraints Analysis**

Although the report recognises fishing is a key spatial constraint factor (Environmental Report, p149), it was not included in the constraints mapping analysis (Environmental Report, 5.7.2). The report goes on to acknowledge that:

*“Vessel Management System (VMS) data has substantially improved understanding of the spatial and temporal distribution of larger fishing vessels (>15m from 2005); however, the distribution of smaller vessels (which*

*dominate the UK fleet by numbers) is less well understood.” (Environmental Report, P149).*

Furthermore:

*“At a strategic level, it is not feasible to identify all such grounds; small, inshore vessels operate at almost all ports throughout the UK, although those in remote and rural areas are likely to be most sensitive. At region- and site-specific levels, early consultation with relevant SFCs and fishermen, will facilitate the identification of these locally important areas.” (Environmental Report p118).*

While the NFFO believe that such a large development programme as proposed for offshore wind farms should have addressed the absence of detailed knowledge of the spatial sensitivities of the fishing industry (as is expected to occur under the Marine Conservation Zone (MCZ) planning process), the NFFO strongly endorse the aforementioned recommendation to consult at the earliest opportunity, both to address this deficiency and to follow best practice procedures.

In addition, the use of chart outputs on the spatial distribution of fishing activity prepared under the SEA should be subject to careful interpretation in collaboration with industry stakeholders, given the limitations of the underlying data used and as such outputs provide only a proxy for the spatial sensitivities of the industry as highlighted above. A more detailed description of the methodology used in deriving chart outputs from Vessel Monitoring Scheme (VMS) and log book data would highlight the limitations of the procedure used and facilitate correct interpretation. Some of these limitations include:

- Poor spatial resolution of non-VMS data units. Effort and landings data are mainly reported to ICES rectangles (approximately 30nm<sup>2</sup>).
- Limited time series of data particularly for VMS and under 10metre fleet data.
- Limited attention given to international fleet activity which would considerably alter the results of fisheries spatial analyses.
- No analysis of seasonality which would inform development planning time frames.

The NFFO believe that spatial constraints analysis should take into account the vulnerability of the fleet to displacement. Within the SEA spatial analysis of fishing activity addresses only the distribution of fishing effort. It is worthwhile noting the preparation of fisheries data layers recently produced under a COWRIE contract<sup>1</sup> which attempt to derive layers based on spatial financial value derived from effort and landings data. As with the SEA fisheries mapping work, careful interpretation is required and should be undertaken in conjunction with the fishing industry.

It should also be possible to resolve spatial data sets to facilitate the identification of stakeholders at the local level.

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<sup>1</sup> [http://www.offshorewindfarms.co.uk/Pages/Projects/Research\\_project\\_areas/Data/](http://www.offshorewindfarms.co.uk/Pages/Projects/Research_project_areas/Data/)

The Regional Advisory Councils (North Sea RAC and North Western Waters RAC) are appropriate forums to facilitate engagement with international fisheries stakeholders.

#### **4. Fishing Compatibility**

The report observes that from stakeholder discussions:

*“Risk was perceived to increase significantly if fishing within a wind farm; different fishermen have different perceptions of risk, with some willing to take more risks than others - it is considered inappropriate to define one type of gear as compatible with offshore wind farms and another as incompatible. Mobile gears such as trawls or drift netting were generally not considered possible” (Environmental Report p163).*

While the NFFO supports the statement above, we underline that coexistence between both the fishing and offshore wind industries will be best achieved by good location decision-making to minimise conflict, rather than through post-site selection mitigation measures. The presence of wind farm structures inevitably increase safety risk, and their physical presence in most cases will limit fishing opportunities.

The report recommends that:

*“To minimise habitat change and to ensure areas developed as a result of the current draft plan/programme are left fit for previous or other uses after decommissioning, the volumes of rock used in cable armouring, foundation scour protection and pipeline protection must be minimised and there should be active promotion of alternative protection methods through the consenting process.” (Environmental Report, p214)*

In the interests of minimising safety risk, the NFFO urge this recommendation should be extended as follows:

- cabling within and between windfarms and to the shore should be buried.
- a clear seabed policy should apply to the decommissioning of windfarm structures.

#### **5. Reef Effects**

The report remarks that windfarms may act as artificial reefs encouraging the abundance of fish and shellfish (p163 and Appendix A3h.13.15.1, p523). As windfarms are not presently planned together as part of a coherent marine conservation strategy, the NFFO maintain that such effects where they did occur would be incidental and such considerations should not supersede the priority to minimise spatial conflict with fishing activity through good site selection decision-making.

## **6. Electromagnetic Fields (EMF) (Environmental Report: 5.5.2.6)**

The report recognises the potential for behavioural impacts to electrosensitive species, but there presently is no conclusive evidence of its effects and:

*“further research is required to investigate the potential significance (if any) of artificial electric and magnetic fields for marine organisms.” (Environmental report p118).*

The report goes on to recommend that:

*“attention to this issue should be proportionate to the potential for impacts, e.g. careful consideration should be given to mitigation and monitoring where there are important areas for key species such as elasmobranchs” (Environmental report p118).*

In light of the lack of knowledge on EMF behavioural effects, the NFFO believe that site selection for wind farms should take into account the location of aggregations of electro-sensitive species. Some of these such as rays form important fisheries which could be affected by the dual impacts to the fish stocks themselves and the displacement effects upon fleet activity. Such areas should therefore be avoided as sites suitable for development.

## **7. Round 3 Offshore Wind Planning Process**

Notwithstanding the limited capacity of the SEA to address the sensitivities of the fishing industry with a degree of precision that would inform windfarm siting decision making effectively, the NFFO is seriously concerned that the recommendations of the SEA could be undermined or ignored in circumstances when the process of offshore leasing of Round 3 zones has commenced before the SEA was completed.

In particular, the recommendations for a coastal 12nm coastal buffer conflicts directly with current zonation proposals on the South Coast and the Bristol Channel. Furthermore, despite representations from NFFO members and constituent bodies about the sensitivities of these zones to fishing communities, no adjustments have yet been made. Copies of these representations are enclosed with this response. A chart detailing the extent of the East Yorkshire crab and lobster pot fishery is also provided as this intersects with western extent of the indicative “Hornsea” R3 zone.

In addition to these specific concerns, the NFFO believes that in principle a process of offshore leasing should take place following the strategic assessment, and running it in parallel is not compatible with good governance in marine spatial planning.

## 8. Summary

The NFFO comments can be summarised as follows with respect to the SEA as it relates to future leasing of offshore wind farms:

- Effort displacement is particularly important to the inshore fleet which is recognised by the SEA but other factors also affect fleet and fishing port vulnerability to fisheries displacement.
- Displacement can have knock-on environmental implications and impacts to other fishing fleets not directly affected by proposals.
- The SEA has not effectively addressed fisheries sensitivities in a comprehensive manner and this places emphasis upon post SEA planning to address such issues.
- Site level mitigation is no substitute for good siting decision-making that should aim to minimise spatial conflict with the fishing industry.
- As a precautionary measure, siting decisions should aim to avoid the location of important aggregations of electrosensitive fish species until there is more knowledge on the behavioural responses of those species to electromagnetic fields.
- Offshore leasing of Round 3 zones should take full account of the recommendations of the Strategic Environmental Assessment and in principle seabed leasing processes should not take place until strategic assessments are completed.

21<sup>st</sup> April 2009

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22 April 2009

Our ref: VC/JB

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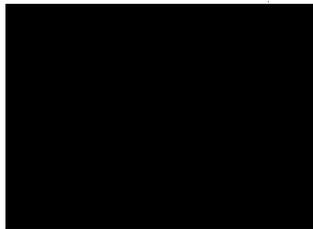
Dear Sir / Madam

**UK Offshore Energy SEA Environmental Report consultation (Strategic Environmental Assessment for Offshore Oil and Gas Licensing and Wind Leasing)**

Thank you for including Natural England in the above consultation. We attach our detailed response herewith.

Please contact [victoria.copley@naturalengland.org.uk](mailto:victoria.copley@naturalengland.org.uk) (Tel: 01929 557454) if you wish to have any follow up discussions on this response.

Yours faithfully



Rob Cooke  
Director Policy

# UK Offshore Energy SEA Environmental Report consultation (Strategic Environmental Assessment for Offshore Oil and Gas Licensing and Wind Leasing)

## Response from Natural England

### Background

*Natural England* was established under the Natural Environment and Rural Communities Act 2006. It is a non-departmental public body.

*Natural England* has been charged with the responsibility to ensure that the natural environment including its flora and fauna, land and seascapes, geology and soils are protected and improved.

*Natural England* purpose as outlined in the Act is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

This response is provided in addition to the submission made by JNCC on behalf of all of the statutory nature conservation bodies and should be read in conjunction with it.

### General Comments

We support the Government's commitment to lead with a strategic approach to offshore energy generation. We reiterate our call for a strategic assessment of the environmental impacts of all of the different energy options to determine the optimal energy mix for England at least cost to the natural environment.

Natural England believes that there is an urgent need to develop clean energy supplies in order to mitigate climate change whilst ensuring that the natural environment is not irreversibly damaged by such developments. We emphasise that the environment should not be seen as a barrier to sustainable energy deployment. We are working proactively with the energy industry to identify areas of England where sustainable energy development can proceed in a manner that avoids unacceptable impacts on the natural environment.

Our response to the SEA Environmental Report focuses on the implications of offshore wind energy leasing, as it could be the most significant spatial use of the sea and has not reached the maturity which the oil and gas sector has in the marine environment.

We support the conclusion that in general within territorial waters, there are a greater number of users and sensitive receptors. The uncertainties and information gaps are greatest offshore, so whilst the general move to locate windfarms further offshore to avoid significant impact on inshore areas is welcomed, we believe that this should remain flexible in order to progress those developments within territorial waters where it can be demonstrated that there would not be significant impact. The Report itself states that the environmental sensitivity of coastal areas is not uniform, and in certain cases new offshore wind farm projects may be acceptable closer to the coast. We believe that this does not provide clear enough guidance in identifying areas within which the risks to the environment and uncertainties are lowest (i.e. where development is most likely to be successful), and also to areas where risks and uncertainties are highest whereby developments could encounter many hurdles before consent can be successfully gained.

### Appropriate Assessment

The Environmental Report does not consider the requirement for Appropriate Assessment under the Habitats Regulations or the stage(s) in the process from SEA through to Government response to Environmental Impact Assessment of individual developments. We strongly recommend that DECC consider the need for carrying out an Appropriate Assessment at the Government response stage since the Government's response will underpin all future decisions and therefore needs to be compliant with the Habitats Regulations. We believe that an appropriate assessment is likely to be required at this stage and can be carried out with useful results. We advise that an Appropriate Assessment may also be required at the stage in which site leases are offered by the Crown Estate to those development consortia which are successful in tendering for Round 3 and future rounds. We also recognise that many individual development proposals may also require an Appropriate Assessment being carried out by the competent

authority(ies) at the time of application for development consent. Natural England will work closely with those authorities to support and advise this process.

### ***Scope of the SEA and consideration of alternatives***

Natural England believes that there is an apparent lack of recognition of the potential role of energy demand and efficiency measures. The Environmental Report refers to energy demand and efficiency, but purely as background information there does not appear to be recognition that the greater the success in demand management / energy efficiency, the less needs to be done in respect of new generation and associated environmental, economic and social costs.

We recommend that the assessment of alternatives should include wider energy efficiency measures and other forms of energy generation and not be restricted to offshore wind and oil and gas. This was raised in our scoping response and we do not consider that this has been addressed in the Environmental Report.

We suggest that the SEA should have considered potential conflicts between energy generation activities, for instance, whether oil and gas licensing should be ruled out in some blocks to provide space for renewable energies to be built.

### ***Evaluation of the effects of gas storage and oil and gas activity***

Gas storage is a new industry and has not received much attention in this SEA. Whilst our response focuses on the offshore wind generation aspect we should highlight that issues related to gas storage, including research needs have not been thoroughly flagged and assessed in the consultation document.

Natural England asks for clarification of the status of areas previously ruled out of licensing for oil and gas activities (i.e. in SEAs 1- 7) due to sensitive environmental concerns.

### ***Impacts on coastal and terrestrial infrastructure***

While some attention is paid to the impact of connecting to the onshore grid, the report could do considerably more to set out environmental objectives for this aspect of development. We believe the impacts (including cumulative) have been underestimated. Although the Environmental Report describes the potential impacts in general terms, it is not clear whether or how this has been considered within the mapping of spatial constraints.

As raised in our scoping response, it is right and proper that grid connections should be assessed at a strategic level within this SEA and that this should not be left to individual development proposals to tackle in the EIA process. It will not be possible to achieve the target plan of an additional 25GW of generation capacity by 2020 without having taken into account at this strategic level the constraints or otherwise of current and future grid capacity. There are real and serious implications of cable routes under consideration by Round 2 wind projects for sites of European nature conservation importance (see Annex 2). This will only be exacerbated by additional development proposals. This SEA has not sufficiently recognised the importance of assessing the turbines, transmission lines, sub-stations and, to some extent, access roads. The in-combination effects of both onshore and offshore issues, particularly related to wind energy developments have also not been sufficiently addressed.

The report has not highlighted the high proportion of protected and sensitive areas/landscapes in inshore/coastal locations in relation to grid connection. We strongly recommend that the sensitivities of and potential impacts on the natural environment should be an integral part of the consideration of the most suitable sites for transmission and connection with the onshore grid. Whilst the report recognises that significant expenditure is required to update and provide new infrastructure, it should also identify geographic areas where this is a particular issue. We want to avoid the situation in the Wash where decisions on cable routes are being driven by cost, based on where there is existing onshore capacity and environmental considerations are not integral to this process.

### ***Landscape implications of energy development***

We agree with the general conclusion that there are multiple sensitive receptors in coastal waters and that the bulk of current proposed development should be sited outside 12 nautical miles in order to reduce conflicts. This would especially protect AONBs, National Parks and Heritage Coasts. However, we believe that this conclusion is not evidence based since work on assessing the sensitivity of different seascape units around the coast has not been completed. As a result, areas within territorial waters which may be less sensitive visually are being potentially excluded from development. Natural England provided significant comment on the requirements for assessing land and seascape impacts in our scoping response which we do not believe has been addressed in the Environmental Report. Therefore the SEA is significantly lacking in this aspect.

### ***Potential Benefits of OWF development***

We believe that across Natural England's engagement with energy there is a need to integrate policy goals. We encourage development of win-win outcomes on energy, marine nature conservation, and climate change. The principles which underlie our approach to the identification of a network of marine conservation zones around England support this, wherein stakeholders and decision-makers will be actively involved in planning the network to increase our knowledge of the socio-economic value of areas, maximise potential benefits, facilitate buy-in and decrease conflict and objections to sites. Opportunities for win-wins with biodiversity protection and marine industry needs will be taken where possible and practical.

We therefore support the principle of co-locating Marine Protected Areas with renewable energy generation where the conservation objectives would not be compromised. We are keenly interested in actively engaging in opportunities to test and better understand the possible benefits to the local environment of renewable energy generation.

### ***Evolution of the baseline***

We welcome acknowledgement in the report that there will be some new Natura 2000 (N2K) sites at sea to be consulted on during this year. We acknowledge that boundaries of future marine Special Protection Areas and a number of Special Areas of Conservation have yet to be identified and emphasise that we wish to work with DECC to develop Impact Assessments and advice on management in relation to these sites to ensure that both conservation objectives and licensing decisions in and near these sites are robust and based on evidence.

### ***Resource implications of Round 3***

Significant resources will be required by the statutory advisors to enable future offshore windfarm development to come to fruition. We request greater clarity on what will be required of us and by when to ensure that we are able to provide quality advice at a strategic level. We emphasise the importance of ensuring that key issues are addressed at the strategic level and early on in the process so that our engagement at a project level is reduced, thereby avoiding uncertainties to developers and investors and delays in the consenting process.

Natural England welcomes the considerable level of work which has been put in to this SEA and previous SEAs which underpin it. We are committed to ensuring that the plan/programme can be implemented in ways which ensure sustainable energy generation in the future and look forward to engaging further in the process.

Further comments on particular aspects of the Environmental Report are provided in the Annex which follows.

Natural England  
22 April 2009



## ANNEX 1: Detailed comments from Natural England on the Environmental Report

### 1. Noise

#### Overall comments

We welcome the importance given by the SEA to marine mammals as a highly sensitive receptor. Piling noise generating high source levels is of potential concern, particularly for large developments with sequential piling. Prolonged seismic surveys are also of concern.

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The information and analysis presented with regards to impacts on marine mammals is highly relevant and useful. However, we believe that some of the key questions remain unanswered especially with respect to whether a cumulative dose from several projects simultaneously piling or longer duration offset piling is a greater impact on marine mammals. We also query how a noise dose could be regulated and enforced between development zones given the continually shifting construction timescales and schedules we have experienced in Rounds 1 and 2. Will the operational criteria take into account the impacts from other sectors such as shipping, especially for deeper water areas?

#### Detailed comments

5.3.2.2 We agree that longer term continuous disturbance effects from operational noise are considered less probable although given that on page 73 it is noted that for larger turbines, narrow tones with clearly defined peaks might considerably exceed background noise levels, and the zone of audibility of these rather discrete frequencies might be much larger than for relatively broadband noise, we query whether this might mean that operational noise has the potential to be more significant for Round 3. Also we note that sound travels further in deep water therefore potential for zones of impact on marine mammals could be greater for future development sites.

5.3.6 We welcome the identification of key areas of marine mammal sensitivity to inform the potential management of noise. However, how these areas will be applied to influence locations and methods of development is not clear from the SEA report.

se dolphin population in the south west of England has not been identified as sensitive.

We believe that further consideration could be given to increasing background noise levels when assessing cumulative noise impacts. P is the dominant noise source at low frequencies in most locations, and its contribution to increased ambient noise levels

### 2. Physical damage / benthos

It appears that no assessment has been made of potential impacts on cobble or rocky reef Annex I habitats or UK BAP habitats.

### 3. Birds

#### Overall comments

We are unclear what is meant by strategic or population level in this context. We do not consider that for many bird species, there is enough information to conclude that collisions and effects are all unlikely to be significant to birds at a population level. Different species have different ecological requirements and need to be assessed separately. This is why Natural England has recommended population viability analyses for several species which may be impacted upon by certain Round 2 projects. The proposed scale of future offshore wind generation is considerably greater than this.

We are surprised that there are no specific recommendations to gather more data or initiate research into particular topics such as modeling displacement or barrier effects and ways in which cumulative effects on birds might be assessed and mitigated.

Whilst we support in general the conclusion that there are more numerous and potentially greater sensitivities in coastal waters, the SEA does acknowledge that there are data gaps further offshore, especially for up to date bird distributions, therefore we are concerned that there could be areas beyond territorial waters which may be more sensitive to windfarm development than areas within where we can have greater confidence in the data available.

### **Detailed comments**

The summarised bird information would appear to be a good synopsis and would be supplemented well by the inclusion of compiled offshore wind monitoring data once the strategic monitoring review being led by CEFAS is complete.

Unfortunately the new boat based data from the SEA gaps analysis, whilst being a good snapshot is a single survey only. It was carried out a time when terns have finished nesting and will have dispersed so feeding aggregations (if present) will have been missed. It was also conducted too late to note moulting auk aggregations (although we note that a significant number were seen around Dogger).

The general seabird distribution at sea data is based on summaries from 1987/95. In view of changes in sea temperature/ fish abundance and distribution, are these likely to have changed? Are the trends still valid? This is acknowledged on pg 197, but no reinterpretation has been attempted.

The only information presented on migratory species is that from SPA counts, so there is no acknowledgement of potential issues with species such as Pink Footed Geese and Whooper Swan for instance. Little or no information is presented on key flyways, though they are mentioned. A synthesis of some of the OWF studies would have been beneficial to the chapter. Some mention is made of mass passerine migration to/from Europe.

Only three of the potential Round 3 zones are covered (Dogger & the zones in the English Channel). The areas due east of Flamborough, off east Anglia, and between Anglesea and the Isle of Man are not covered.

## **4. Seascape**

### **Overall comments**

We support the conclusion that in general within territorial waters, there are a greater number of users and sensitive receptors. However whilst the move to locate windfarms further offshore to avoid significant impact on sensitive landscapes in particular is welcomed, we believe that this should remain flexible in order to progress those developments within territorial waters which would not have a significant impact. We believe that the Environmental Report does not deal well with the implications on seascape/landscape and this is because the environmental baseline concerning landscape/seascape is inadequate and the characterisation work needed to underpin the SEA has not been carried out. The document “*Offshore Energy Strategic Environmental Assessment (SEA) Seascape Study – Identification of Seascape Units around the English coast*



encourage continuation of these initiatives and more focused research as we get a better feel for what are the greatest priorities. The Recommendations set out in the Environmental Report include some indications (we would argue incomplete) of when to get more evidence as well as when to take a precautionary approach. It is not clear whose responsibility it is to implement the recommendations and we believe that this section needs to be clearer on which recommendations are the specific responsibility of government, developers, the Crown Estate or a combination of some/all of these or other bodies. Clarity on this would ensure that the relevance and immediacy of some recommendations are not lost.

Recommendation 1 we recommend that decisions taken now for offshore wind and oil and gas minimise sterilization potential for future wave and tidal energy generation in particular.

Recommendation 2 this should include a presumption against developments which result in significant harm to biodiversity and landscape.

Recommendation 3 we support this recommendation but do not consider that the Environmental Report provides developers with sufficient spatial information to avoid areas known to be of key importance to waterbird and marine mammal populations.

Recommendation 4 s s s' s acceptable closer to the coast than 22km. It is also not clear whether the SEA is leaving it to developers to gather the more detailed site specific information or if more information is being gathered by the SEA process (the seascape baseline and sensitivity information for instance is currently work in progress).

Recommendation 5 we fully support this recommendation but feel that the evidence presented in the SEA rather undermines the need to minimise habitat change and promote alternative methods.

Recommendation 9 clarity on who is responsible for the various information gaps and by when these should be filled is needed. We recommend that completion of the seascape characterisation and sensitivity work is included.

Recommendation 14 we support this in principle although the wording is a little unclear. We recommend that further research to understand the spatial and temporal implications of co-locating renewable energy generation with future or existing marine protected areas is added to the list of information gaps in recommendation 9.

Recommendation 15 we welcome the special attention drawn to N2K sites and the recognition s - ' s s s s be placed on the regulatory steps which need to be taken mitigation may not be sufficient or appropriate in some cases.

## ANNEX 2: Case study of grid connection issues in the Wash

As part of three proposed windfarms in the Greater Wash Strategic Area, an offshore transmission corridor has been identified that will result in offshore transmission cabling through The Wash. The Wash is ecologically biodiverse and supports numerous ecosystem services and functions for a wide range of habitats and species. This is recognised both nationally and internationally, through its status as a National Nature Reserve, Site of Special Scientific Interest, Special Area of Conservation, Special Protection Area and a Wetland of importance under the Ramsar Convention.

It is the Government's policy to ensure that activities within the Wash are sustainable and do not result in an adverse effect on the integrity of the site. At the present time this site is relatively undisturbed by major industrial impacts, and unlike other large shallow inlets and bays or estuaries within the U.K., such as the Humber Estuary, it has not been impinged upon by oil and gas pipelines or other subtidal benthic cabling infrastructure (e.g. telecom cables).

Natural England recognises that as part of the Strategic Environmental Assessment carried out for Round 2, suitable areas for offshore wind farm development were identified. The Greater Wash Strategic Area was one of these three Strategic Areas. Eleven developments are proposed within this area. However, Natural England are concerned that the SEA did not adequately address the infrastructure needed to enable offshore wind farm to be developed and identify optimal investments to ensure offshore transmission connections to the national grid that would not disrupt or put at risk key environmental assets.

As a result of limited grid connection options available to the developer, transmission routes through The Wash or across the North Norfolk coast are being put forward. These routes will cross areas of high environmental and ecological value resulting in higher ecological risk than that of a connection at the Skegness substation (the maximum capacity of which will be achieved once the proposed Lynn and Inner Dowsing wind farm is connected). This is a regrettable position, and from the Government's perspective it is not clear that this is the best option and would minimise risks to higher value environmental interests.

The Government's policy on offshore windfarms through the Wash are set out in full within our responses to the individual Round 2 proposed windfarms. We have advised that there could be significant impact on the *Sabellaria spinulosa* reefs within The Wash and North Norfolk Coast SAC through damage from cabling.

Lincs OWF (consented 21-10-08) is the first of three developments which propose to cable through The Wash. Consent for two export cables which go through The Wash was granted due to mitigation measures which include micro-routing the cables around interest features. The exact route of the Lincs cables has yet to be agreed, but will need to take into account the latest data once a pre-construction survey has been undertaken. The route will also have to consider the draft Inner Dowsing, Race Bank and North Ridge SAC reefs. On its own, and with the mitigation in place, Natural England advised that the Lincs project will not have an adverse effect on the integrity of existing and draft European Marine Sites.

Docking Shoal and Race Bank have applied for consent (in January 2009) for a total of 8 more cables however the adjustments that will need to be made for Lincs project cable route will reduce the total width of the cable corridor identified for the three developments. In addition to this, Eastern Sea Fisheries Joint Committee (ESFJC) has identified an area of historically stable reef within the cable corridor. Natural England is working with ESFJC to protect this area through a *Sabellaria* fisheries byelaw and will advise that other activities with a benthic impact should avoid this area also. It is still possible that, once further benthic surveys have been completed, an

alternative route can be identified to the west of the reef, outside the currently proposed cable corridor.

# **Norfolk County Council Standards Wind Farm Proposals - Potential Requirements for inclusion in an Environmental Statement / Environmental Impact Assessment**

## **Offshore Wind Proposals**

**March 2008**

### **Scoping Report – Round 3 Consultation**

The officer-level comments below are made without prejudice and as such the County Council reserves the right to make further comments on any potential application that may be brought forward.

I would suggest the following areas ought to be addressed/covered in an Environmental Statement (ES) / Environmental Impact Assessment (EIA) relating to Round 3 schemes:

#### **(a) Landscape**

##### **1. Landscape and Visual Assessment Including Impact on Heritage Landscape**

For both off-shore and any associated on-shore developments (e.g. work compound, sub-station) the ES/EIA would need to provide:

- An assessment of the impact of the development on the landscape and seascape character, including landscape in neighbouring counties where they fall within the zone of visual influence;
- An assessment of the visual intrusion caused by the development which should include the preparation of a Zone of Visual Intrusion plan/map;
- Photomontages illustrating the impact of the development (See also Grid Connection Issues below);
- An assessment of the cumulative impact of this development taken together with the other (a) operational wind farms, (b) permitted wind farms in the area and (c) development proposals likely to come forward; and
- An assessment of the impact of the development on the heritage landscape.

##### **2. Transport and Landscape Issues**

The ES/EIA will need to evaluate the impact on the landscape of upgrading existing roads and creating new access routes in the construction and operational phase of the project (including enhanced signage) as all of this can sub-urbanise a rural landscape. It will also need to consider how these should be mitigated, perhaps through removal and reinstatement at the end of the project. Please also refer to *Highway - Traffic and Access* section.

##### **3. Tourism and Landscape Issues**

The ES/EIA will need to address the impact of the wind farm on tourism, including tourism occurring in neighbouring counties, which may be affected if the natural landscape is altered sufficiently.

##### **4. Grid Connection and Landscape Issues**

The ES/EIA will need to address whether the existing overhead lines and substation are sufficient to be able to cope with the Wind Farm, or whether there will need to be

any up-grading of any of the existing overhead power lines. The ES/EIA should also address the cumulative impact on the Grid Network arising from any existing or proposed Wind Farms/Wind Turbines in the area.

In the event that new power lines are needed (or existing power lines up-graded) or any other infrastructure needs up-grading (e.g. sub-station) there would need to be a description of the route(s) including plans at an appropriate scale incorporating, for example:

- an assessment of their impact (e.g. photomontages etc).
- details of temporary construction compounds
- identification of any sensitive features along route

The ES/EIA should consider the possibility of putting over head power lines underground in order to minimise their impact.

For further information I would suggest you contact Judith Cantell (Senior Landscape Architect) on 01603 222768. For further information on Heritage Landscape issues, please contact Mike Knights on 01603 222709.

### **(b) Ecology**

The ES/EIA will need to address the potential impact on Ecology, including in particular, impact on the following interests:

- designated sites e.g. Sites of Special Scientific Interest (SSSI), National Nature Reserves, Special Protection Areas (SPA), Special Area for Conservation (SAC), County Wildlife Sites (CWS) etc;
- Coastal and sedimentary processes;
- Marine benthos (wildlife of the seabed);
- Fish resources;
- Marine mammals; and
- Birds.

The need to consider cumulative impact is a requirement of the EIA process. This is of particular importance when considering ecological impacts. Projects to be incorporated in such an assessment must include those in the past, present and foreseeable future. Projects to be incorporated in such an assessment must include not only other potential wind farms but also other types of project taking place in the marine environment or onshore so that all elements of the infrastructure are assessed.

### **(c) Cultural Heritage and Archaeology**

These issues ought to be discussed with Norfolk Landscape Archaeology (Ken Hamilton) 01362 869275.

### **(d) Socio-economic**

It would be helpful if the ES/EIA could provide accurate figures of those likely to be employed both during construction and once the Wind Farm is fully operational. There should also be a statement as to whether the labour would be sourced from local firms or if expertise would need to be imported to the region. In addition the ES

should provide an indication of the likely impact on the local fishing industry particularly when other proposals are taken into account.

## **(e) Highway – Traffic and Access**

The comments below relate to the on-shore works associated with any offshore schemes including: construction of ancillary facilities such as sub-stations; cabling routes; and transporting and servicing of equipment.

1. **Vehicles** – define the nature of the traffic likely to be generated. In addition for the largest vehicles proposed to use each access route(s) this must include: -
  - minimum width (including unhindered horizontal space)
  - vertical clearance
  - axle weight restriction
  
2. **Access & Access Route** – description of the route (including plans at an appropriate scale incorporating swept-path surveys). Assessment to include site inspection and details of contact with the appropriate Highway Authority (including the Highways Agency for Trunk Roads where applicable). In addition: -
  - details of any staff/traffic movements/access routes;
  - detailed plans of site access/es incorporating sightline provision
  - confirmation of any weight restrictions applicable on the route together with details of contact with the relevant Bridge Engineer
  - overhead/ underground equipment – details of liaison with statutory undertakers - listing statutory undertakers consulted together with a copy of their responses
  - details of any road signs or other street furniture along each route that may need to be temporarily removed/relocated
  
3. **Impacts during construction** – are any special requirements needed and if so provide details e.g.:-
  - timing of construction works
  - removal of parked vehicles along the route(s) – full details will need to be provided – including whether or not alternative parking arrangements are being offered or bus services provided in lieu of potential loss of ability to use private cars
  - removal and reinstatement of hedgerows – since these are usually in private ownership has contact been made with the owners. Has formal legal agreement been reached or are negotiations pending/ in progress
  - identification of the highway boundary along the construction traffic route together with verification from the Highway Authority
  - confirmation of whether the identified route involves the acquisition of third party land and if so has consent been given, (verbal or has a formal legal agreement been entered into)
  - confirmation of any required third party easements – e.g. will construction vehicles need to overhang ditches (these are usually in private ownership), private hedges or open land adjacent to the highway. If so, details of consent (verbal or a formal written agreement)
  - any modifications required to the alignment of the carriageway or verges/over-runs

- identification of sensitive features along route
  - trimming of overhead trees – has a survey been undertaken to identify trees that will need to be trimmed and if so what steps have been undertaken to identify the owners of those trees
  - confirmation of whether any affected trees are covered by a tree preservation order
  - confirmation of whether any of the verges along the route(s) are classified as SSSI or roadside Nature Reserve status. If so, detail any impact
  - confirmation of any extraordinary maintenance agreement/s required by the Highway Authority
4. **Cabling route/grid connection** – description of the route/s including plans at an appropriate scale, incorporating, for example:
- assessment to include site inspection and details of contact with the appropriate Highway Authority (including the Highways Agency for Trunk Roads where applicable)
  - traffic details of grid connection enabling works
5. **Impacts during operation**
- details of type and frequency of vehicle to be used to service the facility/structure(s) when in operation
  - details of any long-term highway impact e.g. will trees and hedgerows need additional trimming to allow access for service vehicles
  - position of structures relative to public highways and/or public rights of way – the minimum distance of which should be no less than 50m
  - assessment of any impact on adjacent/affected public rights of way e.g. horses and pedestrians – e.g. with a wind farm are the blades positioned in close proximity to bridleways such that flicker may startle horses
6. **Impacts during decommissioning** – define the expected life span of the facility/structure(s).
- provide details of decommissioning works including an assessment of whether or not the structure is to be scrapped - i.e. can it be broken up on site and removed or will it require the same logistical process as initial construction.

For further information on highway related matters I would suggest you contact John Shaw (Senior Engineer) on 01603 223231.

If you have any general queries with any of the above comments please call or Stephen Faulkner (Principal Planner) email on 01603 222752 (stephen.faulkner@norfolk.gov.uk).

Offshore Energy SEA Consultation,  
The Department of Energy & Climate  
Change,  
4<sup>th</sup> Floor Atholl House,  
86-88 Guild Street,  
Aberdeen,  
AB11 6AR



20th April 2009

Dear Kevin,

**RE: DECC Offshore Energy Strategic Environmental Assessment Programme. Consultation on the Environmental Report for Offshore Energy SEA.**

Thank you for your letter dated 26<sup>th</sup> January 2009 regarding the above consultation.

The department welcomes the opportunity to comment on this report. The Northern Ireland Environment Agency's (NIEA) response to your consultation request is set out below.

We are broadly content with this Environmental Report. We believe it has been carried out at a very high standard, well researched and presented.

Our main issue relates to the proposed monitoring of implementing the plan which we found to be unclear (Section 6.2). The section about Effects Monitoring does not detail what is being monitored. In addition we note Section 3.5 includes information about SEA objectives and indicators but we are unsure about the source of information for these indicators. As a final point about monitoring it would be worthwhile knowing if there is any monitoring envisaged which relates directly to the proposed mitigation measures.

In terms of Cultural Heritage we are impressed with the comprehensive annex and associated OES covering the various archaeological aspects of the offshore zone. This summarises the relevant current state of knowledge and opportunities for further research, legal conditions applying in each of the jurisdictions and the range of possible threats to the cultural heritage from development of the offshore seabed.

One further point we believe you should address is the fact that there will be a need to ensure that the regulations listed in respect of combustion emissions from power generation etc are UK wide.

Yours Sincerely,



John Minnis

SEA Co-ordinator

# **THE NORTHUMBERLAND SEA FISHERIES COMMITTEE**

## **Response to UK Offshore Energy Strategic Environmental Assessment Future Leasing for Offshore Wind Farms and Licensing for Offshore Oil and Gas and Gas Storage Environmental Report January 2009**

This response is filed on behalf of this Committee after appropriate consultation particularly with the Committee's Environmental Fishery Officer. We have picked out from the report those themes which are of most relevance to fisheries and we comment accordingly below and this is hopefully helpful.

1. The draft plan/programme subject to this SEA needs to be considered in the context of overall UK energy supply policy and greenhouse gas emission reduction efforts. The main objectives of the current draft plan/programme are to enhance the UK economy, contribute to the achievement of carbon emission reductions and security of energy supply, but without compromising biodiversity and ecosystem function, the interests of nature and heritage conservation, human health, or material assets and other users.

### **Comment**

**This is a good overall objective that gives protection to a wide area of concerns that demonstrate that energy production while important is not the overriding issue**

2. What are the alternatives to the draft plan/programme – three alternatives are mentioned.

### **Comment**

**Option 3 to restrict the areas offered for leasing and licensing temporally or spatially is felt to be the most likely, as is acknowledged later in the report. Other issues will always need to be considered and addressed.**

3. Energy consumption from renewable sources

### **Comment**

**The UK has considerable potential for offshore renewable energy production. The interests of fisheries need to be properly considered before any development takes place.**

4. UK Energy needs met by oil, gas and coal.

### **Comment**

**From this Committees involvement with the new proposed coal fired power station at Blyth it is noted that the majority of coal will be resourced from overseas and fisheries interests should be taken account of.**

5. What areas are included in this SEA?

**Comment**

**This Committee has understood that placement of wind turbines would only occur in shallower water than mentioned in this part of the consultation. For this reason the coast of Northumberland has been found to be unsuitable for the siting of wind farms. This Committee will need to be consulted therefore on applications which may be made in its district.**

6. EU Marine Strategy Framework Directive

**Comment**

**This statement again highlights the issue that energy production is not paramount in decision making.**

7. Water depth, distance from areas of high electricity demand, and the availability of connection points to the onshore transmission grid are significant factors in the preferred location of offshore wind developments.

**Comment**

**Assuming that the power station at Blyth is given approval it is relatively unlikely that there would be sufficient justification to sight a wind farm off the Northumberland coast as there would not be demand for more energy production on a local basis.**

8. Biodiversity, habitats, flora and fauna - acoustic disturbance by noise

**Comment**

**The Committee has previously raised the issue of spawning sites and is pleased to note that it will be considered again during any SEA.**

9. Bird sensitivities

**Comment**

**This statement indicates that siting of wind farms within the Committee's district is unlikely to occur particularly as most of the coast is home to a variety of important species throughout the year.**

10. Landscape/seascape

**Comment**

**The siting of wind farms within 12 miles of any sites of national or international importance should be avoided wherever possible.**

11. Fishing in the UK has a long history and is of major economic and cultural importance. In 2007, there were nearly 13,000 working fishermen in the UK (of which 79% were full time), operating over 6,700 vessels, many of which were smaller inshore boats. These vessels landed 610,000 tonnes of fin and shellfish in 2007, with a total value of £645 million.

**Comment**

**Extrapolating from the figures quoted for value of fin and shellfish landed, this produces an average of £49,000.00 per fisherman before costs which is felt to be in excess of the average income of local fishermen. This does not detract from the importance of the fishing industry to fishermen, associated businesses and local fishing communities, but incomes tend to be lower in Northumberland and the North East of England than the national average.**

12. It is recommended that waters near the coast and certain especially important fishing areas offshore are avoided for future wind farm siting.

**Comment**

**This is an important statement for the current and future fishing industry.**

13. Offshore wind farms have the potential to affect civilian aerodromes and radar systems.

**Comment**

**This is felt to be unlikely to affect fisheries matters and see 19 below.**

14. A number of offshore European Conservation (Natura 2000) sites are in the process of being designated under the Habitats Directive, and the boundaries of some coastal and marine sites are being extended. In addition, the Marine Strategy Directive through the Marine and Coastal Access Bill will introduce further requirements for identification and designation of Marine Conservation Zones (or Marine Protected Areas). These will require careful consideration in the selection of offshore wind farm sites and oil and gas/gas storage infrastructure to avoid adverse effects on the integrity of the sites or compromising good environmental status.

**Comment**

**These considerations will also apply to coastal and inshore sites so development in or near the European Marine Site in Northumberland are unlikely, which is appropriate.**

15. Transboundary effects

**Comment**

**It is noted that displacement of fishing activity has been considered in this report, which is important.**

16. The SEA considered the alternatives to the draft plan/programme and the potential environmental implications of the resultant activities in the context of the objectives of the draft plan/programme, the SEA objectives, the existing regulatory and other control mechanisms, the wider policy and environmental protection objectives, the current state of the environment and its likely evolution over time, and existing environmental problems. The conclusion of the SEA is that alternative 3 to the draft plan/programme is the preferred option, with the area offered restricted spatially through the exclusion of certain areas. It is concluded that there are no overriding environmental considerations to prevent the achievement of the offshore oil and gas, gas storage and wind elements of the plan/programme, albeit with a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea.

**Comment**

**This confirms option 3 as preferred and which this Committee would agree with.**

17. The requirement for SEA.

**Comment**

**This object is to be welcomed as the main protection is to the environment as a whole.**

18. Consultation bodies.

**Comment**

**It is noted that only Governmental organizations are deemed to be consultation bodies in this report, and all other bodies are therefore stakeholders but it is vital that their views are sought where appropriate.**

19. Offshore wind farms have the potential to affect civilian aerodromes and radar systems. The UK air traffic control service for aircraft flying in UK airspace has made available mapped data indicating the likelihood of interference from offshore wind turbines on its radar network. Similarly, the Civil Aviation Authority (CAA) produces an Aerodrome Safeguarding Map and Local Planning Authorities are required to consult on relevant Planning Applications which fall within a 15km radius.

Military use of the coasts and seas of the UK is extensive, with all 3 Services having defined Practice and Exercise Areas, some of which are danger areas where live firing and testing may occur. Additionally, several military radars - Air Surveillance and Control Systems (ASACS) - are present around the coasts of the UK; these have been mapped along with corresponding buffers relating to potential conflict with wind farms.

**Comment**

**In particular in Northumberland the position of RAF Boulmer should mean that there should not be wind farms in the vicinity thereof.**

Dated: 21 April 2009

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**From:** Chris Bale  
**Sent:** 20 April 2009 19:08  
**To:** SEA.2009@berr.gsi.gov.uk  
**Subject:** Offshore Energy SEA Consultation

FAO Kevin O'Carroll  
Head of Environmental Policy Unit  
Department of Energy and Climate Change

Dear Kevin

Thank-you for the opportunity to respond to BERR's Offshore Energy SEA Consultation.

Ocean Electric Power (OEP) is a marine renewable energy project development company. Our business model involves identifying suitable sites and then undertaking project design, obtaining all necessary licenses and consents, procuring equipment, raising funding and then managing construction and operation of wave and tidal stream energy farms. We are technology neutral and aim to develop projects utilising both wave and tidal stream resources.

We have identified a number of prospective projects in UK waters and elsewhere. OEP is a participant in The Crown Estate's current marine licensing round in Scotland where the company will be seeking a site for a tidal stream project. OEP has also identified a site off Cornwall for its first offshore wave project.

Our principal contribution to the consultation revolves around the proposed scope of the SEA. As matters currently stand, it is not possible to conceive of a commercial wave energy farm outside of Scottish waters due to the capacity limitations imposed by The Crown Estate on any project in England where there is no SEA. Unfortunately, a number of the necessary conditions for commercial offshore wave energy projects cannot presently be fulfilled in Scotland. The 10MW ceiling on site licenses applied by The Crown Estate in English waters, coupled with the 'development' categorisation has the effect of rendering projects uneconomic and unsuited for investment. Such a situation risks damaging the progress of the marine energy sector in the UK. It is inhibiting the creation of a market for the technology that is being designed by the device developers. Without a market being created by companies such as OEP, device developers will struggle to obtain investment for their activities. There is also a real risk that a delay in completing SEAs in suitable areas in the UK will lead to companies such as OEP focusing effort elsewhere.

OEP would therefore wish to see the scope of the SEA extended to include marine renewable energy in areas in England that have the potential for early development. These would include the South West of England and the Western Approaches. We would be very happy to suggest specific areas for marine energy SEAs.

Best regards

Chris Bale

**Chris Bale** | Chief Executive | Ocean Electric Power

24/06/2009

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**From:** Donners, Maurice  
**Sent:** 06 March 2009 15:07  
**To:** sea.2009@berr.gsi.gov.uk  
**Subject:** Offshore Energy SEA Consultation  
**Attachments:** PCIC\_Europe\_Paper 535.doc; \_1 Poot 2008 Green Light for Nocturnally Migrating Birds.pdf

Dear Madam, Sir,

As a reaction to your Environmental Report of DECC's Strategic Environmental Assessment (SEA) of a draft plan/programme to enable licensing for offshore activities related to energy, I'd like to draw your attention to the possible risks which the lighting of offshore activities can pose to migrating birds. One of the possible prevention measures is the use of light sources with an adapted light spectrum which is less disturbing to the migrating birds.

You can find more information in several published papers and reports. For your convenience I've attached the most important ones to this e-mail.

In a few weeks time, a research report from the dutch ecological consultancy firm Altenburg and Wybenga will be published, stating that for the Wadden Sea, 52 bird species are put at serious risk by the effects of offshore platform lighting.

vriendelijke groeten, best regards,

Maurice

dr.ir. M.A.H. Donners  
Project Leader / Segment Team Leader Outdoor, Advanced Development Lighting

Mathildelaan 1, 5611 BD Eindhoven, The Netherlands

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# ADAPTING THE SPECTRAL COMPOSITION OF ARTIFICIAL LIGHTING TO SAFEGUARD THE ENVIRONMENT

Joop Marquenie NAM	Maurice Donners Philips Lighting	Hanneke Poot Max-Planck Institute for Ornithology	Willy Steckel Coopers Crouse Hinds GmbH	Bas de Wit NAM
Schepersmaat 2 9405 TA Assen	Mathildelaan 1 5611 BD Eindhoven	Postfach 1564 D-82305 Starnberg/Seewiesen	Senator Schwartz Ring 26 D-59494 Soest	Schepersmaat 2 9405 TA Assen
The Netherlands	The Netherlands	Germany	Germany	The Netherlands

**Abstract** - Over 60 million birds, of many species, cross the North Sea each year, twice. Light has a significant impact on migratory birds at sea, as it can attract and trap birds at large illuminated structures, such as off shore platforms. We first studied the behaviour of birds around offshore platforms and secondly tested the effect of the presence of lighting, the intensity and type of lights and the light colour on bird behaviour. As a conclusion, about 10% of the North Sea migrating bird populations are impacted by offshore installations. We developed a light spectrum that can be applied off shore, offering safety to both humans and birds. A field demonstration test, involving the exchange of lights to the new colour on a gas production platform has demonstrated a reduction of bird reaction of at least 50 to 90 %. Finally, the compliance to explosion safety requirements has been demonstrated. It is expected that the bird-friendly lighting will become the new standard for any installation situated in areas with bird migration.

*Index Terms* — Migrating birds, lighting, off shore platforms, fatal light attraction, ecology.

## I. INTRODUCTION

The North Sea is an important migration route for a large number of bird species (songbirds, waders, birds of prey and other bird species). Over 50 million birds may cross the North Sea each year twice, with peaks in spring and autumn. Appendix 1 gives an overview of migration intensity and direction above the North Sea in different months. This route is normally indicated as the Atlantic flyway. Several more of such flyways exist around the globe.

At the same time, these bird populations are worldwide under pressure. Their environment is subject to rapid change by multiple factors (land-use, climate change, exploitation of natural resources, etc.). In order to protect endangered and vulnerable species and to enhance resilience of the ecosystems, measures are taken worldwide. For EU countries this results in the further implementation of the habitats and Bird directives, developing environmental legislation and the creation of a network of interconnected protected areas (Natura2000). This recently also includes the North Sea. Several international treaties have been signed to protect migratory species including the Migratory Bird Treaty Act (US) and the African-Eurasian Migratory Waterbird Agreement (Lenten, B. 2006).

The investigations were initiated because of observations that large flocks of migratory birds occasionally may enter flares. It was found, however, that also without flaring, large flocks of birds accumulated

around illuminated installations at open sea at night. The reason was not fully understood, but it was estimated that North Sea wide, about 10% of the migrating bird population (6 million birds) could be significantly affected (delay, wasting energy resources, exhaustion, enhanced predation, etc.) by the installations. The impact could worldwide even be magnitudes greater.

In the period 1992-2002 we experimentally proved that artificial light was the reason that these birds accumulated and what were the conditions that triggered this behaviour. In the following period we revealed that only a part of the spectral light was responsible for the bird's reactions.

Finally we developed and tested a spectrum for different light sources as are mostly used offshore that is electrically safe, allows safe and comfortable working conditions and does no longer disorient birds.

Our paper will cover three major topics:

- 1) Migration in the ecology of birds and the response to artificial lighting;
- 2) The development of light sources for safe working, while being bird-friendly;
- 3) The electric safety of replacement light sources.

## II. MIGRATION IN THE ECOLOGY OF BIRDS AND THEIR REACTION TO ARTIFICIAL LIGHTING

Many bird species migrate long distances. The most common pattern involves flying north to breed in the temperate or Arctic summer and returning to wintering grounds in warmer regions in the south.

There are many reasons to migrate. One reason is to avoid predation, other reasons involve essential food reserves and the longer day length. The longer days of the northern summer provide greater opportunities for breeding birds to feed their young. Most species developed their own optimum for migrating, most go north as soon as possible, some return immediately after the first clutch, some stay till the bitter end of season. Species that breed extremely north, like many wader birds, have a very limited window. If they come to early, there might still be snow, if they come too late, their offspring might not make it.

Migration is often concentrated along well established routes known as flyways. These routes typically follow mountain ranges or coastlines, and may take advantage of updrafts and other wind patterns or avoid geographical barriers such as large stretches of open water. Much information about flyways can be found in a recent series of web publications: [www.jncc.gov.uk/worldwaterbirds](http://www.jncc.gov.uk/worldwaterbirds). The altitude at which birds fly during migration varies. Most bird migration is in the range of 150 m (500 ft) to 600 m (2000 ft), but occasionally up to 6 km (20.000 ft) to cross mountain ridges. Bird hit records from the US show

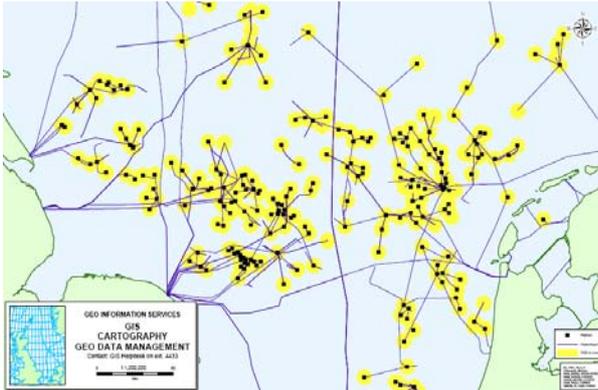


Fig. 1 Map of the southern section of the North Sea with existing production platforms (2007). Also indicated the potential impact zone of 5 km (in yellow)

most collisions below 600 m (2000 ft) and almost none above 1800 m (6000 ft).

Reactions to artificial lights are known for a long time. Clarke (1912) was the first to record the impacts of lighthouses in his extensive studies on bird migration. Many bird watchers became obsessed by the phenomenon of large flocks of birds circling around lighthouses in incredible high concentrations and species diversity, often resulting in the death of many. The “problem” was solved, by applying floodlights around the lighthouse, enabling the birds to orient themselves on the surroundings. Marquenie and Van der Laar (2004) identified the same phenomenon around gas and oil production installations at sea. Their systematic approach led to the conclusion that the majority is song and wader birds and that the milling behaviour around platforms only occurs during cloudy or foggy nights during the broad front migration. In addition, the milling in high concentrations of birds only occurred between midnight and dawn.

The role of the platform lighting was assessed by turning lights off and on and sequential testing groups of lighting. A typical outcome for the on-off experiment is shown in table 1 and for the impact of different groups of lighting in table 2.

TABLE I

TYPICAL REACTION RATE OF BIRDS TO LIGHT AT SEA DURING CLOUDY NIGHT MIGRATION (ALL LIGHTS ON, INCLUDING MAIN DECK LIGHTS; 30 kWh)

Time in minutes after light-on	Number of birds
7	200-250
12	1000
20	1500
25	2000
30	4000-5000
<hr/>	
Time in minutes after lights off	
3	Significant decrease
15	Gone

The results prove that the artificial lighting is responsible for the disorientation of birds during periods of cloudy skies. They also prove that the response is dose related: the more light, the stronger the effect. Upward directed TL floodlights have an increased effect as well as the sodium flood lights of the cranes. The impact was estimated to reach between 3 and 5 km. Maximum lighting (TL and Sodium floodlight) gives the strongest impact. The

estimated residence time of bird flocks is about 20 minutes, but some solitary and therefore specific recognisable birds (like a solitary Woodcock, etc) have been observed to circle for several hours.

From an analysis of the spatial distribution of platforms in the southern North Sea (Fig. 1) in relation to migration routes, the reach of the impact and the frequency of cloudy conditions during periods of migration, it was concluded that about 10% (6 million birds) of the migrating population is impacted every year.

The solution to switch off lights appeared not workable due to costs of redesign of the electrical scheme and costs of installation. Moreover, light is essential for safety reasons.

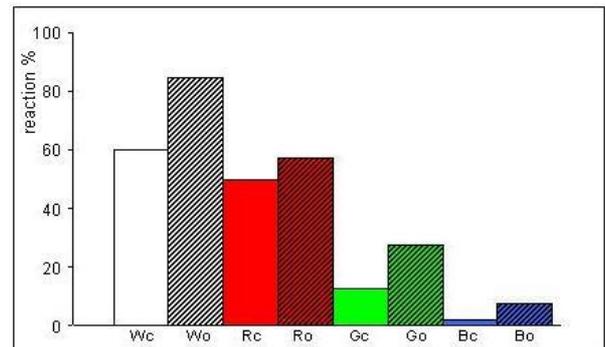


Fig. 2 Bird responses to different light conditions: white (W), red (R), green (G) and blue (B) under clear (c) and overcast (o) conditions.

### III. BIRD FRIENDLY LIGHT SOURCES FOR SAFE WORKING CONDITIONS

Eager to find a solution, a novel experimental approach was chosen and the sensitivity of birds in field conditions was tested towards primary colours blue, green and red, and a “white” spectrum. The experiments were performed using a HPI 1000 W light source directed to the sea in a nature conservation area at 10 km distance from the nearest light point. The spectrum was manipulated with filters and the response parameter was change of original flight direction of migrating birds coming freshly from sea. Bird’s reactions were registered as solitary birds or as groups. The results are shown in figure 2. This shows a clear trend of increasing bird’s reaction going from red to green, blue, to white light. The reaction under cloudy conditions also proved to be stronger as under clear skies.

This outcome led to the hypothesis that the reaction of birds to change flight direction is mainly due to the red component in the spectrum. This red part of the spectrum, is known to interact with the bird’s internal compass (Wiltschko, W., Munro, U., Ford, H. & Wiltschko, 1993). This also explains the observations during the previous 10 years that birds only reacted during overcast nights or fog and disappeared at the onset of dawn or breaking of clouds, whereas moonlight did not make a difference. We speculated that lighting in general attracts birds, but the reason for accumulation and circling around is loss of direction due to a disturbance of their compass by red light.

To put this result in practice, a number of other factors had to be taken into account. A light source without any red light would not be acceptable from safety considerations, as any colour, which is not present in the

available light will not be visible. A certain minimum level of red is therefore necessary for a sufficient visibility of important safety equipment such as fire extinguishers and emergency buttons and safety signs.

To ensure that helicopter pilots can locate the helicopter deck easily, a new standard for helicopter deck lighting is being put in place, defining the perimeter lighting to be green and excluding the use of green lighting on other parts of the platform. The ICAO definition of green is shown in figure 3.

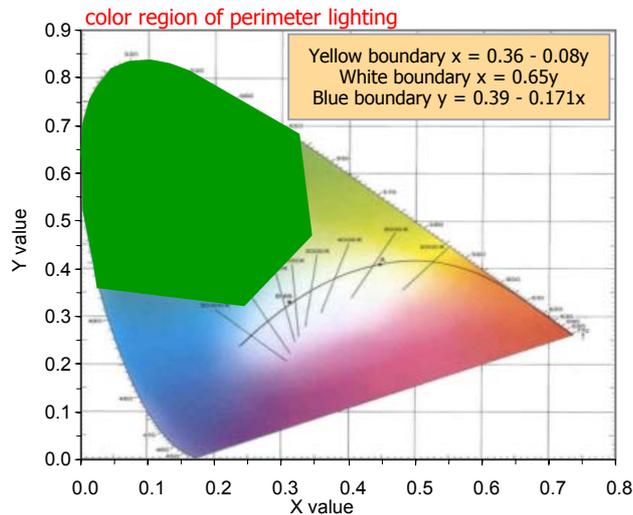


Fig. 3 x,y CIE colour triangle, showing ICAO definition of green.



Fig. 4. Off shore platform equipped with low-red exterior lighting.

The following two years, similar tests were performed during autumn migration, now using specially developed lamps with adapted spectra. A detailed analysis of all data, has shown that the best description of the relation between the spectrum and the bird reaction is given by the parameter  $B$  which we defined as the fraction of the light (radiation with a wavelength between 380 and 780 nm) which has a wavelength between 575 and 650 nm:

$$B = \frac{\int_{575}^{650} E(\lambda) d\lambda}{\int_{380}^{780} E(\lambda) d\lambda} \quad (1)$$

The correlation of the bird reaction to this parameter is shown in figure 5. This has been the basis for our further lamp development.

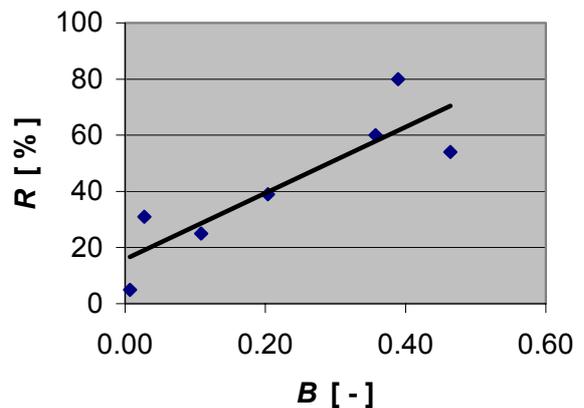


Fig. 5 Reaction percentage,  $R$ , versus parameter,  $B$ , for seven tested spectra.

In order to confirm that a light source as this would not disorient birds when used at a large scale, a test was needed offshore. To ensure safe working conditions, perception and functional tests were first done at on shore test facilities under the guidance of lighting application specialists. These tests were performed both with off shore personnel and randomly selected members of the public and showed that safety was indeed guaranteed. The new light was applied on an off shore platform 20 km north of the Dutch island of Vlieland. In May 2007 almost all of the exterior 400 TL and 20 floodlights were replaced with lamps with the new spectrum. A photo of the platform is shown in figure 4.

Autumn 2007 the reaction of birds off shore was assessed following the techniques that were applied during the offshore inventory phase. The observations were compared with observations in previous years, taking into account the weather conditions and aligning with bird intensive counts all along the shore. The results are shown in table 3.

It was concluded that the period of observation fell with in the top of the period of migration (based on coastal bird counts and radar observations) and that the circumstances for disorientation were optimum (cloudy weather). Taking this into account, the disturbance of birds declined with 50-90%. It has to be noted that at the time of this test not all white lamps had been replaced. Much of the remaining bird reactions were concentrated around the remaining white lamps. Therefore, the total effect is assumed to be even more positive.

**TABLE 2  
INFLUENCE OF BRIGHTNESS AND LAMP TYPES ON BIRDS**

Intensity of light	Number of birds	Remarks
Beacon and obstruction lights (300 W)	None	This level of brightness is inconsequential
Light in crane (1500 W)	Small number	Bright lights shining outward, albeit to a limited extent, has some influence on birds
Light in crane, beacon and obstruction lights (160 W) and beacon and obstruction lights	Limited numbers	Lights in a place clearly visible to birds has a marked, but limited influence
All lights on the helicopter landing platform (incl. landing lights: 480 W)	Numbers clearly increase	Quite a lot of light in a place conspicuous to birds has quite a considerable influence
All lights switched on (30 kWh)	During intensive migration, large to very large numbers	Standard lighting of a location has a marked, considerable and prolonged influence

**TABLE 3  
RESULTS OF THERMAL MEASUREMENTS FOR /840 AND LOW-RED LAMP TYPES**



Lamp type	driver				lamp		reflector		protective bowl			enclosure
	above L3	above L3 in furrow	at side of L3	above L22	near filament No. 1	No. 2	under lamp 1 near filaments	under lamp 2 near driver	above the filaments lamp 1	lamp 2	above lamp 2 near driver	above driver
/840	57	62	66	57	69	67	53	64	34	33	37	41
Low-red	57	61	66	56	70	68	52	64	34	34	37	41

**TABLE 4  
RESULTS OF ELECTRICAL MEASUREMENTS FOR /840 AND LOW-RED LAMP TYPES**

Lamp type	main			lamp 1			lamp 2			total power
	I [mA]	P [W]	cos φ	I [mA]	P [W]	U [V]	I [mA]	P [W]	U [V]	Dissipation [W]
/840	285	62.5	0.95	300	27.8	93.2	288	27.4	95.8	7.3
Low red	287	63.1	0.96	299	28.2	94.9	287	27.6	96.5	7.3

#### IV. ELECTRIC SAFETY OF RETROFIT TL LAMPS

The process area lighting of the relamped platform is in majority of a double bi-pin TL type. All the production / process areas are classified zone 1 and zone 2 for explosion protection, meaning all lighting equipment is certified for use in these areas. However for standardization reasons the luminaries are all EX"e" (zone 1 luminaries). Replacement of the platform luminaries, to conduct the test, was not seen as an option. Replacement of the "white lighting tubes" by "bird-friendly" ones was the most efficient way to do the testing. The light output of the tubes is 16% lower as the normal 36W/840 tubes. It is remarked however that this not resulted in an increase of safety risk, as the perceived brightness is higher due to the higher colour temperature of this light.

The installation owner is responsible to operate the lighting within the certification boundaries. A risk assessment on the new lighting was done by the manufacturer of the luminaries by assessing the influence of the "bird-friendly" tubes on the existing lighting certification. The impact investigation of the lamp change

with respect to Ex requirements was done by the luminaries' original manufacturer. The first luminary, with an electronic ballast, used for the investigation was manufactured after 2003. The luminary, 2x36W, was rated for a voltage range of 110 V to 254 V and a frequency range of 50 Hz to 60 Hz. The working temperature range is from -20° C and 70°C.

Compared were the Master TLD 36/840 lamp with the same lamp type but with a new phosphor composition producing the new light color.

On request of the installation owner two additional luminaries were tested too, an older one of the same manufacturer (manufactured in the nineties) and a luminary of another manufacturer.

Test results of the first test are given in attachment x (number to be given). The test results of the additional test were equal to the ones of the first test.

The test program consisted of:

- 1) Temperature measurement with both types of tubes at normal ambient temperature,
- 2) Electrical measurements (voltage, current) including signal analysis at the tubes,

- 3) Light output measurement with both types of tubes.

The executed measurements on the fixture show nearly the same results for the "white" tubes as well as for the new "low-red" tubes.

"Nearly" means that the results of the thermal and electrical measurements are within the estimated variances of different tubes of the standard "white" tubes.

Based on these results and the fact that the structural design of the "white light" and "low red" lamps are identical the "low-red" fluorescent lamps could be used for replacement of "white light" lamps in installed luminaries in hazardous areas. This statement is to our opinion valid for luminaries with electronic ballasts of different make and type. However it is advised to check this with the original manufacturer of the luminaries in use.

### CONCLUSION

Lighting is the main factor in attracting migrating birds to off shore platforms. In many cases, lighting is needed to give safe working conditions. A new light colour has been designed which can reduce the distraction of migrating birds with a factor of up to 90 %. In separate experiments, the safety of these new lamps with respect to human working conditions and explosion safety has been demonstrated.

### NOMENCLATURE

- B Bird parameter (-).
- I Current (A).
- P Power (W).
- R Reaction percentage (%).
- U Voltage (V).

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### VITA

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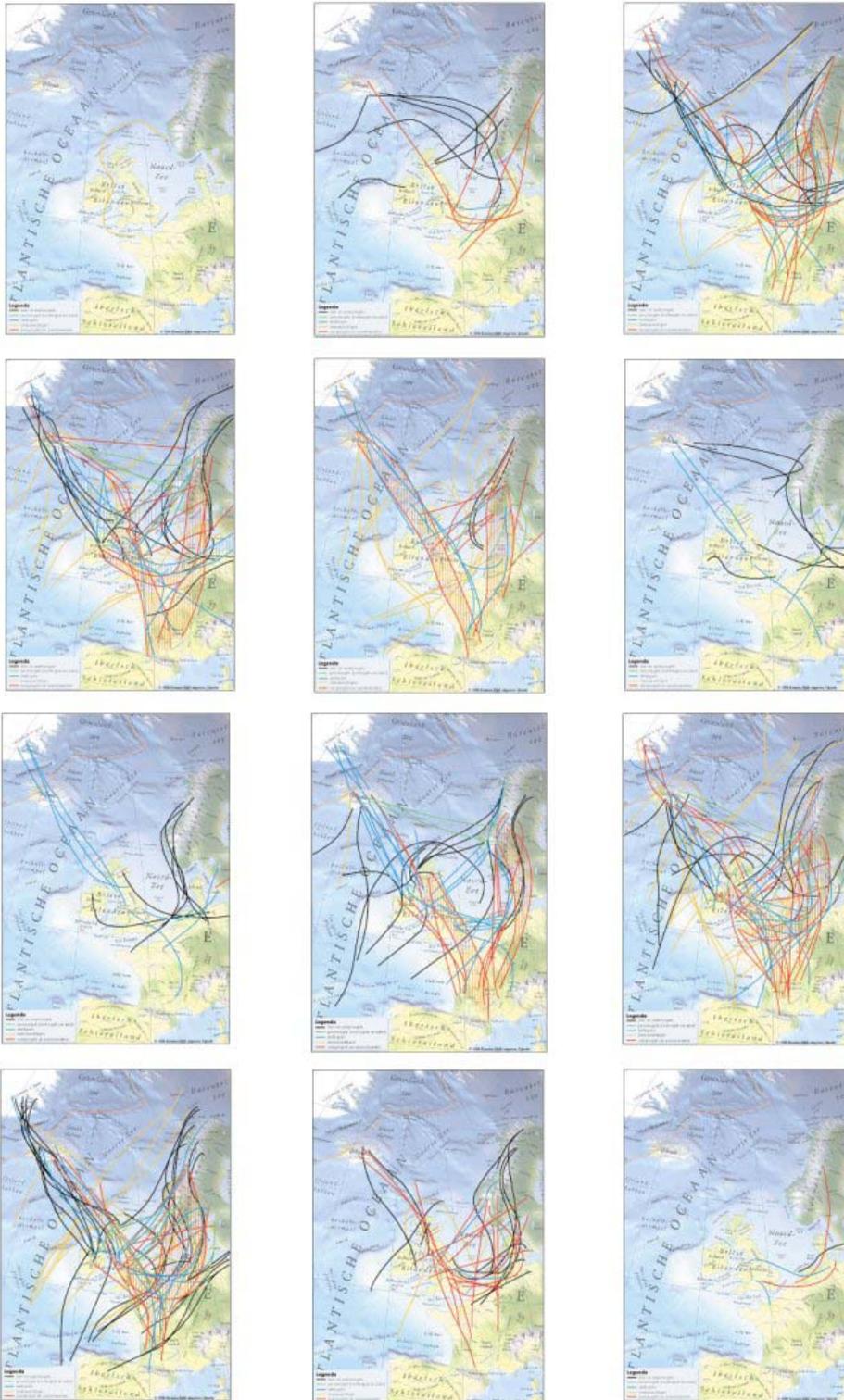
Hanneke Poot did her MSc and a number of subsequent projects on the influence of light colours on distraction of migrating birds. She is currently at the Max Planck Institute of Ornithology at Seewiese.

Willy Steckel is product line manager lighting with Cooper Crouse Hinds.

Bas de Wit is a senior electrical engineer of the NAM.

## Appendix

Migration intensity and direction in different months (January through December) above the North Sea. In spring species migrate to northerly breeding grounds.



### Legenda

Black	=	Sea birds
Green	=	Birds of prey
Red	=	Songbirds
Bleu	=	Waders
Yellow	=	Gulls

Research

## Green Light for Nocturnally Migrating Birds

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**ABSTRACT.** The nighttime sky is increasingly illuminated by artificial light sources. Although this ecological light pollution is damaging ecosystems throughout the world, the topic has received relatively little attention. Many nocturnally migrating birds die or lose a large amount of their energy reserves during migration as a result of encountering artificial light sources. This happens, for instance, in the North Sea, where large numbers of nocturnally migrating birds are attracted to the many offshore platforms. Our aim is to develop bird-friendly artificial lighting that meets human demands for safety but does not attract and disorient birds. Our current working hypothesis is that artificial light interferes with the magnetic compass of the birds, one of several orientation mechanisms and especially important during overcast nights. Laboratory experiments have shown the magnetic compass to be wavelength dependent: migratory birds require light from the blue-green part of the spectrum for magnetic compass orientation, whereas red light (visible long-wavelength) disrupts magnetic orientation. We designed a field study to test if and how changing light color influenced migrating birds under field conditions. We found that nocturnally migrating birds were disoriented and attracted by red and white light (containing visible long-wavelength radiation), whereas they were clearly less disoriented by blue and green light (containing less or no visible long-wavelength radiation). This was especially the case on overcast nights. Our results clearly open perspective for the development of bird-friendly artificial lighting by manipulating wavelength characteristics. Preliminary results with an experimentally developed bird-friendly light source on an offshore platform are promising. What needs to be investigated is the impact of bird-friendly light on other organisms than birds.

**Key Words:** *artificial light; bird-friendly lighting; ecological light pollution; light color; magnetic compass; nocturnally migrating birds; orientation*

### INTRODUCTION

For millions of years, plants and animals evolved under a day–night cycle, where the bright light of the sun during the day was replaced at night by weak light from the stars and sunlight reflected off the moon and planets. This situation ended very recently when humans started to artificially light the nighttime sky, which is especially clear in wealthy industrialized areas (Cinzano et al. 2001). Because animals (including man) and plants did not evolve under these artificial conditions, nighttime lighting may have serious negative consequences for the ecosystem, which made Longcore and Rich (2004) coin the term “ecological light pollution,” after Verheijen (1985) had coined the term “photopollution”

in 1985. According to Rich and Longcore (2006), the vast majority of conservation studies have focused on the daytime. As a result, we are just starting to appreciate the magnitude of the ecological consequences of artificial night lighting.

Artificial night lighting affects the natural behavior of many animal species. It can disturb development, activity patterns, and hormone-regulated processes, such as the internal clock mechanism; see references in Rich and Longcore (2006). Probably the best-known effect, however, is that many species are attracted to, and disoriented by, sources of artificial light, a phenomenon called positive phototaxis. Apart from insects, birds that migrate during the night are especially affected (Verheijen 1958). This

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may cause direct mortality, or may have indirect negative effects through the depletion of their energy reserves. Reviewing the literature, Gauthreaux and Belser (2006) conclude that “all evidence indicates that the increasing use of artificial light at night is having an adverse effect on populations of birds, particularly those that typically migrate at night.”

The reason why migrating birds are attracted toward artificially lit structures remains obscure. Gauthreaux and Belser (2006) discuss several hypotheses, including the possibility that artificial lighting interferes with the magnetic compass. It is assumed that migrating birds use visual cues (Emlen 1967, Evans Ogden 1996, Åkesson and Bäckman 1999, Mouritsen and Larsen 2001) as well as a magnetic compass mechanism (Wiltschko and Merkel 1966, Emlen et al. 1976, Wiltschko and Wiltschko 1995a, Deutschlander et al. 1999, Wiltschko and Wiltschko 2003) for orientation. It is clear that light is an important factor in using visual cues, but the second mechanism involves light as well. Magnetic orientation is probably based on specific light receptors in the eye and shown not only to be light dependent (Ritz et al. 2000), but also wavelength dependent: migratory birds require light from the blue-green part of the spectrum for magnetic compass orientation (Wiltschko and Wiltschko 1995b, 2001, Muheim et al. 2002) whereas red light, the long-wavelength component of light, disrupts magnetic orientation at least in laboratory conditions (Wiltschko et al. 1993). During overcast nights, the birds cannot use celestial cues and may be more dependent on the magnetic compass for orientation. In line with the hypothesis that artificial night lighting interferes with the magnetic compass, it is well established that during overcast nights, birds are more affected by artificial lights than on clear nights (Cochran and Graber 1958, Herbert 1970, Avery et al. 1977, Evans Ogden 1996, Wiese et al. 2001, Evans Ogden 2002). Resident birds are less affected, or even unaffected as they get accustomed to the presence of artificial light, do not use magnetic compass orientation, or lack this mechanism altogether (Mouritsen et al. 2005).

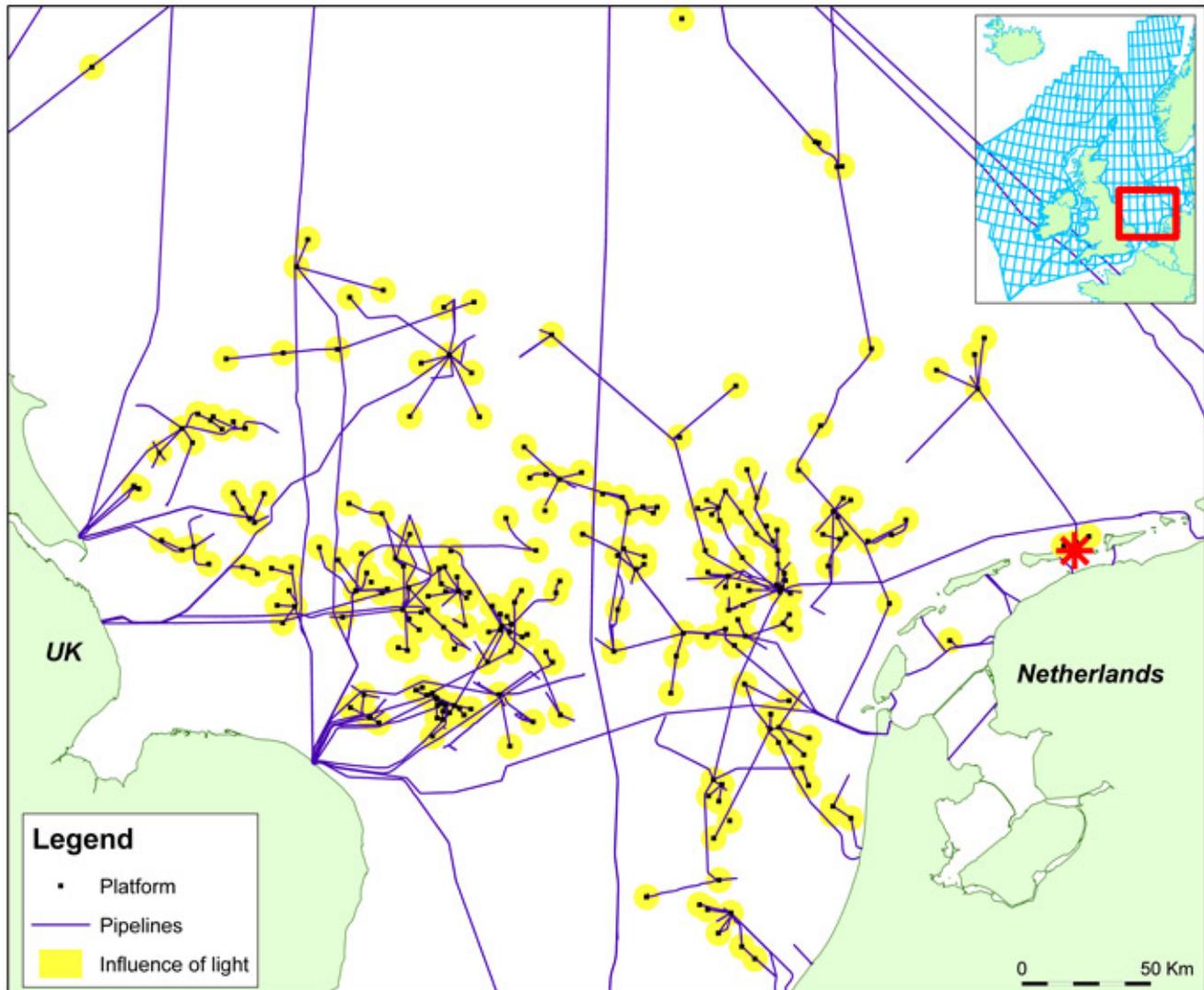
Irrespective of the precise mechanism, it is clear that artificial lights may interfere with the birds' ability to orient themselves (Evans Ogden 1996). Nocturnal bird kills occur wherever a lit obstacle, such as a tall building, lighthouse, or offshore installation, extends into an air space where birds are flying

(Verheijen 1958, 1985, Evans Ogden 1996, Wiese et al. 2001, Evans Ogden 2002). Globally, hundreds of millions of migrating birds are affected by the presence of artificial light on a yearly basis, many of which do not survive the encounter. The potential consequences can be excessive for sea areas with a high density of offshore installations. For the southern North Sea, for instance, it is impossible for a bird to cross without encountering two to ten installations (Fig. 1). Millions of seabirds, waterbirds, raptors, owls, shorebirds, gulls, terns, and songbirds pass through this area on their migrations back and forth between their breeding areas and wintering areas (Fig. 2). What can be done to minimize the losses among these migrants caused by the many offshore installations?

In an unpublished study, Marquenie and van de Laar (2004) investigated the behavior of migrating birds around offshore installations in the southern North Sea in the period 1992–2002. They observed that the milling behavior of dense—often mixed species—flocks only occurs during overcast nights (>80% cloud cover) and is most concentrated between midnight and dawn. In order to prove the cause-effect relation of lighting of offshore installations, they performed several experiments during two nights in November 2000 in which they manipulated the lighting of a gas-production platform (gas-production platform L5, situated 70 km offshore of the Dutch coast). When the lights were switched on, the number of birds on and around the platform quickly increased and when the lights were switched off, the birds rapidly dispersed from the platform, showing that it was indeed the artificial lighting that attracted the birds. A typical example is given in Table 1. In a second experiment on the same platform, they assessed the impact of partial lighting. It was shown that the influence of lighting increases with power (i.e., light intensity) and skyward-directed position (Table 2). It was estimated that the influence of full lighting (30 kW) extends to 3–5 km.

The easiest solution to this problem, turning off the lights (Evans Ogden 1996, Marquenie and van de Laar 2004), is not feasible for most offshore installations because of safety requirements or technical design. Many offshore installations in the North Sea and elsewhere are developed without the capability to switch off lights because this is regarded as undesirable because of explosion and corrosion risks. Retrofitting offshore installations also proved to be extremely expensive. Apart from

**Fig. 1.** Map of the southern section of the North Sea with existing production platforms in 2007. For each production platform, the potential impact zone of 5 km is indicated in yellow. The inset indicates where this area is located in the southern part of the North Sea. The red star indicates our study area.

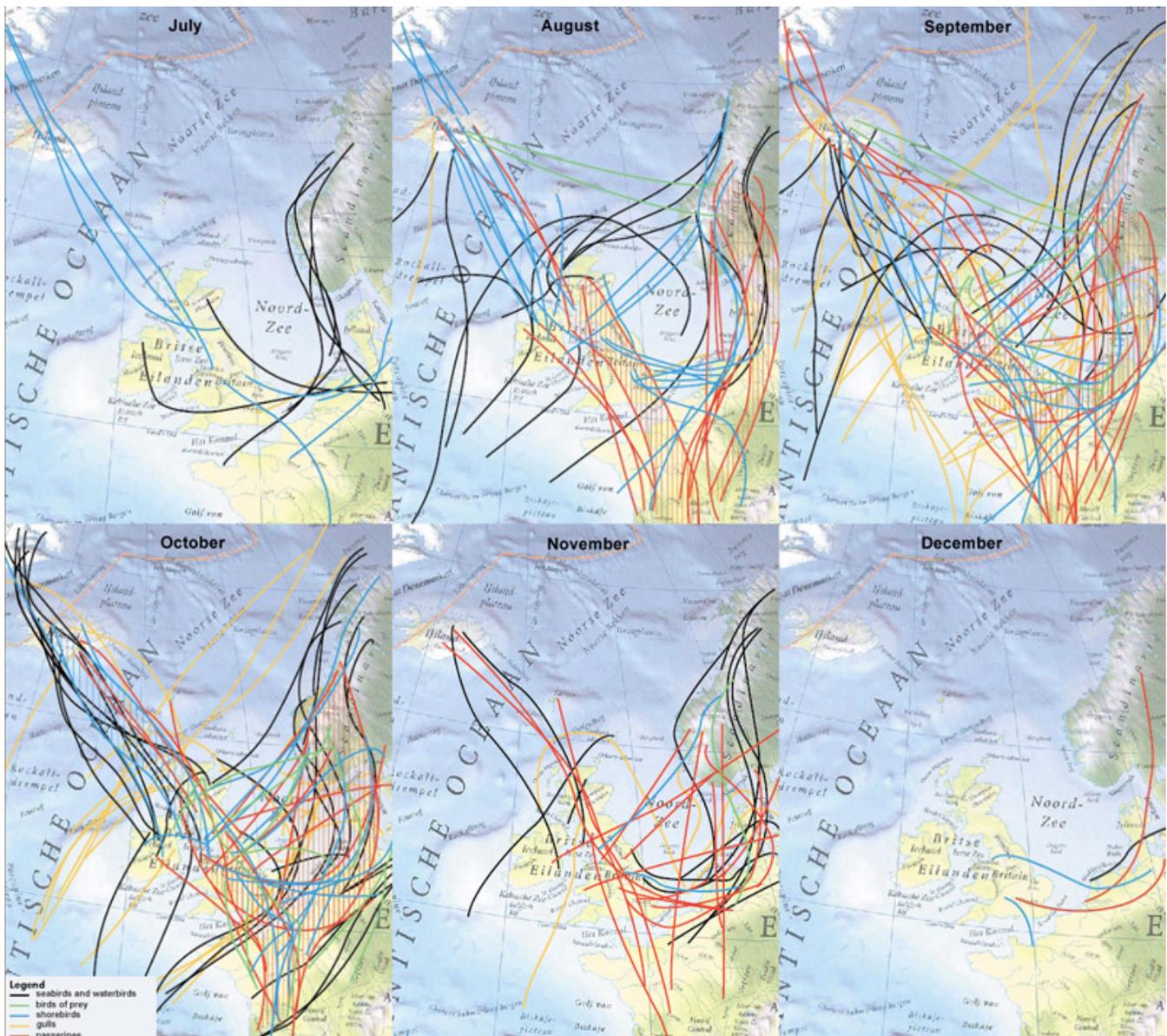


redrawing the platform electrical scheme, it requires explosion-proof switches, installing switch wires, and temporarily taking the platform out of production.

A promising alternative would be to change light color, as laboratory studies show that birds are only disoriented under specific wavelength conditions (Wiltshcko and Wiltshcko 1995b, 1999, 2001,

Muheim et al. 2002). This idea dates back to A. L. Thomson, who suggested in 1926 that changing light color could result in a decline of the number of birds affected by artificial light (Thomson 1926). When the longer wavelengths of ceilometers (very bright vertically pointed spotlights that were developed in the late 1940s to measure the height of the cloud ceiling) were filtered so that mainly ultraviolet light remained, massive mortalities

**Fig. 2.** Schematized maps of the migrations of various bird groups through and around the North Sea area (van de Laar 1999). The following groups are distinguished: seabirds and waterbirds (black lines), raptors (green lines), shorebirds (blue lines), gulls and terns (orange lines), and songbirds (red lines). From top left to bottom right, maps are for July, August, September, October, November, and December.



**Table 1.** Typical reaction rate of birds to light at sea during cloudy night migration as measured on the gas-production platform L5 (Marquenie and van de Laar 2004). The intensity of the lights when all lights were on, including main deck lights, was 30 kW.

Time in minutes after lights on	Number of birds
7	200–250
12	1000
20	1500
25	2000
30	4000–5000
Time in minutes after lights off	Number of birds
3	Significant decrease
15	All gone

among migratory birds due to these ceilometers were essentially eliminated (Gauthreaux and Belser 2006). However, being invisible to the human eye, ultraviolet light is not an option for offshore installations that must be visible to humans at a distance and where people must be able to work safely during the night. Thus, the challenge consists of developing bird-friendly lighting that is visible to the human eye, but does not attract and disorient nocturnally migrating birds. As a first step, we tested the response of nocturnally migrating birds to artificial lights of different colors during autumn migration in a field situation far removed from other artificial light sources.

## METHODS

Our experiment was carried out directly next to a production site of the Nederlandse Aardolie Maatschappij (NAM) for natural gas on the eastern part of the Dutch Frisian (or Barrier) isle Ameland (53°45' N 5°68' E) (Fig. 3). This production site is located behind the North Sea beach, surrounded by sand dunes, and at about 10 km distance from the nearest village with artificial night lighting. During nighttime, the site is not artificially lit.

A 4.8-m lamp post with two identical 1000 W metal-halide lamps was used, directed northeastward at a 110° angle toward the sky. Lamps were alternately covered with red, green, blue or three opaque white Perspex filters. The opaque filters were used to control for intensity effects of the light. Absolute values of intensity and spectral composition measured at 0.57 m from the lamp and filter are shown in Fig. 4. Initially, measurements with white light did not include the Perspex filters. Thus, the measurements with white light were of variable light intensity. Measurements indicated that for wavelengths exceeding 450 nm, the three opaque white Perspex filters reduced illumination to 40% of the initial value.

Bird responses to the different colors were observed by the first author with the naked eye from an observation cabin made of wood and clear Perspex at some distance (about 15 m) behind the lamp standard in the shadow of the lights. In this arrangement, the observer was invisible to approaching birds, preventing a fright response from the birds. Observations started around 22:00 in the evening, as this turned out to be the time that migrants started to arrive on the island, and lasted throughout the night, except on nights with no or very little migration. Throughout the night,

**Table 2.** Relationship between light intensity and the number of birds attracted to gas-production platform L5 (Marquenie and van de Laar 2004). Disconnecting different light groups varied light intensity: beacon and obstruction lights (300 W), light in crane (1500 W), helicopter platform (160 W), and landing lights (480 W). When all lights were on, total intensity was 30 kW.

Installed light sources	Type of lighting	Number of birds
300 W	Red and green safety lights	None
1500 W	Sodium floodlights of crane	Small number
1960 W	Above sources plus helideck perimeter lighting	Limited numbers
640 W	Upward helideck TL lights	Numbers clearly increase
30000 W	Mostly TL (400x36 W) and sodium floodlights (20x400 W)	Large to very large numbers in times of heavy migration

observation periods were about 45 min per light color, alternated with 15-min breaks. In all, observations were collected over the course of 41 nights during autumn migration in 2003 (September–November) under various weather conditions. Moon phases were noted according to the monthly sun- and moon-phase calendar for Amsterdam. Cloud coverage was estimated on a scale of one-eighth of the sky covered as visible from the observation site. Wind direction, wind force, and precipitation were also noted, but not used in the subsequent analysis. Two categories of bird responses were distinguished: oriented flight (no reaction) and attraction to the light source (reaction). To avoid pseudoreplication due to group effects, both individual birds and bird groups were treated as single observations. As it was hard to identify birds at a species level, all observations were treated the same. The observed species were mostly passerines (thrushes and smaller songbirds), but also included some shorebirds, ducks, and geese.

Oriented flight was defined as flying in a straight line in the seasonally appropriate direction. As we mainly observed migrating birds coming from Scandinavia, we assumed a general North–South movement as being seasonally appropriate; see also Fig. 2. Birds flying straight lines but in different directions were not taken into account because they were most likely not autumn migrants. Directions were estimated when the bird or bird group flew

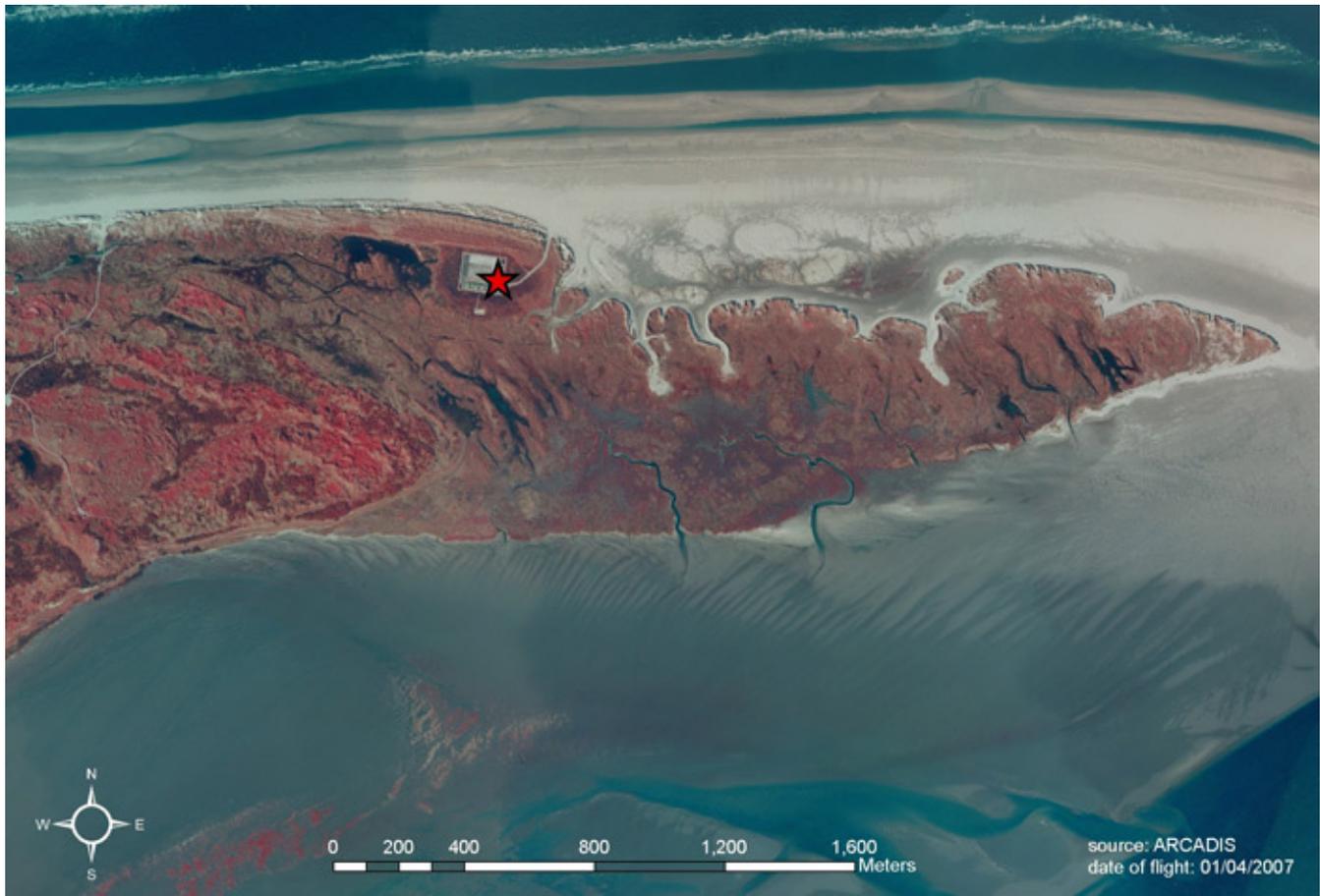
over the light source, which made it visible to the observer. Flight altitude of birds varied with weather conditions and species between ca. 10–100 m above the light source: birds flying higher could not be seen and were thus not included in this study.

We employed hierarchical log-linear modeling to statistically separate the possible effect of light conditions (white, red, green, and blue), overcast conditions (cloudy with more than 50% cloud cover or clear with at most 50% cloud cover), and moonlight (less than or equal to half moon, or more than half moon) on the reaction of the birds (reaction or no reaction).

We subsequently employed logistic regression to test the direction of the relationship between peak wavelength of the light and reaction of the birds. This analysis was necessarily restricted to the observations with red, green, and blue light and we included cloud cover as an additional independent variable.

Statistical analyses were performed using SPSS 15.0 for Windows (Release 15.0.1 dated 22 Nov 2006).

**Fig. 3.** Aerial view of the study area on 1 April 2007 (false color image produced by ARCADIS). The uninhabited eastern cape of the barrier island Ameland (Dutch Wadden Sea) is shown. The red star indicates the location of the artificial light source used for experiments.



## RESULTS

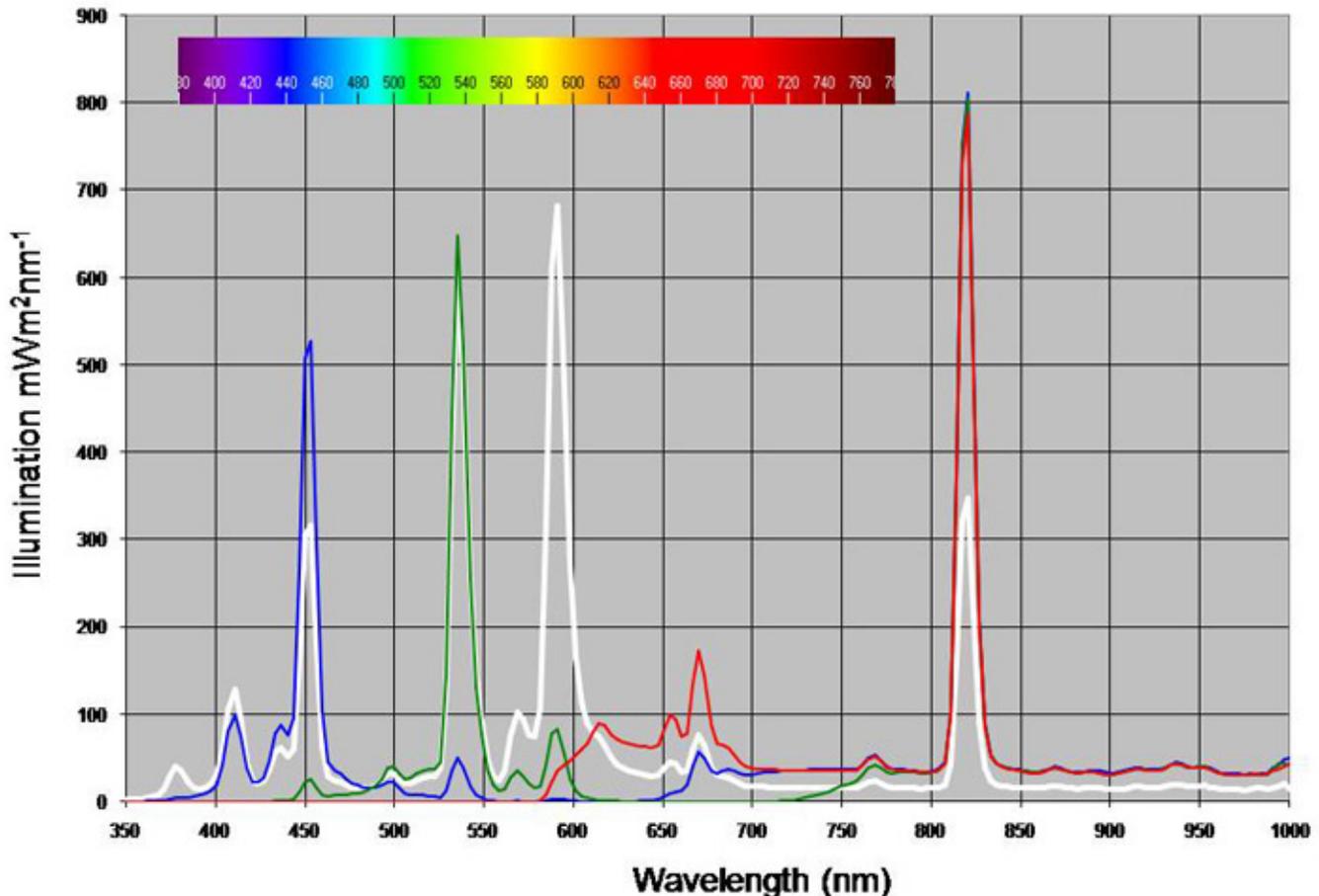
We obtained bird observations for all lamp types and weather conditions on different nights during the observation period. Light configurations (two types were used each night) were changed regularly in order to prevent possible order effects. The bird responses in all situations, including sample sizes, are given in Table 3.

Bird responses to the three different white-light conditions were statistically indistinguishable (Pearson  $\chi^2 = 4.945$ ,  $df = 2$ ,  $P = 0.084$ ) and thus all white-light data, irrespective of intensity, were totalled for further analysis. Under white-light

conditions, the birds were significantly disturbed and attracted to the light source. The same is true for the red-light condition. In blue-light conditions, birds generally followed a seasonally appropriate migratory direction. In green light, birds were less well oriented than in blue light, but significantly less disturbed or attracted than in red and white light (Fig. 5). The effects of disturbance and attraction were strongest on overcast nights, regardless of lamp configuration, indicating primary use of celestial cues for migratory orientation.

We started the log-linear analysis with the fully saturated model including reaction (REACT), light conditions (COLOR), overcast conditions (CLOUD),

**Fig. 4.** The spectral shape of, respectively, the diffuser filter (white line), the blue filter (blue line), the green filter (green line), and the red filter (red line).



and moonlight conditions (MOON), i.e., the generating class of this model is REACT\*COLOR\* CLOUD\*MOON. Table 4 shows the significance of all two-way and three-way interactions in this model involving the variable REACT, i.e., a reaction by the birds. There were highly significant two-way interactions between COLOR and REACT, and between CLOUD and REACT. The three-way interaction MOON\*CLOUD\*REACT bordered significance. We obtained the best-fitting hierarchical log-linear model ( $\chi^2 = 9.867$ ,  $df = 11$ ,  $P = 0.542$ ) using backward elimination of terms, i. e., non-significant terms ( $P > 0.05$ ) were dropped, starting with the least significant term. Comparing the best-fitting model with the model that excluded

the interaction between COLOR and REACT indicated that birds responded differently to different light conditions (partial  $\chi^2 = 153.68$ ,  $df = 3$ ,  $P < 0.0001$ ). Comparing the best-fitting model with the model that excluded the interaction between CLOUD and REACT indicated that birds were also affected by overcast conditions (partial  $\chi^2 = 13.71$ ,  $df = 1$ ,  $P < 0.001$ ). We found no effect of moonlight.

Logistic regression indicated that the probability that birds reacted to the light significantly increased with wave length of the light ( $B = 0.013$ ,  $Wald = 28.0$ ,  $df = 1$ ,  $P < 0.001$ ) and cloud cover ( $B = 0.014$ ,  $Wald = 4.8$ ,  $df = 1$ ,  $P = 0.029$ ). Thus, birds were

**Table 3.** Reaction of nocturnally migrating birds to different light conditions (peak wavelength indicated) under clear and overcast skies. It was noted that the red part of the spectrum is best characterized by a shoulder between 590–680 nm. The number of observations is given in parentheses, where groups are counted as a single observation.

Condition	Peak wavelength (nm)	% bird reaction clear sky	% bird reaction overcast conditions
White (diffuser)	—	60.5 (n = 38)	80.8 (n = 156)
Red	670	53.8 (n = 13)	54.2 (n = 24)
Green	535	12.5 (n = 8)	27.3 (n = 77)
Blue	455	2.7 (n = 37)	5.3 (n = 38)

more likely to respond to the light when it had a long wave length, i.e., when it was red, and when cloud cover was high, i.e., on overcast nights.

## DISCUSSION AND CONCLUSION

As in other field studies, strongest bird responses were found in white light, which seems to interfere with visual orientation on celestial cues (Verheijen 1958, Evans Ogden 1996): the artificial light becomes a strong false orientation cue and birds can get trapped by the beam (Verheijen 1958, 1985).

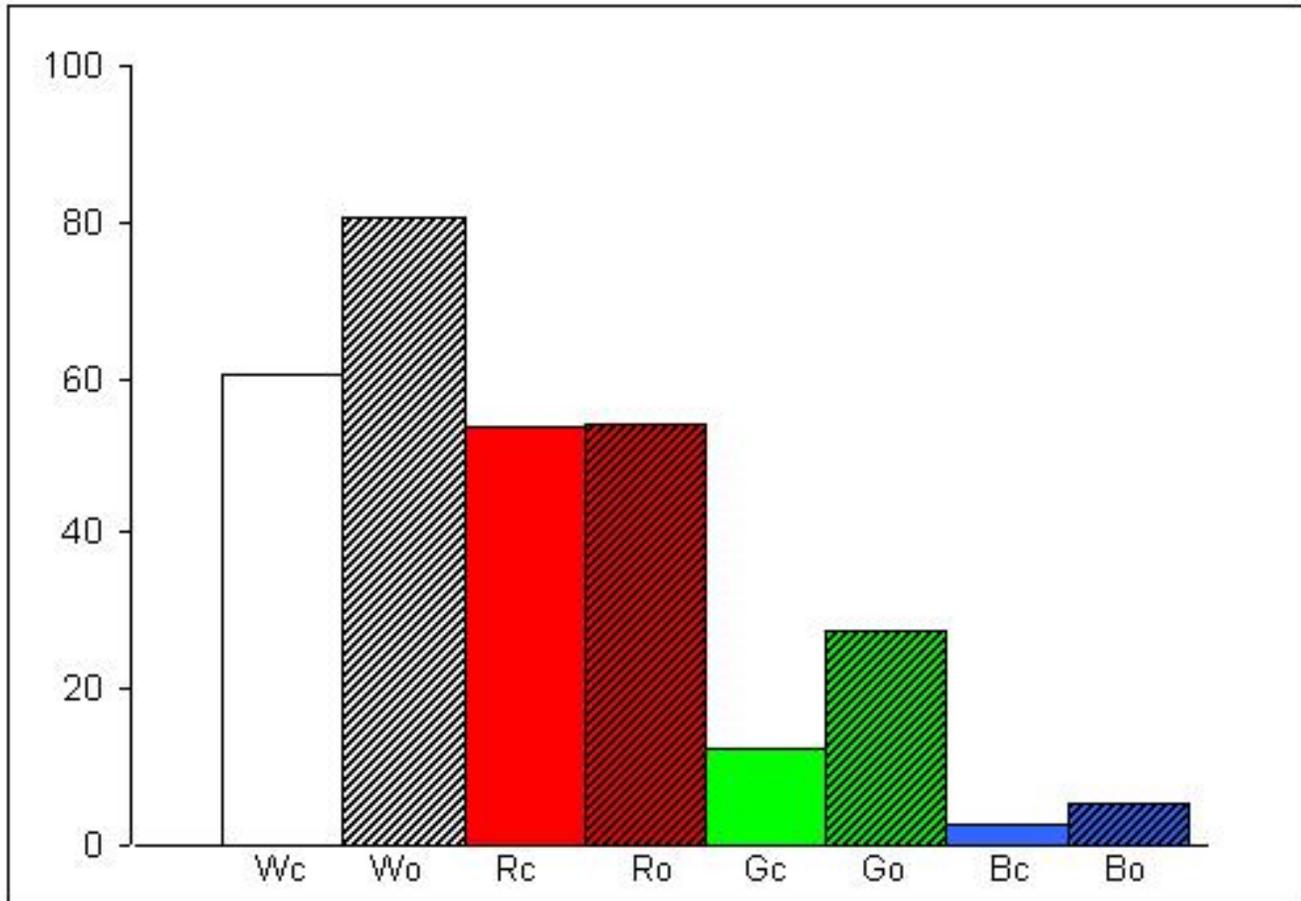
The bird responses observed in the colored-light conditions are similar to those of previous studies in the laboratory where red light caused disorientation by impairing magnetoreception (Wiltschko et al. 1993, Wiltschko and Wiltschko 1995b). In our study, birds were oriented in the seasonally appropriate migratory direction in blue light (Wiltschko et al. 1993, Wiltschko and Wiltschko 2001). As in these earlier laboratory studies, it was found that green light caused no or minor disturbance of orientation (Wiltschko and Wiltschko 1995b, Wiltschko et al. 2000, 2001, Wiltschko and Wiltschko 2001).

It is unlikely that differences in responses to various light conditions in our study were caused by differences in intensity. Red light caused disorientation at low light intensity, whereas the relatively high-intensity green light caused less

disorientation, even though birds are optimally sensitive to the green part of the spectrum (Maier 1992). Our results show also that bird responses to all light conditions are strongest on overcast nights when moon and starlight are unavailable as orientation cues. This finding is consistent with the outcome of previous research (Verheijen 1958, Evans Ogden 1996, Marquenie and van de Laar 2004). Overall, the results of our field study fit the hypothesis based on laboratory work that white and red light interfere with the magnetic compass of migrating birds. This magnetic compass is especially important to birds during overcast nights, when celestial cues are not visible. We did not find an effect of moonlight, but this could be due to small sample sizes. With larger sample sizes, we could have distinguished more than the two moonlight classes used in this study.

The impression that we derived from our observations on oil platforms leading up to this study was that birds could be attracted from up to 5 km distance with full lighting (30 kW). With the methodology of this study, we could not see birds flying much higher than 100 m, but the two lamps that we used were only 1 kW each. However, we cannot rule out the possibility that the birds that passed by in this study were already attracted to the experimental lamps from a much greater distance. At present, radar seems the only feasible option to study long-range responses of birds during the night. Future field experiments on the impact of bird-friendly lighting on nocturnally migrating birds

**Fig. 5.** Percentage of bird (groups) responding to different light conditions: white (W), red (R), green (G), and blue (B) under clear (c) and overcast (o) conditions during our observation period.



would do well to include the use of radar in their experimental setup.

From an applied perspective, the main conclusion that can be derived from this experiment is that birds do respond significantly differently under field conditions to various colors of artificial light, i.e., reactions of migratory birds to artificial light are largely determined by the wavelength characteristics of the light source. Migratory birds react strongest to white and red light (long wavelength); little to green light (shorter wavelength); and blue light (short wavelength) hardly causes any observable effect on the birds' orientation. Birds apparently did not react to the infrared heat radiation > 680 nm.

This led to the assumption that the visible long-wavelength part of the spectrum (excluding the infrared part) causes the disorienting effect on migrating birds. White light contains all parts of the spectrum (including long wavelengths), our red-light source only contained a small fraction of the long-wavelength part of the spectrum, and our green-light source contained very little long-wavelength radiation, whereas the blue-light source did not contain visible long-wavelength radiation at all.

Based on the results of the experiment presented here, it can be suggested that changing the color (spectral composition) of artificial lights for public

**Table 4.** Tests of all two-way and three-way partial associations involving reaction of the birds (REACT) in the fully saturated hierarchical log-linear model with generating class COLOR\*MOON\*CLOUD\*REACT.

Effect name	Partial $\chi^2$	df	P
COLOR*MOON*REACT	3.26	3	0.354
COLOR*CLOUD*REACT	1.50	3	0.682
MOON*CLOUD*REACT	3.59	1	0.058
COLOR*REACT	154.62	3	<0.001
MOON*REACT	0.94	1	0.331
CLOUD*REACT	11.29	1	<0.001

roads and on human-built structures will significantly decrease the number of casualties among nocturnally migrating birds. Therefore, as a follow-up, the electronics company Philips experimentally developed bird-friendly light sources, low in red. It was not possible to include only blue light, even though this would seem optimal from the point of view of the birds. The problem is that humans cannot work safely under blue light. Therefore, the newly developed light source includes the green spectrum and appears greenish to human observers. We replaced the lights of the offshore gas-production platform L15 with these new bird-friendly light sources in autumn 2007. Figure 6 shows that the platform is sufficiently visible from a distance with the new lighting and so far the crew of the platform has not filed complaints about the new working conditions. In fact, an unexpected added bonus of the newly developed bird-friendly lamps is that the platform crew stated that they were less blinding and increased contrast vision during crane operations. Preliminary observations also suggest that far fewer birds are attracted to the platform (van de Laar 2007). Just how strong the reduction is remains to be determined.

Our study has initiated new research on the effects of artificial lighting on migrating birds and the possibilities of the further development of bird-friendly artificial lighting that would still be safe for humans to work with. This light will lack the long-

wavelength part of the spectrum and will thus be seen as greenish by human eyes. Additional advantages of using such a new type of lighting are improved contrast due to the high sensitivity of the human eye for the green part of the spectrum, better reflection on (green) roadside vegetation, and potentially less disturbance of natural vegetation (flowering, seed setting, and germination) by affecting the red:far-red ratio (see, e.g., Pons 1986).

The concept of bird-friendly lighting can potentially be used everywhere, both off- and onshore, artificial night lighting affects migrating birds. Examples include marine ports, coastal refineries, industrial areas, highways, airports, etc. However, as the recent book on ecological consequences of artificial night lighting edited by Rich and Longcore (2006) abundantly proves, migratory birds are not the only species harmed by artificial night lighting. What is needed now are systematic investigations into the impact of bird-friendly light on other organisms than birds. In the case of oil platforms in the North Sea, for instance, the possibility that migratory fish and sea mammals are also affected cannot be ruled out. The question we now face is whether it is possible to develop light sources that satisfy human demands, yet do not harm the ecosystem in general.

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**Fig. 6.** Photo of the Nederlandse Aardolie Maatschappij (NAM) offshore gas-production platform L15, situated in the North Sea about 20 km offshore of the barrier island Vlieland (photo courtesy NAM), after our light-color recommendations were acted upon. At the time of the photo, some of the white lights still needed to be replaced by green lights.



Responses to this article can be read online at:  
<http://www.ecologyandsociety.org/vol13/iss2/art47/responses/>

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### Acknowledgments:

This work was funded by NAM. We thank the NAM Ame-1 crew and J. A. Poot for their help in conducting the experiments.

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## Ocean Energy Group

### REA RESPONSE TO THE GOVERNMENT CONSULTATION ON THE UK OFFSHORE ENERGY STRATEGIC ENVIRONMENTAL ASSESSMENT

The Renewable Energy Association represents British renewable energy producers and promotes the use of sustainable energy in the UK. The membership is active across the whole spectrum of renewables, including wave and tidal, electric power, heat and transport fuels.

The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 570 corporate members of the REA, making it the largest renewable energy trade association in the UK.

's is to secure the best legislative and regulatory framework for expanding renewable energy production in the UK. The Association undertakes policy development and provides input to government departments, agencies, regulators and NGOs.

In order to cover sector-specific issues, a number of so- s s' s up. The Ocean Energy Resource group, comprising more than 100 individuals, covers wave energy and tidal energy. The primary focus of the Group is the progress of energy conversion device development to prove the capability and survivability of full-scale prototypes, and the transitional measures required to finance projects and bring them to commercial fruition. The results of the UK Offshore Energy Strategic Environmental Assessment (SEA) are of fundamental interest to the Group since a similar SEA in English and Welsh waters is required for wave and s industry beyond

Scotland, where a full marine SEA has already been conducted.

This response to the UK Offshore Energy SEA consultation was formulated following discussions at a meeting of Ocean Energy Group on 12<sup>th</sup> March 2009.

#### The UK Wave and Tidal Energy Industry and the Offshore SEA

In 1997, the Marine For s s s ss renewable energy available in the oceans could be converted to electricity, it would satisfy the s

The UK possesses 's tidal energy resource (10-15% of the global resource) and 's s We currently lead the world in the development of wave and tidal stream device development. Exploitation of tidal and wave energy offers significant benefits to the UK, through the supply of a clean, renewable and secure source of energy and by 's s ss s

The Carbon Trust estimates that wave and tidal stream energy could contribute 15-20% of the UK's for the proposed Severn Barrage (which utilises tidal head rather than tidal stream technology) predicts that it could contribute an additional 5% of UK demand.

It is therefore vital that the government conducts a wave and tidal energy SEA in English and Welsh territorial waters, in order to progress the deployment of commercial-scale wet renewables in these areas. Until this work is completed, the Crown Estate will grant only short-term leases for

demonstration projects, which are defined as being no larger than 10MW. Such terms are not of interest to large utility companies and major investors.

The beneficial effect of conducting the requisite SEA on deployment of marine renewables is illustrated by the flurry of activity in the Pentland Firth, following the completion of the Scottish marine SEA and the subsequent announcement of a bidding round for commercial-scale sites by the Crown Estate in September 2008. Thirty eight individual companies and consortia have been invited to tender, following confirmation of their interest by registering for the pre-qualification process.

**The REA believes that it would have been a more effective and efficient use of public funds if an SEA for wave and tidal energy had been conducted alongside the SEA that is the subject of the present consultation. The cost of including wave and tidal would have been insignificant in comparison to the cost that will now be incurred in conducting a separate SEA.**

Evidence for this appears in the Non-Technical Summary of the UK Offshore Energy SEA:

- There is much overlap between the wave and tidal energy deployment activities that can interact with the natural and broader environment and those activities listed for offshore wind, oil and gas on page x of the Summary
- A similar overlap exists for interactions with other users of the marine space and material assets, as described on pages xvi- xviii of the Summary
- The interrelationships and cumulative effects described on page xviii of the Summary are incomplete without the inclusion of wave and tidal energy

the poten s s s s s s s s s s It is clear that the most sensible route would have been to conduct an offshore SEA encompassing **all** forms of marine energy offshore wind, wave and tidal, plus oil and gas.

### **Comments on specific recommendations of the UK Offshore Energy SEA**

The REA welcomes this opportunity to comment on the findings of the UK Offshore Energy SEA. We are pleased that the work has been conducted since it will enable further rounds of offshore wind farm leasing, which is crucial if the UK is to achieve its 2020 renewable energy targets. We cautiously support the findings and recommendations of the SEA, subject to the following provisos:

**Recommendation 1** states: *In areas with high renewable energy generation potential DECC should ensure decisions on renewable energy leasing and licensing for oil & gas (including natural gas storage) are coordinated to minimise potential sterilisation of areas for other industries. This recommendation extends to maintaining options for potential future geological storage of captured carbon dioxide*”.

The REA believes it is imperative that this recommendation specifically states that the coordination relates to wave and tidal energy generation, particularly for the limited areas of UK waters containing a high wave or tidal stream energy resource.

**Recommendation 3** states: *“Until there is a firmer base of information available to inform adaptive management, in respect of ecological receptors, a precautionary approach to siting is recommended since the offshore wind industry is relatively young, with appreciable technological development expected in for example, turbine size, rotation speed, spacing and potentially rotational axis. This precautionary approach dictates that unless suitable evidence indicates otherwise, avoidance (for the present) of areas known to be of key importance to waterbird and*

*marine mammal populations, including breeding colonies, foraging areas and other areas essential to the survival of populations”.*

The marine renewables community is by definition environmentally aware and the industry embraces environmental best practice. Our concern regarding application of the precautionary approach is that it makes it impossible to acquire evidence of minimal impact on the environment, as referred to in this recommendation. The REA would encourage regulators to accept that some

s s s s

**Recommendation 4** *s s Reflecting the relative sensitivity of multiple receptors in coastal waters, this report recommends that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km)”.*

Despite reassurance that the proposed coastal buffer zone is not intended as an exclusion zone, the REA is concerned that this statement is unnecessarily harsh and may deter developers from taking forward viable offshore wind projects, because of the expected consequential cost of underwater cabling.

I trust that the above comments are helpful. Please do not hesitate to contact the REA if you wish to discuss any of the points we have raised in this response to the UK Offshore Energy SEA consultation.

Dr Stephanie Merry  
Head of Marine  
Renewable Energy Association  
April 2009



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**By email only**

21<sup>st</sup> April 2009

Dear Sir / Madam,

**Offshore Energy SEA Consultation**

RES welcomes the opportunity to respond on the Department for Energy and Climate Change's Offshore Energy Strategic Environmental Assessment (SEA) consultation.

RES has been actively involved in the offshore wind farm industry since its inception as a developer and also as a provider of construction management and engineering services. RES developed the R1 Inner Dowsing wind farm and continues to provide a significant contribution to the development and construction of Centrica's R2 projects in the Greater Wash Strategic Area. RES has also played an important role in supporting industry liaison and support groups.

RES is therefore suitably well placed to comment on the SEA report for offshore energy.

***General Comments on the SEA***

RES welcomes the conclusion *"that there are no overriding environmental considerations to prevent the achievement of the offshore oil & gas, gas storage and wind elements of the plan/programme, albeit with a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea"*. However, RES does have some concerns with the recommended measures to prevent, reduce and offset significant adverse impacts. Importantly, the SEA should consider Environmental Impact Assessment as a tool to identify and mitigate potential impacts on the plan/programme.

**Coastal buffer**

The reasons given for the recommendation of a 12 nm coastal buffer are not clear and further confused by the statement in the conclusion of the non-technical summary that *"the proposed coastal buffer is not intended as an exclusion zone, since there may be scope for further offshore wind development within the area, but as mitigation for the potential environmental effects of development which may result from this draft plan/programme"*. Whilst there may be more existing constraints to development within coastal zones, a buffer based on 'possible' impacts is

too precautionary an approach. A better approach would be to note that potential impacts can be mitigated through undertaking a robust EIA prior to development to judge the level of impact of a specific plan/programme. This is a point that is well made later in the conclusions of the SEA.

#### Landscape and Seascape

Further clarity is required in the recommendations made to mitigate impacts of the plan/programme on landscape and seascape. How potential impacts on this environment contribute to a recommendation of a coastal buffer, are not clear and their appears to be a presumption of negative effects, which differs to our experience; the R2 Lincs wind farm, located 8 km off the Lincolnshire coast received an overwhelming positive response from local residents. An arbitrary buffer set now will serve little purpose apart from providing a useful tool for opponents to development within this zone.

#### Shipping and Navigation

MCA Marine Guidance Note 371 places great emphasis on the collection of robust shipping survey data and production of a Navigation Risk Assessment during the Environmental Impact Assessment phase of a plan/programme to determine the potential impact of that plan/programme on shipping and navigation. RES would recommend that we continue to use this tried and tested method to identifying the specific impact of wind farm development site-by-site on shipping rather than to arbitrarily preclude all development in areas that are important for shipping.

#### Grid

The 'likely evolution of the baseline' should also consider grid. Meeting future UK power demands will require significant reinforcement of the current Transmission Network, whether that demand is met by offshore wind or other forms of energy production.

If you require any further clarification on this response please don't hesitate to get in touch,

Yours sincerely,

Gero Vella  
Environmental Consents Manager  
RES Offshore

---

**From:** Richard Cowen  
**Sent:** 31 March 2009 00:10  
**To:** sea.2009@berr.gsi.gov.uk; sea.2009@berr.gsi.gov.uk  
**Subject:** Offshore Energy SEA Consultation

Dear Sir,

I refer to the Consultation Document in respect of the above.

First, I wish to comment that I fully support the Marine and Coastal Access Bill. I consider that a coastal footpath so far as is possible is highly desirable. Marine Conservation Zones are long overdue in this country. Other countries have established similar protection areas for marine life and I consider it is a disgrace that there is not at this stage statutory (as opposed to voluntary) protection for sensitive marine areas in this country. I have dived at St Abbs and off the Farne Islands - surely these areas warrant such protection for their diversity of marine life. And if the underwater environment is not protected, the diversity above the waves will soon be affected - as indeed may already have occurred with bird breeding rates crashing in many coastal areas.

I acknowledge that the Bill also makes provision for exploitation of the seas. Clearly this has been happening, not just in fishing but also mineral extraction, for generations. Overfishing, particularly in sensitive areas, may well be a greater cause of recent poor breeding success of seabirds than climate change. It may now be a little late in respect of mineral extraction as I understand gas and oil exploitation may be drawing to a close, but even so some control of this together with suitable national policies must be helpful. I appreciate both these subjects are likely to be very controversial.

However I think the primary purpose of this document is to consider renewable energy. I must start by commenting that, whatever the IPCC scientists may say, I remain sceptical about the causes and effects of climate change. Indeed, after two relatively cool winters, one is perhaps entitled to question whether any climate change is more cyclical than man made. I understand there has been more snow in ski resorts this year than for many a year.

On shore wind farms are clearly controversial. Whatever Mr Milliband may say about objectors being socially irresponsible, they cause considerable concern and there is increasing evidence that they may have a detrimental effect on the health and wellbeing of nearby residents. In addition, evidence obtained from the OFGEM ROC register suggests they are significantly underperforming - indeed, David Wighton in the Times on 6 March stated that during January they only operated at 10% of installed capacity.

In addition, it is generally acknowledged that wind farms need shadowing by conventional sources of power. Wind can never provide the base load. E.ON has stated that wind farms need perhaps 80 to 90% shadowing from these sources. That must significantly affect the claimed reductions in CO2 emissions but this aspect is rarely if ever mentioned in planning applications.

Consequently, whatever the situation may or may not be regarding climate change, one must question the validity of Mr Milliband's comment about social irresponsibility.

Off shore wind farms do perhaps have a more reliable fuel source. There is clearly more wind off shore than on shore. But even here it cannot be guaranteed and indeed there may be a greater problem with winds being too strong, when again turbines do not operate.

Clearly off shore wind farms do not cause the same problems to landscape and people's residential

amenities as on shore wind farms. But they can still affect sensitive land and seascapes. I think that the suggestion in this Assessment that large off shore windfarms of 100MW or more should be at least 12 miles off shore is a valid one. 100 MW however is a very large wind farm indeed and I suggest the 12 mile limit should apply to more than this. Indeed, I believe that care must be taken to prevent a series of smaller wind farms from being allowed within this 12 mile limit that, cumulatively, will amount to a large wind farm of these proportions.

I note the comments in the Assessment concerning how such development may affect wildlife. Birds obviously are particularly vulnerable. I am a keen bird watcher and am very aware that Britain has a seabird population that is perhaps second to only a very few. While these birds may often hug the coast that is far from always the case. Puffins and guillemots may come ashore to breed but spend the rest of the year out to sea. Common Scoter are very sensitive to noise and while they may want shallower waters are not always close to land.

I may have missed it, but have not noticed any reference to migrating birds. These of course are not sea birds but so many birds cross not just the Channel but also the North Sea. As I understand it, many travel at night. The risk of turbine collision for these birds must be high, and the only way we will have any idea as to whether it has happened is if numbers of migrating birds fall significantly. The chances of recovering bodies from the sea are nil. I fear the Assessment underplays the potential effect on birds generally.

The Assessment also considers the effect on fish and mammals, not just from noise but also from warming that may be associated with underwater cables and with electrical waves escaping from them. There is also of course the question of disturbance of the sea bed. With the numbers of off shore turbines being considered, this may be a significant factor. I think the Assessment properly draws attention to these factors but perhaps significantly underplays the potential effect of so many turbines off our shores.

We have all heard of whales and other cetaceans coming ashore. I am no whale expert but understand no one really knows why although military sonar has been blamed. I question whether there is likely to be a significant increase in view of the likely noise (particularly low frequency noise) from off shore turbines.

The Assessment suggests the risk to bats of collision is minimal. I am not sure of the migratory habits of bats and this finding may be because they do not cross the sea. However I am aware that it has recently been suggested that the greater cause of bat deaths from wind turbines does not come from collision, but the changes they cause in air pressure which bats cannot tolerate. This is not addressed in the Assessment.

I am aware there may be other problems with off shore turbines that affect other organisations. That is for them to comment upon. The only one I wish to mention is aircraft safety. I know wind turbines affect radar and while this may be primarily for those involved in the air industry to comment upon, I would like to think that when I am in a plane I am as safe as possible and that air traffic control does not lose the position of my and other planes when they are over wind farms

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06 April 2009

Dear Sir

## **Consultation on UK Offshore Energy Strategic Environmental Assessment. Future Leasing for Offshore Wind Farms and Licensing for Offshore Oil & Gas and Gas Storage - Environmental Report, January 2009**

We refer to the Department's consultation in relation to the above. We set out below our comments on the Environmental Report.

The RYA is the national body for all forms of recreational and competitive boating. It represents dinghy and yacht racing, motor and sail cruising, RIBs and sportsboats, powerboat racing, windsurfing, inland cruising and personal watercraft. The RYA manages the British sailing team and Great Britain was the top sailing nation at the 2000, 2004 and 2008 Olympic Games.

The RYA is recognised by all government offices as being the negotiating body for the activities it represents. The RYA currently has over 100,000 personal members, the majority of whom choose to go afloat for purely recreational non-competitive pleasure on coastal and inland waters. There are an estimated further 500,000 boat owners nationally who are members of over 1,500 RYA affiliated clubs and class associations.

The RYA also sets and maintains an international standard for recreational boat training through a network of over 2,200 RYA Recognised Training Centres in 20 countries. On average, approximately 160,000 people per year complete RYA training courses. RYA training courses form the basis for the small craft training of lifeboat crews, police officers and the Royal Navy and are also adopted as a template for training in many other countries throughout the world.

The RYA welcomes this opportunity to comment on the Environmental Report.

### **1 General comments**

1. The SEA covers the development of offshore wind energy, offshore oil and gas extraction and gas storage. Of primary concern to the RYA is the development of offshore wind energy. Our concerns with these developments can be summarised as follows:

- **Navigational safety:** Collision risk; Risk management and emergency response; Marking and lighting; Effect on small craft navigational and communication equipment; Weather
  - **Location:** Loss of cruising routes; Squeeze into commercial routes; Effect on sailing and racing areas; Cumulative effects; Visual intrusion and noise
  - **End of life:** Dereliction; Decommissioning
  - **Consultation**
2. We would encourage future reports to be consistent in their terminology and refer to distances at sea in nautical miles and fractions of nautical miles and navigational speed accordingly should be measured in knots. Reference to kilometres, if required, should follow the nautical miles in brackets. Depths and heights should be measured in metres.

## 2 Site Selection

1. It is our belief that in order to achieve the objectives as set out in the SEA, there are areas of the identified zones that would not be able to be developed. Objectives of specific relevance to the RYA are:
  - Balance other UK responses and activities (including recreation) with the need to develop offshore energy resources
  - Safety of navigation
2. The report highlights that due to the scale of the proposed development an issue previously considered minor may result in a major impact. In addition, commercial and recreational navigation previously not in conflict may be brought into direct conflict with associated safety implications as a result of the developments. We would support that all future developments fully consider the cumulative effects of their site. Navigation is considered a key spatial issue and free unconstrained navigation routes are vital to the UK and a requirement in both territorial and EEZ under UNCLOS. The report recognises the need to minimise any increase to the risk of collision and vessel passage time through route deviation which clearly has its own implications in terms of carbon emissions.
3. We are fully supportive of Recommendation 2 (a) and (e) in the report that states: Offshore wind farms should aim to minimise the disruption, economic loss and safety risks to other users of the sea and for the UK as a whole there should be a presumption against development which impinges on major commercial navigation routes, significant increase in collision risk or causes appreciably longer transit times and results in significant detriment to tourism, recreation and quality of life.
4. The proposed development for offshore wind is considerable. An area of 10,000km<sup>2</sup> could be occupied by 5000 turbines. Whilst we understand that the actual developments will only take up part of the identified 'zones', at this stage we have to assume that developers would attempt to maximise single development in each zone and it is unclear as to which zones at present would be favoured.
5. The extent of the project has resulted in the report concluding that there will be a significant environmental effect, including a significant effect on other users of the sea. We are encouraged that the report sees this significant effect on navigation. As a result, the report concludes that the bulk of the generation capacity should be away from the coast, generally outside the 12nm. The RYA is extremely supportive of this conclusion and feels that much of the potential risk to recreational craft posed by such large scale development will be avoided by keeping development beyond 12nm. We should also like to emphasise as stated in the report, that 12nm is the minimum distance from the coast that is found in other European developments.

6. We do acknowledge that there may be some scope for development within the 12nm buffer but this would be based on more work. We assume that this would be in areas lightly used by navigation (commercial and recreational) as well as for other reasons.
7. We are supportive of the statement that IMO routing measures and MCA advice on 'siting not recommended' will be taken into account and for general development guidance on OREI's, developers should refer to MGN 371.

### **3 Data on recreational boating**

1. The SEA states that it intends to consider the environmental implications of the plan which includes interactions with 'other users of the sea'. Navigation is included in 'other users of the sea' and we are pleased to see that the report does identify 'yachting' as a specific activity. It should however, be emphasised that whilst 4 weeks of AIS data has been collected for the SEA this method will not pick up the majority of recreational craft which are not required to carry an AIS transponder. We are pleased to see the RYA Atlas of Recreational Boating has however been used to identify recreational routes, sailing and racing areas. We enclose a copy of the Atlas for reference. Further copies can be requested from the RYA and we would expect this information to be used in specific site selection.
2. The Atlas is an important source of information for recreational boating activity as it gives a comprehensive picture of an informal activity that is difficult to accurately monitor. Recreational and commercial navigation differ in many ways and the understanding that recreational navigation avoids the main shipping routes on the basis of safety is of paramount importance when planning for offshore wind developments often requiring space to be retained outside commercial shipping lanes for recreational routes. In addition it should be understood that sailing yachts will not necessarily follow a direct line between A and B, their line of travel depends on the direction of the wind on the day.

### **4 Navigating around wind farms**

1. We note that the understanding of wakes between turbines is likely to result in an increased distance between turbines as well as between wind farms. 0.5 nm (850m) between the turbines in rows, 0.7 nm (1200m) between rows and 3nm (5km) between farms. The report also states that vast majority of recreational vessels would not be excluded from the wind farm development areas. On the basis of the above figures and in favourable conditions, a mariner would be happy to transit a wind farm area and we would not expect them to be excluded from the site. However, in unfavourable conditions which must be planned for, the mariner may opt to avoid the site all together in which case extending the time at sea and increase the risk to their safety in these adverse conditions.
2. Deviation of routes should include recreational vessels and it should be noted that in unfavourable conditions, recreational vessels may well avoid these developments increasing travel time. 5 knots speed is generally used for average passage planning.
3. We have developed what we regard as a safe rotor clearance height for the majority of recreational craft at 22m above MHWS. We note that the report states this clearance should be adhered to unless there is proof that a lower level carries no added risk. We would not support a proposal where this height is reduced. It should be noted that as vessels increase in size and technology improves, mast height is likely to increase, not decrease. This factor alone should preclude the consideration of a lower level.
4. Marking, lighting and visibility of offshore wind farms has been standardised and Trinity House takes the lead on this. We liaise with Trinity House as to any concerns we may have and expect them to be fully consulted and continue to take the lead in this matter.

## 5 Identifying development

1. On the basis of the SEA objectives, conclusions and recommendations and our above comments we would expect developments to:
  - Balance other UK marine resources, including recreation with offshore energy resources and ensure safety of navigation is maintained
  - Recognise that AIS is not representative of all vessels and as a result use the RYA Coastal Atlas to identify recreational boating activity
  - Protect coastal navigation by maintaining a 12nm buffer from the coast
  - Recognise that recreational craft avoid shipping (Coastal and international) routes so buffer areas between developments and shipping lanes should be planned in for small craft
  - Maintain a minimum air draft of 22m above MHWS
  - Not exclude recreational vessels from wind farm development areas
  - Take specifications from Trinity House with regard to marking, lighting and visibility of offshore wind farm sites

## 6 Site specific comments

1. Poole Bay: We do not see any part of this zone that could be safely developed. The zone is in a heavily used navigational area with vessels entering the Solent through the Needles Channel and heading towards or from the Eastern entrance to the Solent. In addition, vessels leave the coast at Poole, the Needles and Christchurch for France and the Channel Islands bisecting the zone in several places. High speed cross-channel ferries also cross this area. This area is a good example of recreational craft and commercial vessels being able to stay out of conflict. It is our belief that safety of navigation would be seriously compromised should any area be developed which would be contrary to the SEA objectives. Additionally, over half of the area lies within the 12nm buffer which again is contrary to the SEA recommendations.
2. SE Zone: This zone lies almost entirely within 12nm from the coast, and would appear to be of limited potential for development on the SEA's own recommendations. From the recreational perspective again we can only see limited opportunity for development whilst ensuring navigational safety.
3. East Anglia: There are several routes crossing the North Sea from UK ports to Holland, Belgium and France which should be safeguarded. However, there are parts of the zone that we believe could be safely developed.
4. Lincolnshire coast: The area further offshore can be safely developed in terms of recreational boating, whilst the area closest to the shore is crossed by a number of routes, some of which would be adversely affected due to the existence of proposed Round 2 sites.
5. Scotland: Both of the Scottish sites are crossed by coastal cruising routes which should be preserved. However we see that there may be some scope for development. The SEA should have taken into account the latest proposal from Crown Estate and the Scottish Government as the cumulative effects of the proposals within 12nm from Crown Estate and those in this

SEA outside 12nm. There is a clear need here for integrating the planning for offshore renewables.

6. North West: This zone impinges on the shipping lane as commercial vessels leave the Traffic Separation Scheme and approach Liverpool Bay. This will leave little or no area for recreational vessels that are navigating alongside the TSS and the shipping lane heading for the same destination. The zone is also crossed by numerous routes transitting between Wales, Ireland, England, Scotland and the Isle of Man. There may be some scope for development in such a large zone. Any prospective site must fully examine the recreational and commercial navigation use of the area.
7. Severn Estuary: This site lies almost entirely within the 12nm zone and in a busy navigational area which would be contrary to the SEA's recommendations. The site is crossed by numerous routes. We believe there is limited potential to develop this zone without adversely impacting recreational boating.

Please do not hesitate to contact me if you have any questions or queries arising from our response. On behalf of the RYA, I would be pleased to be involved in any future consultations or discussions. We would welcome early dialogue with all developers looking to exploit any of these areas.

Yours faithfully,



Dr. Susie Tomson  
RYA Planning and Environmental Advisor

Encl: RYA's UK Coastal Atlas of Recreational Boating



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# Offshore Energy SEA Consultation

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# Response by RWE npower renewables to the Offshore Energy SEA Consultation

## 1. Introduction

- 1.1 This response is submitted by RWE Npower Renewables Limited (NRL), a subsidiary of RWE Innogy, one of the RWE Group of companies.
- 1.2 From the start of the wind industry in the UK, in the early 1990s, NRL has been a market leader; initially with onshore developments in England and Wales, and later in Scotland.
- 1.3 In November 2003 NRL was the first company to supply electricity to the UK grid from a fully commercial offshore wind farm, the Round 1 North Hoyle project. A second Round 1 project, Rhyl Flats, is currently under construction and due to be completed later this year.
- 1.4 In December 2003 NRL was awarded two Round 2 projects: the 750 MW Gwynt y Môr, and 1,200 MW Triton Knoll offshore wind farms. In November 2008 NRL took the decision to invest in 50% of Greater Gabbard, the first Round 2 project to enter construction.
- 1.5 In total NRL has a UK offshore wind portfolio amounting to 2,350 MW, of which 400 MW is in operation or under construction and 750 MW is consented awaiting construction. In Germany RWE Innogy owns the rights to the 960 MW Innogy Nordsee 1 project, which is currently completing the consenting process.
- 1.6 It is NRL's intention to continue to lead the development of the offshore wind industry with its ambitious plans to develop further offshore wind farms under the Round 3 process.
- 1.7 In August 2008 NRL acquired the development assets of the Atlantic Array project from Farm Energy, who had started to develop the project in 2005.
- 1.8 Building on the legacy of Farm Energy's early predevelopment activity, including an agreement with National Grid to connect 1,500 MW of offshore wind power in October 2014, NRL would like, subject to The Crown Estate (TCE) tender process, to deliver the first Round 3 project in the water within Zone 8 in the Bristol Channel.
- 1.9 In pursuit of this aim NRL has formed the Bristol Channel Zone (BCZ) Alliance to assess the capacity of TCE Zone 8 for offshore wind farm development and to produce the development proposal submitted to TCE on 3 March 2009.
- 1.10 The members of the BCZ Alliance, in addition to NRL are RPS, KBR, SeaRoc and Zero Carbon Marine (Farm Energy successor company).
- 1.11 In March 2009 NRL, together with SSE and Norwegian energy companies Statoil and Statkraft, announced that they had formed a joint venture called Forewind to submit bids to TCE for Round 3 Zones.

- 1.12 In addition to its Round 3 interests NRL in partnership with SeaEnergy was also recently successful in obtaining an exploration licence for the proposed offshore wind farm Inch Cape, as part of the Scottish Territorial waters offshore wind development round.
- 1.13 NRL therefore has extensive interests in developing, constructing and operating future offshore wind farms in UK territorial waters and the Renewable Energy Zone (REZ) both as a sole developer, in partnership with SeaEnergy and as a member of the Forewind consortium.
- 1.14 As Forewind will be submitting a response to the Offshore Energy SEA Consultation, this response focuses on the SEA Environmental Report as it impacts the development of the BCZ, TCE Zone 8. The contents of this response are however equally relevant to our proposed offshore wind farm Inch Cape, which is located within Scottish Territorial Waters.
- 1.15 NRL fully endorses the Government's draft plan for offshore wind energy and supports the intent of the programme to enable further rounds of offshore wind farm leasing in the UK Renewable Energy Zone and the territorial waters of England and Wales with the objective of achieving some 25GW of additional generation capacity by 2020, not including the territorial waters of Scotland.

## 2 SEA Process and Review of Conclusions

2.1 The Environmental Report of the SEA process was published in January 2009.

2.2 The SEA is intended to:

*'Consider the environmental implications of a draft plan for licensing for offshore oil and gas, including gas storage, and leasing for offshore wind. This includes consideration of the implications of alternatives to the plan/programme and the potential spatial interactions with other users of the sea.*

*Inform the UK Government's decisions on the draft plan/programme.*

*Provide routes for public and stakeholder participation in the process.'*<sup>1</sup>

2.3 The Environmental Report provides baseline information in relation to each of the zones put forward as part of the Round 3 leasing process. Based on this information, a broad assessment of potentially significant effects on the environment has been undertaken.

2.4 Section 6 of the Environmental Report recommends the following:

*'The draft plan/programme for an additional 25GW of offshore wind farm (OWF) generation capacity will require wind farm development on a massive scale. In advance of a formal marine spatial planning system being in place for the UK, the leasing and consenting of OWFs must ensure the minimisation in disruption, economic loss and safety risks to other*

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<sup>1</sup> Page 1 Section 1.1

*users of the sea and the UK as a whole. In particular there should be a presumption against OWF developments which:*

- a) impinge on major commercial navigation routes, significantly increase collision risk or cause appreciably longer transit times*
- b) occupy recognised important fishing grounds in coastal or offshore areas (where this would prevent or significantly impede previous activities)*
- c) interfere with civilian aviation including radar systems*
- d) could potentially jeopardise national security for example through interference with radar systems or significant reductions in training areas*
- e) result in significant detriment to tourism, recreation and quality of life.<sup>2</sup>*

2.5 The Environmental Report recommends that a precautionary approach is taken and in particular recommends a buffer zone for offshore wind farm development of 12 nautical miles (22km) from the coast to minimise the effects on

*‘...the relative sensitivity of multiple receptors’<sup>3</sup>*

2.6 The report states that the 12 nautical miles should not be an exclusion zone, as there may be scope for development within this area, and notes that the suitability of a development can only be judged after

*‘Detailed site-specific information gathering and stakeholder consultation’.*

However, it recommends the buffer zone as:

*‘mitigation for the potential effects of development which may result from this draft plan/programme’.*

### **3 Consideration of the SEA Applied Coastal Buffer**

3.1 Although the SEA has identified various additional datasets and also provided detail in terms of the regional sea baseline, the baseline information provided in the SEA Environmental Report is in broad agreement with that collated and considered in the work undertaken to date by NRL and also in the MaRS collated by TCE.

3.2 The SEA consistently identifies the coastal buffer as an area which should not be seen as an exclusion zone

*‘.....since there may be scope for further offshore wind development within this area, but as mitigation for the potential environmental effects of development which may result from [the] draft plan/programme’.<sup>4</sup>*

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<sup>2</sup> Page 213 Section 6.1

<sup>3</sup> Page 214 Section 6.1 (4)

<sup>4</sup> Page 158 Section 5.7.3

- 3.3 However the SEA does in fact treat it as such in identifying the areas of potential development where the coastal buffer zone has been used to remove English and Welsh territorial waters entirely and hard constraints have also been applied to further diminish the available area for development within the UK REZ.<sup>5</sup>
- 3.4 The following sections provide a view on the sensitive receptors and constraints lying within the 12nm 'buffer' zone as identified in the SEA in order to provide a clear view on the applicability of this generically applied mitigation measure to illustrate the limitations this imposes on development under Round 3.

#### **4 Coastal navigation routes, port access and safety**

- 4.1 The SEA Environmental Report identifies AIS data to inform the spatial mapping of areas of importance for coastal navigation, port access and navigational safety. This is in line with the NRL mapping work undertaken in formulating its project proposals.
- 4.2 However, in the SEA these are augmented with MCA 'siting not recommended' areas derived from unpublished (and officially unavailable) OREI 1 primary navigation routes.
- 4.3 The effect of this is to sterilize wide expanses of the sea area around the UK, substantially over and above those areas which can be demonstrated to be heavily used by shipping as derived from the vessel tracking data (AIS).
- 4.4 In contrast the NRL mapping and assessment process based shipping constraints on analysis of vessel densities, thus providing potential for identifying sites for offshore wind farm development within potentially less critical areas for shipping.
- 4.5 TCE's MaRS based approach appears to support NRL's assessment process in that the Zones accommodate known shipping routes presumably on the understanding that there was potential for negotiation around the less dense vessel route areas.
- 4.6 Whilst shipping density is cited within the SEA as playing a role in the determination of constraint areas, the default position seems very much in line with the MCA's 'clearways' approach.
- 4.7 If taken at face value, the approach taken by the SEA eliminates much of the sea area within 7 out of the 9 Round 3 zones identified by TCE.
- 4.8 The need to apply a buffer zone of 12nm to the coast to protect navigational routes, lanes, port access or even navigational safety seems out of line with the measures already in place in the assessment of project location, and historical practice and due processes, already undertaken in consenting Round 1 and Round 2 offshore wind farms.
- 4.9 Close liaison with the MCA, Trinity House and the Chamber of Shipping through the established Nautical and Offshore Renewables Energy Liaison (NOREL) Group, provides a forum for marine industries and Government to discuss matters of mutual interest related to navigational safety.

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<sup>5</sup> Page 154 Fig 5.24

- 4.10 This, coupled with formal Navigation Risk Assessments (NRA's) that assess the implications for actual vessel usage of sea areas obtained through AIS data and site-specific surveys (including smaller vessels), provides the appropriate level of rigour in considering the likely effects of siting a wind farm in a given sea area. Indeed the Environmental report states in Section 5.7.4. 'Navigational Risk Assessment' that *'The SEA judgement is that sufficient regulatory control exists, at the consenting and operational stages to manage navigational safety risk effectively'*.
- 4.11 If the closest to shore routes and navigational areas need to be protected by employing a blanket measure, it is considered likely that these would have been sufficiently protected utilising a smaller buffer area, more in line with the 13km zone used in both NRL's and TCE's mapping exercises.

## 5 Inshore fisheries

- 5.1 Fishing activity is one of the key spatial issues identified in the SEA for consideration within the context of offshore energy developments.
- 5.2 Almost all areas of UK waters are subject to some degree of fishing, much of which is focused on specific areas either as a result of targeting specific species/seabed types, or through a reliance on accessibility, the latter being of most importance for smaller inshore vessels of limited range. Such inshore vessels are identified as being the most sensitive to displacement etc. impacts from OWF developments.
- 5.3 The principal mitigation measure applied within the SEA for avoiding or minimizing conflict with fishing interests is the application of the 12nm coastal buffer.
- 5.4 However it is notable that many areas outside the 12nm mark are also recognised as being subject to UK and international fishing effort. It is further recognised that even within the 12nm zone there are areas of less intensive activity but these may still comprise areas of great local significance, which should also therefore be avoided by OWF development.
- 5.5 Whilst the protection of the interests of inshore fisheries is obviously important to consider, particularly for smaller vessels of limited range, the majority of such vessels would be anticipated to fish much closer to shore than the 12nm limit.
- 5.6 A coastal buffer may well serve to minimise conflict and substantially mitigate displacement effects on the most vulnerable (smallest) vessels, however fisheries liaison, conducted in-line with guidance published by FLOWW<sup>6</sup> will provide the most appropriate level of site-specific assessment.
- 5.7 This could be augmented by applying a buffer zone specifically targeted at protection of the most vulnerable vessels, i.e. inshore waters within 8-13km, which would sit well with the jurisdiction of the sea fisheries committees areas (within 6nm).

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<sup>6</sup> Fishing Liaison with Offshore Wind and Wet renewables group (FLOWW)

- 5.8 Overall, it is suggested that the potential importance of areas for both fishing and energy industries would suitably be negotiated during the feasibility and pre-development phase, rather than being provided for by applying a blanket (effectively exclusion zone) measure.

## 6 Aviation aerodrome safety, civilian and military radar interference

- 6.1 As stated in Appendix A3h.3 of the SEA Environmental Report, offshore wind farms have the potential to affect aerodromes and both civilian and military radar systems, and certain civilian and military aerodromes and technical sites are officially safeguarded to ensure that their operation is not compromised by developments such as wind farms.
- 6.2 From safeguarding maps presented in the SEA report, buffer zones around civilian sites include:
- a 15km buffer indicating the height above ground level for which any proposed development must be consulted upon; and
  - a 30km buffer delineating the area within which a local planning authority is required to consult with the relevant aerodrome regarding any wind turbine proposal.
- 6.3 The provision for military sites is conducted on a site-by-site basis.
- 6.4 Further to these provisions for aerodrome sites, there is also information from NATS En-Route Ltd (NERL) presented showing the likelihood of interference from wind turbines on its radar network for a range of turbine tip heights (from 20-140m).
- 6.5 There is additional mention made of extending this height to 200m to accommodate the larger turbines likely to be deployed in Round 3 projects. Although these maps are not provided in the Environmental Report or its annexes, the commentary suggests that the areas of interference are extended line-of-sight by some 10km when the tip height is increased from 140 to 200m.
- 6.6 The application of the 12nm buffer zone to provide for mitigating sectoral conflicts in this instance is again questionable.
- 6.7 Firstly, the buffer zone would negate the potential development of areas within several TCE zones, including the Bristol Channel, which are clearly outwith any consultation buffer areas from any known installations or sites in the region as illustrated by the safeguarding maps presented in the SEA; and secondly, there is a range of activity ongoing which is attempting to mitigate wind turbine effects on radar coverage which may provide for development in areas currently subject to potential conflict between the two sectors.<sup>7</sup>
- 6.8 Clearly, the role of consultation in determining acceptable locations for offshore wind farm siting is the most appropriate route to minimising conflict and thus constraint on the activities of either sector.
- 6.9 Indeed, the SEA Environmental Report states this quite clearly

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<sup>7</sup> For example NATS (2008). Mitigating the effects of wind turbines on NATS En-Route Ltd (NERL) operations. Unpublished report, 13pp.

*‘Detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 or subsequent wind farm projects close to the coast can be assessed’.*<sup>8</sup>

- 6.10 A generically applied buffer zone mitigation measure uniformly extending 12nm from the coast would therefore seem to be an inappropriate measure in terms of safeguarding aviation interests.

## **7 Coastal PEXA danger areas (using Bristol Channel Zone as an example)**

- 7.1 The SEA Environmental Report recognises the widespread military use of the coasts and seas of the UK and the Bristol Channel is no exception, with extensive defined danger areas (army) in proximity to the BCZ off south Pembrokeshire (Castlemartin and Manorbier) and Camarthen Bay (Pendine and Pembrey).
- 7.2 It is important to note, however, that the PEXA danger areas defined already offer a safety ‘buffer’ around the actual firing range activity and as such the areas indicated on the mapping presented in the SEA report require no further exclusion zone to be established around their boundaries.
- 7.3 It is equally important to note that the BCZ, although close, does not show any overlap with these areas at any point.
- 7.4 On this basis, and notwithstanding project specific consultation with MoD, the selection by TCE of the BCZ perimeter already provides for avoidance of any conflict with military activities in this area. As such, there is little to be gained from applying the coastal buffer zone and it is therefore considered inappropriate to do so in relation to military areas.

## **8 Recreational and racing yachting, boating and coastal tourism**

- 8.1 In general, tourism, recreation and quality of life are difficult to quantify with any degree of certainty since:
- tourism effects, in most cases of already built wind farms, are difficult to discern, if any;
  - the recreation value of any particular offshore site is not always known to any greater level of detail than the sailing areas as provided by the Royal Yachting Association. This is further complicated by the fact that recreational sailing is allowed within offshore wind farms and that the overall effect on recreation is very difficult to quantify; and
  - as with the above factors, ‘quality of life’ is similarly difficult to quantify, either positively or negatively.
- 8.2 As the SEA has recommended a presumption against offshore wind farm developments which *‘result in significant detriment to tourism, recreation and quality of life’*<sup>9</sup>, it is imperative that the factors which result in ‘significant

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<sup>8</sup> Page 214 Section 6.1 (4)

<sup>9</sup> Page 213 Section 6.1 (2e)

detriment’ are spelled out in terms of the provision of an objective method of assessment.

- 8.3 Despite the many Public Inquiries in the last 15 years into onshore wind farms in the UK, no such method has emerged to allow the assessment of detriment to tourism, recreation and quality of life by onshore wind farms. It is therefore reasonable to assume that no such method will emerge in the future for offshore wind farms.
- 8.4 In the Environmental Report, it is stated that *‘conflicts with recreational activities are expected to be substantially mitigated by a coastal buffer zone’*.<sup>10</sup>
- 8.5 The exclusion of OWF development within the 12nm area would indeed provide for safeguarding of recreational activities around the UK coastline, but the area so protected is significantly greater than that subject to high recreational use.
- 8.6 The focus of coastal tourism interests lies in the close inshore area generally, although it is acknowledged that some extend this area of interest further offshore, for example scenic value, sailing, racing, motor boating and angling activities, but still well within a few miles of the coast.
- 8.7 The provision of a buffer zone to protect these activities and maintain the important economic benefits provided by an active tourism industry is acceptable in principle; it is the spatial extent of such a zone which is questionable.
- 8.8 A buffer zone, if any is to be applied, extending to some 8-13km as has been employed previously would seem to provide for appropriate levels of protection for the high-usage areas and it seems likely that extending this area to 12nm from shore will do little to increase this level of safeguarding.

## 9 Landscape/Seascape

- 9.1 The Environmental Report states that the suitability of development can only be judged after *‘detailed site-specific information gathering and stakeholder consultation’*.<sup>11</sup>
- 9.2 Furthermore, the Landscape Institute and Institute of Environmental Management and Assessment guidance set out in the Guidelines for Landscape and Visual Impact Assessment 2002 (GLVIA) requires that site specific sensitivity be taken into account in locating development:

*‘Landscapes vary in their capacity to accommodate different forms of development. Sensitivity is thus not absolute but is likely to vary according to the existing landscape, the nature of the proposed development and the type of change being considered. Sensitivity is not therefore part of the landscape baseline, but is considered during the assessment of effects.’* (para 2.28).
- 9.3 On this basis, the appropriate distance for wind farm development from the coast will vary dependant on site specific conditions. In addition to the nature

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<sup>10</sup> Page 156 (4<sup>th</sup> bullet) Section 5.7.2

<sup>11</sup> Page 214 Section 6.1 (4)

of the site, the potential environmental effects will be dependant on the nature of the proposed development.

- 9.4 Section 5.6.1.3 of the Environmental Report deals with experience from previous wind farm studies. This section illustrates the range of distances at which effects may arise from offshore wind farm development.
- 9.5 No particular distance emerges from this section as a clear threshold of significance, although the report notes that DTI (2005) guidance indicates that the limit of any significant effect in areas of moderate sensitivity can be considered at a distance of 30-35km offshore.
- 9.6 The information presented in this section of the Environmental Report does not include the consented London Array offshore wind farm. The turbines proposed for this project were 155-180m in height located at 20.5-22.5 km from the coast and the predicted significance of landscape and visual effect varied from negligible to slight. The closest nationally designated landscape (the Suffolk Coasts and Heaths AONB) lies 24km from the London Array scheme. Locally designated areas e.g. Special Landscape Areas were closer, as were lengths of Heritage Coast, which are a non-statutory designation. However, the impact on all these landscapes was considered to be negligible, and this was not disputed during the consenting process.
- 9.7 The closest turbine of the Gwynt y Môr offshore wind farm is 12.7km from the coast. The ES and SEI for this project considered the 'worst case scenario' of 5MW turbines of approximately 161m to blade tip. The significance of effects ranged from insignificant to moderate/substantial. The latter effect was for one viewpoint only (not a designated landscape/townscape). The significance of effect from the Anglesey AONB and the Clwydian Range AONB was considered to be slight.
- 9.8 In the application of a buffer zone, the Environmental Report does not acknowledge that turbine height, together with distance from the shore, will also play a role in the likely significance of visual effect.
- 9.9 The Environmental Report acknowledges that development scenarios will vary for each individual wind farm
- '...though the principal factors affecting visibility other than distance from the coast are lighting, turbine arrangement and individual turbine size'.<sup>12</sup>*
- 9.10 Despite this acknowledgement that the nature of the scheme, including turbine number, arrangement and size will affect the likely effects of the scheme, the report proposes a universal 12nm buffer applicable to all of the Round 3 zones.

#### *Consideration of a Buffer Zone*

- 9.11 In considering the need for a coastal buffer, Section 5.7.3 of the Environmental Report refers to Planning Policy Guidance 20: Coastal Planning (PPG 20). It should be noted that PPG 20 is not applicable below Mean Low Water (MLW) and relates to development located on the coast only. It is not therefore strictly applicable to consideration of a buffer within the marine environment for offshore development.

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<sup>12</sup> Page 130 Section 5.6.1.3

9.12 Similarly this section of the Environmental Report refers to Planning Policy Statement 22: Renewable Energy (PPS 22). PPS 22 explicitly states that

*‘As the land use planning system does not extend offshore, the policies do not apply to developments for offshore renewables.’*

9.13 Even if it was applicable, the PPS is clear that

*‘Regional planning bodies and local planning authorities should not create ‘buffer zones’ around international or nationally designated areas and apply policies to these zones that prevent the development of renewable energy projects’ (paragraph 14).*

9.14 A site specific approach is supported by the GLVIA which also states that

*‘The test is whether the integrity of the landscape and objectives of designation are compromised or not’ (paragraph 7.43).*

9.15 As recognised within the Environmental Report, the Marine and Coastal Access Bill will introduce a new marine planning system, including the creation of more detailed local marine plans. If individual buffer zones were to be adopted on a local, site specific basis, it should be the role of this legislation rather than the SEA process.

#### *Other Considerations*

9.16 The Guide to Best Practice in Seascape Assessment (Countryside Council for Wales *et al* 2001) explains that seascape consists of three components:

- The coastal dimension;
- The marine component (national, regional and local units);
- The hinterland component.

9.17 The guidance notes that a local unit of the marine component may be affected significantly by a proposal, but that in many cases the regional and national units containing this local unit would not. Similarly the coastal dimension could be affected significantly, but when taken as a whole, the unit may not be significantly affected. It is concluded that a development should not be ruled out simply because it affects one part or dimension of a landscape or seascape.

9.18 Additional considerations in determining any distance at which a proposed development would be visible include the acuity of the human eye and meteorological conditions.

9.19 Section 5.6.1.1 of the Environmental Report mentions the acuity of the eye but does not give any details.

9.20 The Guide to Best Practice in Seascape Assessment discusses the limitations of the acuity of the human eye. This guidance states that:

*‘At a distance of 1 kilometre in conditions of good visibility a pole of 100mm diameter will become difficult to see, and at 2 kilometres a pole of 200mm diameter will similarly be difficult to see. In other words there will be a point where an object whilst still theoretically visible will*

*become too small for the human eye to resolve. Mist, haze or other atmospheric conditions may significantly exacerbate that difficulty.*<sup>13</sup>

Consequently, when visible in favourable conditions, a slim object approximately 3m in width will be at the limit of perception by the human eye at a distance of 30km.

- 9.21 The Environmental Report also notes that the DTI recommend using Met Office data to assess trends in weather conditions over ten year periods. It notes that such conditions will

*‘...greatly affect how far can be seen,....’*<sup>14</sup>

but the report has not taken into account such data or visual acuity in its calculation of the proposed buffer zone.

- 9.22 With specific reference to the BCZ, section 5.6.6.6 of the Environmental Report describes the landscape of the coasts on either side of the Bristol Channel Zone:

*‘The Bristol Channel has surrounding coasts in England and Wales. Landscape value here is recognised in the: Hartland, Lundy, North Devon, Exmoor, Glamorgan, Gower and South Pembrokeshire Heritage Coasts: North Devon and Gower AONBs and the Exmoor and Pembrokeshire Coast National Parks. Unlike most areas the Bristol Channel is viewable from almost all sides from high cliffed coasts. Large developments may interfere with views across the Bristol Channel and down the Severn, where turbines would be silhouetted against sunsets. Views from Devon and Cornwall to Lundy Island may be compromised by developments in the offshore parts of this area, and the rural undeveloped and often secluded nature of much of the coast in this region may clash with the industrial character of turbines.*

- 9.23 Notwithstanding the use of pejorative language such as ‘the industrial character of turbines’, the assessment of effects on character provided in this section is harsh, seemingly definitive, and perhaps biased, given the position taken in other parts of the landscape/seascape section of the Environmental Report.

- 9.24 By comparison, the Hastings Zone, at its closest point, lies approximately 13.5km from the Sussex Downs AONB and the South Downs National Park but the Environmental Report indicates

*‘low to moderate impacts from the developments with 5MW turbines between 13 and 24km offshore’*<sup>15</sup>

despite the high cliffs and consequent increase in viewable distance for an offshore wind farm proposal in this area.

- 9.25 The detailed study of both the Welsh and Scottish seascape units and the lack of a similar study of English units have resulted in a more detailed analysis of the potential effects of an offshore wind farm on Wales and Scotland.

- 9.26 Table 5.12 within Section 5.6.6.6 of the Environmental Report outlines the sensitivity of the Welsh seascape areas to

<sup>13</sup> Page 8 Section 2.4

<sup>14</sup> Page 129 Section 5.6.1.2

<sup>15</sup> Page 140 Section 5.6.6.4

*‘a wind farm development scenario of many parallel turbines (160m to blade tip) at 550m intervals, 13km from the shore’.*

- 9.27 The calculations are for Wales only, as England has no seascape assessment, thus giving an unequal view of the effect on the landscapes/seascapes and this is reflected in comment made in the Severn Barrage landscape and seascape topic paper on the DECC website, which states

*“Limitations in establishing the baseline landscape/seascape character could arise through inconsistencies in approach in the published assessments and tranquillity mapping in England and Wales. Therefore it will be necessary to develop criteria to evaluate these in consultation with the relevant authorities prior to undertaking detailed studies. Public perception/values of the existing seascape and estuarine character are not fully understood and further assessment is suggested.”*

- 9.28 Clearly the coastal area of the Bristol Channel varies in character and quality and so it is difficult to see how a rigid buffer zone could ever be appropriate.

- 9.29 It should be noted that Table 5.12 of the Environmental Report assesses the sensitivity of the seascape character areas

*‘Based on a wind farm scenario of many parallel [rows of] turbines (160m to blade tip) at 550m intervals, 13km from the shore’*

- 9.30 However the ‘buffer’ zone is drawn at 22km (12nm). There has been no assessment of the effects of turbines 13km-22km from the shore. The conclusion to recommend a 12nm buffer zone is therefore not based on any evidence that such an exclusion zone would provide any definable benefits.

## 10 Seabirds and waterbirds

- 10.1 The SEA applies the coastal buffer, within which major wind farm development would not normally occur, in recognition

*‘that a large proportion of the bird sensitivities identified are concentrated in coastal waters’.*<sup>16</sup>

- 10.2 Whilst it is accepted that this assumption may be valid, the assessment of impact on bird interests arising from offshore wind farm developments is routinely undertaken to ensure that sufficient protection of feeding, roosting, foraging, breeding areas and migration routes are provided for in the final selection of a development site. Furthermore, the layout of any wind farm is also designed in recognition of the need to provide for protection of sensitive receptors such as important bird areas.

- 10.3 The current Round 3 process provides for a more holistic strategy in assessing potential effect on birds through the zonal approach to leasing and development, allowing assessment of environmental sensitivities in the selection of specific sites within a wider, sub-regional context.

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<sup>16</sup> Page 127 Section 5.5.5

- 10.4 This in turn allows more scope for selection of appropriate sites for individual wind farm projects and provides the mechanism for evaluating cumulative or in-combination effects arising from multiple projects within a region (zone).
- 10.5 NRL supports the requirement for collection of detailed environmental baseline information to inform assessment. In respect of birds, this extends to some 2 years of data being viewed as necessary for the purposes of robust impact assessment.
- 10.6 A key benefit of assessing projects on the basis of such detailed and relatively long-term data is that an in-depth consideration of potential effects, both positive and adverse, is made with specific reference to the site itself, thus avoiding the need for blanket measures to offer protection against impacts on a receptor.
- 10.7 Applying an expansive buffer zone does not automatically provide for protection at the site-specific scale and leads to unnecessary sterilization of potential projects and resource areas.
- 10.8 On the basis of the accepted requirement to collect a comprehensive baseline dataset to inform assessment, it is therefore considered appropriate to deal with individual zones and the location of wind farm sites within the zone on a case by case basis.
- 10.9 Applying a catch-all mitigation measure which serves to reduce the potential of zones such as the BCZ, which is likely to be one of the first projects delivered under Round 3, seems counter-intuitive when the appropriate assessment will be conducted on the specific conditions and qualities of the zone itself.

## **11 Natura 2000 sites**

- 11.1 The BCZ lies in proximity to a number of European designated sites and clearly assessment will be needed in terms of the development projects undertaken in this area and the potential effects arising from these on features, species and ecosystem functioning of the designated sites.
- 11.2 Such sites are selected on the basis of the occurrence of listed features or species and are focused on offering a higher level of protection in order to conserve important or uncommon habitats and species.
- 11.3 As acknowledged in the SEA Environmental Report, such importance or sensitivity is not uniformly distributed around the UK coastline and this is reflected in the selection of specific sites at which this highest level of protection is afforded.
- 11.4 It would therefore be incorrect to establish a buffer zone extending around the entire coastline to provide for the avoidance of impacts at such sites, when the sensitivity to impact of the designated features or species is determined by reference to those occurring at the site level.
- 11.5 This is, then, a further example of the role of site-specific evaluation rather than a ubiquitous mitigation measure to be applied for the offshore energy plan/programme, particularly when the site-specific sensitivities need to be considered in establishing the acceptability of a project in a given area in order to offer protection and develop targeted mitigation against adverse effect.

- 11.6 The provision of such detailed assessment is in any case established under statute through the Conservation (Natural Habitats, &c.) Regulations 1994. Where a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on a European Site, (i.e. on internationally important habitats and/or species), and is not directly connected with the management of the site for nature conservation, the developer is required to provide the Competent Authority with information to undertake a test of likely significance and potentially an Appropriate Assessment, under these regulations.
- 11.7 NRL considers this system of assessment far more effective than the application of a 12nm buffer zone (which does little to protect proposed offshore SACs), both in terms of offering protection to features of conservation interest and in the avoidance of unnecessary sterilization of potentially viable resource areas.

## **12 Potential for wet renewable energy generation**

- 12.1 The BCZ, located within the Bristol Channel/Severn Estuary area, represents a region well documented in offering potential for future wave, tidal stream and tidal range energy projects.
- 12.2 The need for potential safeguarding of wave and tidal resource areas around the UK coastline is recognised in order to provide for a future renewable energy sector to be established on a commercial scale.
- 12.3 However with reference to the DTI (now DECC) renewable energy atlas work, the principal areas of tidal resource of relevance to the Bristol Channel area lie close inshore immediately off the headlands of Pembrokeshire and North Devon and further to the east of the BCZ within the inner Bristol Channel/Severn Estuary area.
- 12.4 Although the potential effects of the establishment of offshore wind farms within the BCZ will be subject to evaluation through modelling to inform assessment, it is unlikely that any significant alteration in tidal stream or range will accrue from the development of BCZ as the turbines themselves will not form any coherent barrier to tidal flows within the regional system.
- 12.5 On this basis it is logical to surmise that any potential projects, notably including the Severn barrage or tidal lagoon proposals, would be unlikely to be affected by wind farm development within the BCZ.
- 12.6 The BCZ does fall within a relatively promising area of wave resource; however the potential for wave devices remains unaffected by the development of wind farms in the zone. In fact the presence of the wind farms, with their strong connections to the National Grid, could dramatically improve the economic viability of a wave farm in the deeper water to the west of the BCZ
- 12.7 Overall, whilst the safeguarding of potential wet-renewable resource areas is an acceptable measure and indeed one perhaps to be encouraged, the application of the 'catch-all' 12nm buffer zone artificially sterilizes vast areas of coastal waters, only a small proportion of which are economically viable for wet renewable developments.

- 12.8 A more sensible measure would be to safeguard specific areas for, particularly for tidal power generation, thus leaving areas with sufficient wind resource available for suitable OWF development, a proven technology that has commercial scale application that will deliver the majority of the renewable energy targets committed to by Government within appropriate timescales.

### 13 The 12nm coastal buffer

- 13.1 A principal justification of the application of the 12nm buffer within the SEA Environmental Report seems to be that even with its application and that of the hard constraints it is still possible to exceed the targeted 25GW capacity delivered by Round 3, citing a potential capacity of 80GW.
- 13.2 It is worth noting that this is based on some 59% of the total (using the 80GW figure) being delivered from the Southern North Sea, with the lion's share of this within TCE Zone 3, the Dogger Bank.
- 13.3 However the overdependence of the draft plan/programme on the development of offshore wind farms over such a large proportion of the Dogger Bank area seems at odds with the potential restrictions which are likely to constrain development since the area is a draft SAC.
- 13.4 The achievement of a positive outcome of an Appropriate Assessment (AA) of developments in this zone would seem likely to be subject to a demonstrably limited zone of effect, on habitats, species and ecosystem function. In NRL's experience of undertaking studies to support AAs, this is generally only achievable on the basis of a minor proportion of the total area being affected.
- 13.5 Figures 5.22 - 5.24 in the Environmental Report<sup>17</sup> appear to indicate that the Dogger Bank Zone is developed in its entirety. The affected area within this zone would therefore be substantial and thus unlikely to provide for an assessment conclusion of *de minimis* effect, even assuming the effect from individual turbines *per se* is minimal; cumulatively the impact may be seen as significant.
- 13.6 With the probability of constrained development within the Dogger /Bank zone and the evidence from Figures 5.22 - 5.24 indicating that much of the unconstrained wind resource areas lie outside the 9 TCE development zones, it is questionable whether the 25GW by 2020 target for Round 3 is achievable within the 6 TCE zones that would remain after applying the 12nm coastal buffer.
- 13.7 The SEA Environmental Report references the Carbon Trust study which

*'...used the spatial constraint criteria and GIS developed for the DECC Offshore Energy SEA to determine the area of seafloor available for offshore wind farm development and to analyse the costs and risks associated with different sites.*

*Economically, the most attractive sites are those that are near-shore with shallow water and mid-distance, mid depth sites with higher wind speeds. However, the effect of applying all of the constraints (including for example offshore Natura 2000 sites), would be to restrict development*

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<sup>17</sup> Pages 152 - 154

*sites for offshore wind farms to the most expensive site types such as north of the Dogger Bank. In order to locate all of the 25GW of capacity on the most economically attractive sites the study suggests that a seaward buffer zone would need to be reduced in some places and some constraints (including those that are currently considered 'hard' or 'fixed') would need to be relaxed, especially the 6nm exclusion zone around oil and gas installations.'*<sup>18</sup>

- 13.8 It seems that, having used exactly the same constraint criteria and GIS employed by the Carbon Trust in their report, the SEA concludes that rather than relaxing the seaward buffer zone of 7nm used in the Carbon Trust report, it should be increased to 12nm.
- 13.9 Unfortunately there seems to be no consideration of the economic consequences of applying this recommendation.
- 13.10 In practice, as is clearly shown in Figure 5.24 of the Environmental Report, the application of hard constraints, including 6nm exclusion areas around existing oil and gas installations and a 12nm coastal buffer reduces the majority of the remaining available offshore wind resource to far offshore sites, which normally also means deeper water.
- 13.11 The consequences of applying these constraints to all UK territorial waters and the REZ would be to remove all of the economically attractive sites for offshore wind turbines; including the 6.5 GW of sites awarded exclusive development agreements in Scottish territorial waters by TCE in February.
- 13.12 It would also eliminate all of the near term opportunities for early development of Round 3 projects which are all located in TCE zones 6, 7 and 8 where the sites are closer to shore and can connect into the existing National Grid transmission system, without the need for extensive grid reinforcement.
- 13.13 This would have significant implications for DECC's target of achieving 25GW of additional offshore wind generation capacity by 2020 and the UK's ability to meet the 15% target set for primary energy production from renewables under the European Directive.
- 13.14 Overall, NRL do not consider it appropriate for the Environmental Report to set a broad buffer zone around the UK in relation to future Round 3 wind farm development.
- 13.15 Although specifically stated as not representing an exclusion zone, the adoption of a set distance from the shore within this document is likely to encourage the use of this figure in future during consultation and the determination of consents for offshore wind farm projects.
- 13.16 This is considered to be wholly inappropriate taking into account the following:
- The suitability of development in any given location is site specific and therefore can only be judged based on detailed and site specific information and consultation. This is stated within the Environmental Report itself (Section 6.1 (4)).

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<sup>18</sup> Page 156 Section 5.7.2

- The suitability of development is dependant on the nature of the proposed development (such as turbine height, number and layout within a zone) and therefore will not be constant for a given distance from the shore.
- Any future zoning of the coastal/marine environment should be the focus of appropriate legislation and planning policy, such as that associated with the Marine and Coastal Access Bill rather than forming part of the Environmental Report.

13.17 The proposed buffer zone does not take into account the fact that development in closer proximity to the coast may be acceptable, particularly taking into account mitigation strategies such as careful consideration of the number, arrangement and height of turbines.

13.18 Section 3.7 of the Environmental Report begins:

*‘The assessment is presented as evidence based discussion....’*

NRL considers that insufficient evidence is presented within the report to justify the recommendation for the 12nm to be adopted. Indeed the justification seems to rely almost exclusively on frequent repetition of the phrase

*‘Reflecting the relative sensitivity of multiple receptors in coastal waters...’<sup>19</sup>*

13.19 The application of a buffer zone may be a useful tool in safeguarding interests and, with respect to visual intrusion, on the basis of expressing a distance beyond which no visual effects are likely. However, the use of a blanket buffer zone to determine areas that should not be used for development of offshore wind farms without taking into account the nature of the site or the proposed development is not considered to be helpful and is therefore inappropriate.

## 14 Conclusion

14.1 The Environmental Report sets out the Code of Practice on Consultation - the Seven Consultation Criteria. Criterion 3 - Clarity of scope and impact states:

*‘Consultation documents should be clear about the consultation process, what is being proposed, the scope to influence and the expected costs and benefits of the proposals.’<sup>20</sup>*

14.2 NRL believes that the Environmental Report falls short of achieving this criterion.

14.3 Discussion of the benefits of the draft plan/programme is limited to a brief acknowledgement that:

*‘Making efficient use of the UK’s own energy reserves brings obvious benefits both in the contribution it can make to a diverse UK energy mix and to the economy in terms of jobs, investment and national income generated by the sector.’<sup>21</sup>*

This comment refers to the entire plan/ programme including offshore wind, oil and gas and gas storage.

<sup>19</sup> Page xx Executive Summary; Page 155 Section 5.5.5; Page 186 Section 5.7.3; Page 242 Section 6.1 (4)

<sup>20</sup> Page 7 Section 1.5

<sup>21</sup> Page 37 Section 2.1

- 14.4 Apart from references to relevant legislation there is no in-depth assessment of the economic, social or environmental benefits of developing offshore wind energy on the scale envisaged by the draft plan/ programme. There is no discussion of the likely consequences of not achieving the deployment proposed by the draft plan/ programme.
- 14.5 The discussion of costs (economic, social and environmental) is limited to the brief reference to the Carbon Trust work.
- 14.6 In setting out the SEA objectives under the topic ‘Other users of the sea, material assets (infrastructure and natural resources)’ the report states:
- ‘Balances other United Kingdom resources and activities of economic, safety, security and amenity value including defence, shipping, fishing, aviation, aggregate extraction, dredging, tourism and recreation against the need to develop offshore energy resources.’<sup>22</sup>*
- 14.7 In Section 5 - Assessment, which forms the bulk of the Environmental Report, it is difficult to see where, if anywhere, this balancing exercise is applied.
- 14.8 Rather than balancing the relative benefits and costs of developing offshore wind resources against the existing marine interests, the Environmental Report adopts a precautionary approach whereby existing activities and interests automatically take precedence over the development of offshore wind projects.
- 14.9 Ultimately it is this approach that drives the assertion
- ‘Reflecting the relative sensitivity of multiple receptors in coastal waters...’*
- which in turn leads to the recommendation of the 12nm coastal buffer zone.
- 14.10 In conclusion, the need for renewable energy developments must be noted and balanced against other marine activities and interests. The commitment of the UK to achieve percentages of energy production from renewable sources is set out in legislation at a European level (2001/77/EC Renewable Directive) and in national legislation and policy (Energy White Paper, Energy Act 2004).
- 14.11 The BCZ benefits from a range of pre-development feasibility work undertaken over several years, initially by Farm Energy and more recently by the BCZ Alliance assembled by NRL.
- 14.12 NRL views wind farm development in the BCZ region as representing a crucial ‘stepping stone’ project, bridging the gap between the existing near shore Round 1 and 2 projects and the bulk of the current Round 3 initiative that lies further offshore.
- 14.13 The potential for early delivery of projects in this region has an important contribution to make, therefore, in addressing both the need for renewable energy production and the achievement of renewable energy targets to which UK Government is committed and legally bound.
- 14.14 Without development in the BCZ and the two south coast zones, all of which are threatened by the 12nm coastal buffer recommendation, NRL believes that the

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<sup>22</sup> Page 35 Section 3.5

net cost of achieving the Government's Round 3 ambition will be greater and the delivery period will inevitably need to be extended.

Name Sandor Gera

Address

Chatham

Topic General

The United Kingdom undertook an obligation to satisfy 20% of her energy needs from renewable sources by the year 2020.

How much is this 20%?

First, a few words about our widely known and used energy sources:

1. Conventional, non-renewable sources:
  - a. Coal-fuelled power plants
  - b. Gas and oil fuelled power plants
2. Non-conventional, non-renewable sources:
  - a. Nuclear energy
  - b. Thermal energy

The reserves are vast and with technological advances the production of energy is becoming safer, cheaper, and more efficient.

3. Conventional, renewable sources:
  - a. Water-powered plants on rivers
4. So-called "renewable" energy sources
  - a. solar power plants
  - b. wind power farms
  - c. wave powered plants
  - d. sea tide-powered plants

Based mainly on direct solar power or its secondary effects, and the gravitational effect of the Moon in the case of tide-powered plants.

5. Produced energy sources:
  - a. bio mass, gas-based plants
  - b. alcohol-based plants

The disadvantage here is that it requires land at the expense of food production, which land is greatly needed by the intensively growing world population.

A common characteristic of the energy sources under points 1, 2, 3 and 5 from the perspective of energy production is:

"The power plants are able to provide consistent and continuous electric power that users can rely on in the long term.

Although the renewable energy sources cause less pollution, they renew daily, and never run out, they have one inevitable (but not insurmountable) disadvantage: UNCERTAINTY. Meaning that the sun does not always shine or the wind does not always blow as and when we actually need it.

- The demand for power (consumption) cannot tolerate the idea that it can use power only when the sun shines or the wind blows with the required force, etc.
- Another problem is that the rhythm of usage of energy (mainly during the day) does not correspond with the rhythm of production of energy – if the wind does not blow or the sun does not shine, etc.
- (Example from everyday life: electricity during the night is cheaper and its use is subsidized by governments.)

Based on the laws of large numbers, statistical data show us:

- the annual average number of sunny days
- the annual average number of windy days at a minimum wind force
- the annual average number of hours of strong wave activity
- the energy generated by tide power can also be calculated precisely.

On an annual basis these data are accurate, in fact the amount of energy produced will be very close to the anticipated output, yet experiences in Germany tell us that “with a good estimate it is only one fifth of the nominal capacity that we can surely rely on on a continuous basis.” Increasing our capacities to fivefold is such a luxury that no nation can afford thus it is important to understand the basic problems of the issue.

Uncertainty presents itself in the facts that the possibilities of energy production and the rhythm of the demand for energy (mainly the use during the day) do not always meet and reconciling these two factors is a serious challenge. The difficulties are lessened by the existence of internationally interconnected electric networks that enable us to transport energy where it is needed (since the wind always blows somewhere), but this is clearly not the proper solution.

The core problems are:

- Reducing the difference between the nominal capacity and the amount of energy generated by the sunshine, the wind or the waves that can actually be harnessed.
- Storage of energy, adjusting to the patterns of demand, i.e. the accumulation of energy from night time to day time, from the time of production to the time of usage.

The solutions necessary for the operation at near nominal capacity levels will be provided by the technological improvements.

As far as the accumulation and storage of energy are concerned high level water reserves have been long known and utilized to store energy in the form of potential energy of the water. Fortunately, the United Kingdom (UK) is rich in geographical locations where these reserves can be constructed at a low cost.

We are witnessing the birth of a new industry and the opportunities of new, high-return investments are knocking on the door. The sector of energy storage will play a key role in the efforts to harmonise the supply and the demand for energy.

This area of investment or industry is so fresh that investors have not yet set their scouting eyes on it.

It is high time to address this issue in order to effectively support the cause of renewable energy.

With the costs of production of energy via conventional methods increasing, renewable energy sources are receiving more and more attention and they are becoming ever more competitive. Moreover, let us not forget the fact that countries disposing of conventional energy sources will not hesitate to utilize this advantage of theirs in their political interests against countries which rely on coal, gas and oil imports.

We must act...

Sándor Gera

Water engineer  
General contractor

## **SAVE OUR SEAS (SOS)**

### **Consultation Response**

## **UK Offshore Energy Strategic Environmental Assessment**

### **Environmental Report**

**April 2009**

## **SOS**

SOS is a campaign group concerned to respond to threats to the environment of Cardigan Bay and in particular potential damage to wildlife in the area. It seeks to identify threats to this environment, to raise awareness of the nature and extent of these, and to campaign to ensure that unnecessary damage is not created by industrial or other initiatives. Cardigan Bay SOS has the additional purpose of identifying environmental threats in the area and responding to these where there is the potential for damage to sustainable tourism, an important feature of the local economy. The group is particularly concerned to protect the integrity of the marine Special Areas of Conservation (SACs) in Cardigan Bay, and the important designated species that these areas are intended to protect. Cardigan Bay SOS is an independent voluntary group with no external funding, or formal association with any industry, government or other organisation.

### **SOS Contact**

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## Summary of SOS consultation response

SOS is responding specifically concerning aspects of the SEA Environmental Report which relate to impacts of anthropogenic noise on marine mammals. SOS notes the following :

- The report adopts an overly narrow interpretation of what may constitute a biologically significant effect of noise impacts. This interpretation is effectively limited to injury impacts, particularly auditory injury such as PTS and TTS. This limited definition is not warranted by the available evidence.
- The consequence of adopting a narrow interpretation is that SEA analysis of predicted significant group effects is likely to represent a substantial underestimate of potential adverse impacts of oil and gas and offshore wind-farm development.
- The report fails to adequately appraise the status of evidence concerning behavioural disturbance and communication interference effects of noise and inappropriately underplays its significance for strategic planning.
- The report does not adequately consider the problematic nature of establishing short-term effect to longer-term population level effect relationships. It is unfortunate that the report makes only passing reference to the NRC (2005) report and does not adequately address the issues raised by it.
- The report is misleading in confusing the lack of available evidence on short-term behavioural effect/population effect relationships with the non-existence of such relationships.
- The report in seeking to predict potential effects under conditions of uncertainty would benefit from a greater emphasis on the use of well-supported theory rather than relying on specific previous empirical findings alone. The use of frameworks such as that of allostasis theory (McEwen and Wingfield, 2003) is likely to be helpful.
- While considerable emphasis is placed in the report on the application of mitigation measures to reduce or avoid adverse effects of noise impacts, little or no evidence is supplied concerning whether particular mitigation methods are effective. It is recommended that greater emphasis is placed on the evaluation of mitigation methods. SOS notes in this connection substantial criticism of JNCC guidelines in the literature.
- With respect to mitigation SOS believes that spatio-temporal restrictions on noise-generating activities are likely to be particularly valuable from a conservation point of view, but that these have been given insufficient consideration in the report. SOS disagrees with the conclusion of the report that neither regional or local prohibitions on the activities under consideration by the SEA are justified by acoustic disturbance considerations. SOS believes in particular that the introduction of acoustic buffer zones in relation to key MPAs would be valuable and would represent justification for local restriction.
- With some qualification SOS endorses particular recommendations of the SEA report that bear on noise impacts on marine mammals, specifically : SEA Recommendations 3, 6, 7, 9, 15, 22, and 23.

### **Report assumptions concerning the 'biological significance' of noise effects and the consequences of these**

The SEA Environmental Report has adopted a limited definition of the biological significance of the effects of human generated noise associated with oil and gas exploration and development (OGED) and offshore wind farm development. This has significantly influenced its strategic recommendations in relation to licensing and leasing for these activities. The limited definition applied is not justified by available evidence concerning effects of anthropogenic noise on marine mammals, or by theoretical considerations concerning the potential relationships between relatively short-term (eg physical/auditory and behavioural disturbance) effects and longer term population effects that bear on favourable conservation status.

The primary analysis presented in the SEA report concerning the potential effects of noise associated with OGED and offshore wind farm development is based on guideline sound exposure levels for marine mammals provided by Southall et al (2007). These guidelines relate to two levels of potential effect. The first level concerns sound exposure that would be anticipated to lead to physical injury including, in particular, auditory damage leading to permanent threshold shift (PTS). The second level referred to in the SEA report as the 'behavioural response' level concerns sound exposure that would be anticipated to lead to auditory temporary threshold shift (TTS). Both of these levels relate to injury consequences of sound exposure.

The SEA Assessment Summary (p.xi) states that, *'recent expert assessments have recommended that onset of significant behavioural response from a single pulse is taken to occur at the lowest level of noise exposure that has a measurable transient effect on hearing'*. Strictly, this recommendation is based on a single expert assessment (the Southall et al. report), as other assessments (eg that of the U.S. National Marine Fisheries Service, NMFS) do not recommend this, but in any event this misrepresents their view. Southall et al (op. cit.) provide an extensive discussion of noise effects characterised as 'behavioural disturbance'. These extend across avoidance, behavioural change, masking and communication effects and others. The diversity of response observed in studies to date, difficulties associated with what could be defined to constitute significant behavioural disturbance, and inter-species variability all contributed to a decision by the Southall group to **take** significant behavioural disturbance to occur at the level that has a measurable transient effect on hearing (ie TTS onset). This represented an expedient (but practical) solution to the difficulties of associating consistent and reasonably valid sound exposure levels with 'behavioural' outcomes. The decision did not have the implication that lower levels of noise exposure or non-injury effects were not potentially biologically significant.

The sound exposure guideline levels provided by Southall et al have been used in the SEA report to estimate spatial ranges from key sound sources (eg seismic airgun array, pile-driving operations) that would be predicted to lead to injury effects at the two levels defined above. Applying these spatial ranges in combination with SCANS II data on group size and population density of cetacean species around the UK, estimates are made of the likelihood of injury to members of a marine mammal 'significant group' were a sound source to be operating in the middle of their distribution. Predicted sound exposure levels ('Effects Threshold Levels', 'ETLs') are determined for the margins of an area that a significant group is predicted to occupy and inferences about probability of group member exposure to damaging sound levels are derived from these. Based on

these analyses the report concludes, *'that single seismic or pile-driving sources are unlikely to have a significant disturbance effect with the possible exception of small odontocetes at locally high population densities'* (Assessment Summary,p.xii).

The SEA report refers to certain other guidelines on sound exposure levels for marine mammals that have been advocated. These include particularly those provided by the U.S.Nationa Marine Fisheries Service (NMFS). The NMFS have adopted two levels of sound exposure criteria which differ in important respects from those of the Southall et al group. The first is 'level A harrassment' defined as a level 'likely to have the potential to cause serious behavioural, physiological and hearing effects' while 'level B' harrassment is understood to relate more generally to non-injury behavioural disturbance. Both Southall group and NMFS sound exposure guidelines are used to determine spatial ranges at which effects at defined levels would be predicted to occur. Indicative ranges are presented in Table 5.1 of the report. Drawing on data from this table a comparison of predicted spatial ranges for the two sets of guidelines is shown below :

Table 1. Comparison of spatial ranges at which effects are predicted for seismic survey for guideline sound exposure levels : Southall et al (2007) 'Injury level' versus NMFS 'level A harrassment'

	Effective horizontal source level / dB re 1 $\mu$ Pa p-p	Southall et al (2007) 'Injury' sound pressure level*/ dB re 1 $\mu$ Pa p-p	NMFS 'level A harrassment' sound pressure level / dB re 1 $\mu$ Pa p-p	Predicted spatial range of effect - Southall / metres	Predicted spatial range of effect - NMFS / metres	Ratio of predicted Southall spatial range to NMFS predicted spatial range
Deep water	245	230	198	5.6	224	1 : 40
Shallow water	245	230	198	10.0	1,359	1 : 140

\* multiple pulse data given

Table 2. Comparison of spatial ranges at which effects are predicted for seismic survey for guideline sound exposure levels : Southall et al (2007) 'Behavioural response level' versus NMFS 'level B harrassment'

	Effective horizontal source level / dB re 1 $\mu$ Pa p-p	Southall et al (2007) 'Behavioural response' sound pressure level*/ dB re 1 $\mu$ Pa p-p	NMFS 'level B harrassment' sound pressure level / dB re 1 $\mu$ Pa p-p	Predicted spatial range of effect - Southall / metres	Predicted spatial range of effect - NMFS / metres	Ratio of predicted Southall spatial range to NMFS predicted spatial range
Deep water	245	224	178	11.2	2,239	1 : 200
Shallow water	245	224	178	25.1	29,286	1 : 1200

\* single pulse data given

While comparison sound pressure levels used for the two guidelines are not precisely comparable it is clear that the spatial ranges at which effects are predicted using NMFS guidelines are much larger than those predicted using 'Southall' guidelines. The guidelines provided by Southall et al for 'injury' (eg PTS equivalent effects) are derived from more extensive and recent evidence than that on which the NMFS level A harassment guidelines are based. While the Southall et al guideline evidential basis is acknowledged by them to be limited, resting primarily on small sample size captive animal studies, and extrapolation from terrestrial mammal data, nonetheless, the Southall 'injury' guidelines can be argued to be more strongly supported than the 'level A harassment' guideline of the NMFS. However, for behavioural effects the substantial difference in spatial range predictions reflects a difference in definition of behavioural disturbance.

In the SEA report only the Southall group guidelines were used in the prediction of 'significant group effects'. This followed from the assumption in the report that only injury type effects of noise on marine mammals are biologically significant. Were sound exposure levels relating to more general behavioural disturbance (such as the NMFS level B harassment criteria) applied, increased estimates of risk of 'significant group effects' are likely. For example, for seismic survey conducted in shallow water, applying NMFS guidelines for 'behavioural disturbance', the estimated spatial range is greater by a factor of over 1,000, which is likely to lead to substantial increases in identified risk of 'significant group effects'.

### **Behavioural and other effects of anthropogenic noise**

Southall et al (op. cit.) discuss a range of potentially important non-injury consequences of exposure to seismic and other significant anthropogenic noise sources. They argued that given the varied evidential base that it was inappropriate to define broad, general guideline sound exposure levels for these. There is no suggestion in their report that such consequences did not have the potential to be biologically significant ones. The SEA report in fact records that, 'Southall et al (2007) noted the importance of contextual variables in determining behavioural response, together with the presence or absence of acoustic similarities between the anthropogenic sound and biologically relevant natural signals. They suggest that a context-based approach to determining noise exposure criteria for behavioural responses will be necessary'.

However, the SEA report is dismissive of evidence for biologically significant non-injury behavioural consequences of sources such as seismic survey and pile-driving. For example, the report states (following previous SEAs) that, '*The balance of evidence suggests that effects of seismic activities are limited in species present in significant numbers ... to behavioural disturbance which is likely to be of short duration, limited spatial extent and of minor ecological significance*' (p.95). Discussion concerning studies cited by Southall et al concludes that '*The majority of studies reviewed by Southall et al. (2007)... recorded no observable response .. ; the observed effects corresponding to "minor or moderate individual and/or group avoidance of sound source"*'.

The dismissal of evidence concerning behavioural effects is unwarranted. The SEA report itself (p.73) refers to the findings of the extensive observations by Stone and Tasker (eg Stone and Tasker, 2007) of seismic surveys, providing consistent evidence of reduced sighting of a range of cetacean species during surveys, avoidance, and other behaviour changes. Reference is also made, for example, to studies by Weir (2008)

which similarly showed movement to greater distances of dolphin species during seismic operations. Elsewhere, in the report evidence of response of marine mammals to noise associated with wind-farm construction and development is discussed. This evidence includes reduced acoustic activity and reduced density of porpoises after pile-driving events (eg Tougaard et al, 2003a, b, 2005); decrease in the number of hauled out harbour seals at a substantial distance from the construction site during pile-driving activity (Edren *et al.*, 2004); and indications of behavioural responses in harbour porpoises and harbour seals to playbacks of simulated offshore turbine sounds (Koschinski *et al.*, 2003). Concerning long-range effects McCauley et al (1998, cited in Parsons, 2009) found that humpback whales responded to seismic testing at distances that were not observable from the survey vessel, females with calves showing most marked changes even at 7-12 km from the vessel. Displacement has been evidenced in a study over ten years in Brazilian waters which found correlations between decreasing cetacean density with increasing seismic activity that could not be accounted for by variation in other oceanographic parameters that were measured (Parente et al, 2007, cited in Parsons, 2009).

Evidence of behavioural effects is limited but the extent and nature of the evidence does not enable conclusions to be drawn about the likelihood of biologically significant consequences of any such changes, or, given the paucity of data about the extent of these. The categorical statements provided at a number of points in the SEA report that such effects are either not shown or are trivial have little substance. This is illustrated for example by the following statement, *'Although quantitative observational data on behavioural responses to stimuli comparable to seismic and pile-driving sources are very sparse, such data as do exist indicate that responses are not biologically meaningful (i.e. zero response or minor/moderate avoidance) at these sound levels'*(p.94). This simultaneously acknowledges the extreme sparsity of data but seeks to draw (very prematurely) general conclusions from that which exists.

Behavioural responses to anthropogenic noise have generally been studied by visual or acoustic monitoring of abundance. Both methods have considerable practical difficulties associated with them, in particular limitations in identifying specific behavioural changes that may bear on life functions and survivability. However, recently Miller (2009) using a sophisticated auditory tagging method with sperm whales was able to show specific changes in the nature of diving behaviour consequent on exposure to noise sources. This method effectively provided data on 'what was going on under the water' and further studies of this kind have the potential to produce evidence of specific behaviour changes that may be biologically important. Potential effects at greater distance have also seldom been examined. The SEA report notes in this context that, *'the spatial scales of cetacean distribution are at least an order of magnitude greater than those which can be monitored by either visual or passive acoustic methods'* (p.94).

In referring to evidence from the Weir (2008) study that noted behavioural changes of Atlantic dolphin to seismic survey noise, the SEA report observes that, *'there was no evidence for prolonged or large-scale displacement of each species from the region during the 10 month survey duration'*. While this study observation is of interest in itself it highlights the question of the time scale over which a cetacean group needs to be monitored in order to determine if effects occur. The studies by Bejder and colleagues (eg Bejder et al, 2006) concerning the effects of dolphin-watching activities found that significant reductions in dolphin presence did occur relative to a control area, but this effect was only apparent after a period of many years observation. While seismic survey

activity at a particular location is unlikely to last for years, and while pile-driving associated with individual turbine construction will not last for this period, with sustained, intensive activity within an area (eg for construction of a large scale offshore wind farm) the possibility exists for longer term displacement consequent on several years noise exposure in a region. Evidence for such an effect would depend on collection of evidence over a substantial period of time with appropriate controls.

A number of commentators (e.g. Weilgart, 2007) have considered what observed behavioural changes might mean. Such authors have also critically examined the legitimacy of inferring that lack of observed behaviour change on exposure to sound sources necessarily implies a lack of a biologically significant consequence of this exposure. A prime consideration in such discussion is the costs associated with staying and leaving understood in terms of reproductive fitness. Movement from an area or avoidance of it may create increased energetic costs for foraging, but may also, in certain circumstances have little effect if other readily accessible areas are equally resource rich. The meaning and effects of any such movement will depend on circumstance and requires thoughtful analysis. Further, it has been proposed (e.g. Weilgart, *op.cit.*) that if an animal leaves an area costs may be incurred in terms of access to feed, protection or breeding opportunities, and that it may remain despite negative effects of sound exposure, applying a kind of trade-off. Simple inferences to the effect that, 'they appear not to have moved, so it must be O.K.' represent an untested assumption.

Other commentators (eg Tyack, 2008) have emphasised the potential for auditory masking at sound levels that would not result in injury. Masking has been predicted based on knowledge of marine mammal audiograms and demonstrated experimentally in captive animals (eg Schlundt et al, 2000; Nachtigall et al, 2004). Masking has the theoretical potential to cause an individual to be less able to maintain social contact over distance, to be less responsive to sound that would alert to a predator, to be less able to use echolocation to locate prey and to be less able to use passive listening (without echolocation) (e.g. Gannon et al, 2005). Tyack (*op.cit.*) argues that there would have been strong evolutionary pressures for marine mammals to develop compensatory mechanisms in relation to the potential for masking by a range of naturally occurring sounds including, for example, increasing intensity of vocalization, shifting frequency used and other mechanisms. He presents evidence in the context of significant increases in shipping traffic and ocean 'pollution' by low frequency noise that some whale species (eg right whales) in certain circumstances now habitually use higher frequency vocalizations. While such mechanisms may be compensatory they entail energetic costs, and may, in any event be limited in their effectiveness. Theoretically-based estimates discussed by Tyack suggest that the range over which far-travelling cetaceans can now communicate is often substantially reduced given ambient levels of noise augmented by human sources, and suggests where species have reduced densities this will exacerbate difficulties in maintaining social contact and breeding. Though Tyack's analysis refers largely to ship noise effects, the potential for both exploratory and operational contributions to background noise from OGED and wind-farm activity to have biologically significant effects in these terms is indicated.

The SEA assessment with respect to effects of OGED and offshore wind-farm related noise is in error if it fails to recognize that hypotheses concerning potential effects of masking, behaviour change or lack of change under certain conditions of exposure

associated with reproductive fitness costs, are theoretically plausible and require testing to be supported or disconfirmed.

### **Population level effects**

In the first paragraph of the Assessment Summary relating to 'Biodiversity, habitats, flora and fauna' the SEA report states, '*...a general distinction may be drawn between effects associated with physical injury, and effects associated with behavioural disturbance*' (p.xi). While this statement is in principle open enough to consider effects that are the longer-term consequence of physical injury or behavioural disturbance the statement betrays a strong tendency throughout the SEA report to consider these levels of effect as the only ones to which evidence might relate. Yet the biological significance of noise effects is most clearly expressed in terms of consequences for the population. Such consequences may be in terms of numbers, population structure, distribution and health status (amongst others). Immediate effects including injury, threshold shifts, masking, behavioural change including site avoidance, are more generally biologically important (from the species point of view) only to the extent that they impact on population viability.

A very substantial problem is that data concerning the relationships between short-term effects and longer-term population level effects is largely lacking. The NRC (2005) provided an extensive discussion of this issue recommending a comprehensive and long-term programme of international research that would be designed to provide data that would enable elucidation of relationships between short-term effects and population level effects. In addressing this important issue the NRC developed a model which sought to identify a chain of relationships. This model relates particular sound stimuli to behaviour change, this to life functions of animals immediately affected, this to vital rates within the population, and this, finally, to population effects. Each level is related to the next, 'higher', level by a 'transfer function' which is a general term describing how effects at one level influence effects at the next. The model is referred to as the Population Consequences of Acoustic Disturbance Model (PCAD). The SEA report makes brief reference to the NRC model (eg p.69, p.70) but fails to consider the relevance of the framework provided or the issues raised by the report concerning determination of causal relationships between noise impacts and population level effects. Why such a discussion is omitted is unclear.

The SEA report does though state that, '*Data on cetaceans are typically few and often characterized by considerable uncertainty and both seasonal and spatial gaps making the identification of trends very difficult. It is even more difficult to establish any causes of potential trends*' (p.57). Despite this acknowledged absence of evidence, which is reinforced very strongly by the NRC report, concerning short-term effect/longer-term outcome relationships, the SEA elsewhere makes the statement, '*Postulated chronic effects (for which evidence is almost entirely absent) include long-term behavioural responses, exclusion and indirect effects*'. (p.69). This comment confuses a lack of evidence on relationships with evidence that such relationships aren't found and is very misleading indeed.

In accounting for the approach adopted by the SEA in its evaluation of noise-related evidence, the SEA states that, '*At a strategic level, a distinction has been drawn between impacts which may be significant in terms of conservation status of a species or population (and hence are significant in strategic terms) which may be significant to individual animals, but which will not influence sufficient numbers to have a significant*

*effect on population viability or conservation status (and hence strategically significant)*'(p.61). Given the strategic focus it is incumbent on the SEA to recognize the limitations of current evidence concerning relationships between more immediate effects and longer-term population level effects. It effectively leaves these central questions unexamined and makes implicit but untested assumptions about the 'non-existence' of relationships between potential effects such as behavioural disturbance (broadly understood) and communication interference and population level effects bearing on conservation status.

### **Application of theory**

The SEA exercise is concerned with anticipating and predicting effects of developments in very diverse circumstances, of types and at scales that may not have previously occurred and for which there may very often be both a lack of experience and accumulated data. These features apply strongly in the case particularly of large scale offshore wind-farm development and gas storage, but also bear to some extent on OGED activity. As pointed out above and acknowledged in the SEA report, data is very limited concerning specific effects on marine mammals of these development activities, particularly so relating to longer-term effects bearing on population viability and conservation status. Collection of relevant data in the future is likely to improve understanding and predictive ability but may prove difficult or impossible to obtain. In this context the value of application of relevant well-supported theory is likely to be critical from the point of view of making reasoned predictions about likely consequences.

It is a feature of the SEA report with respect to consideration of acoustic effects on marine mammals that it adopts an atheoretical approach. Recommendations in the report tend to be made only where there is very specific empirical evidence of a particular relationship. This has tended to result in a narrowing of relevant factors considered and the tendency to build solutions on those apparently harder pieces of evidence that exist. This has in some cases paradoxically caused a large set of recommendations to be built on a small set of data which itself does not have an overly strong evidential base (eg the Southall et al sound exposure guidelines), and which in certain respects may be viewed as 'preliminary'.

A number of valuable theoretical approaches exist which bear on making predictions concerning potential effects of impacts such as noise, though it is true that these are quite general in nature. These include the theory of allostasis proposed by McEwen and Wingfield (eg McEwen and Wingfield, 2003) which provides a basis for considering how multiple demands can bear on reproductive fitness. The application of allostasis theory is argued for strongly by Tyack in his recent review concerning effects of large-scale changes in the marine acoustic environment (Tyack, 2008). Certain studies ( e.g. Olesiuk, 2002, cited in Tyack, 2008) have now considered making more focused use if allostasis theory by calculating estimates of energetic costs associated with particular alternative behaviours (eg site avoidance) that a marine mammal species might adopt. Elsewhere, Wright et al (2007) point out, for example, that there is extensive evidence that the 'stress response' is very highly conserved across mammalian species and that useful predictions can be made about potential effects of stressors such as noise exposure applying a theoretical understanding of the stress response.

The SEA makes inadequate use of theoretical frameworks to aid prediction in the face of uncertainty. The potential value of the integration of use of relevant theoretical

frameworks (such as allostasis theory) with empirical findings is illustrated by the consideration of potential cumulative and interactive effects. Here direct evidence of the extent of an impact under a particular combination of influences is unlikely to be available (certainly not in advance in most cases) and prediction would depend on judgement using theoretical principles where the theory itself has a strong basis. A particular case in point is the consideration of the potential impact of climate change. This is an ongoing phenomenon and specific empirical data concerning, for example, the interactive impact of climate change and exposure to anthropogenic noise is unlikely to be straightforwardly available. Anticipating and estimating interactive and cumulative effects is very likely to depend on applying theoretical frameworks such as those described above.

## **Mitigation**

At many points throughout the SEA report reference or appeal is made to the application of mitigation methods that it is implied would address particular or residual concerns about potential impacts of OGED and wind-farm related noise on marine mammals. For example, to some extent in contradiction to statements made elsewhere, in the Assessment Summary (p. xi) the SEA report states, *'In the light of limited behavioural data the SEA also concurs with the scientific consensus judgement that seismic and pile-driving operations have the potential to cause some level of disruption of normal behaviour in marine mammals and possibly some fish at ranges of many kilometers'*(p.xi). The report continues, *'However, both planning and operational controls cover noise from relevant marine activities, including geophysical surveying and pile-driving'*(p.xi). The conclusions to the Assessment Summary state that, *'It is concluded that there are no overriding environmental considerations to prevent the achievement of the offshore oil and gas, gas storage and wind elements of the plan/programme, albeit with a number of mitigation measures to prevent, reduce and offset significant adverse effects on the environment and other users of the sea.'*(p.xx).

Considerable weight then is placed by the SEA on mitigation measures. For this appeal to be meaningful it is essential that mitigation measures are effective in 'mitigating' potential adverse environmental effects. It is important in this context that mitigation measures have an appropriate evidential base and that data continues to be collected to evaluate whether proposed mitigation measures do work as anticipated and to what extent they are, in practice, effective. The SEA provides virtually no discussion or direct evidence relating to proposed mitigation measures or to consideration of the needs for evaluation of these. While the SEA report provides very extensive discussion of other matters this represents a shortcoming in terms of the opportunity the report provides to evaluate the environmental assessment.

Concerning the UK context, to which the SEA report applies, more specific reference is made at a number of points to the application of JNCC guidelines particularly with reference to mitigation of potential noise effects. The report refers (p.80) to the, JNCC's *'Guidelines for minimizing acoustic disturbance'* as being the major operational control and mitigation device through which seismic surveys in the UK are regulated. Quite extensive discussion is provided of specific features of the guidelines based both on already published documents and the draft revision of June, 2008. This includes coverage of the requirements for a marine mammal observer (MMO), progressive build-up of sound prior to seismic testing, recommendations for use of passive acoustic monitoring (PAM) under certain circumstances, and discussion of guidelines associated

with particular licensing decisions. In relation to offshore pile-driving operations the report refers to Marine and Fisheries Agency (MFA) requirements for awarding of licenses that appear to closely parallel the JNCC requirements for seismic testing.

While many of the recommendations and requirements of the JNCC (and equivalently the MFA as described) appear to be of potential value, the JNCC guidelines (which have been influential internationally as a framework) have been subject to quite substantial criticism in recent years (eg Weir and Dolman, 2007; Compton et al, 2007; Parsons et al, 2009). These criticisms concern (amongst others) the lack of a clear argument for a 500m exclusion zone, lack of evidence that the 'ramp up' of sound is effective in deterring marine mammals, concern over inadequate training and inconsistencies in approach of MMOs, and questions concerning enforcement of the guidelines.

The 500m exclusion zone currently specified to be clear of marine mammals prior to 'ramp up' of sound from an airgun array, has a practical component as a distance beyond which it would be difficult to see cetaceans. However, observation within this distance too can be very problematic in particular circumstances of poor visibility. While the Southall et al guidelines concerning acute injury effects at the level of PTS or TTS mean that it is unlikely that these would occur at a range beyond 500m the potential for sound levels to cause behavioural disturbance more generally remains at this distance. Compton et al (2007) argue that, under particular conditions of propagation, a sound exposure level of 180dB re 1 $\mu$ Pa rms, for example, may occur at 1000m. Compton et al (2007) also refer to some evidence of alterations in behaviour of cetaceans in relation to exposure to seismic survey at distances of several kilometers. While context and species differences are pertinent certain countries (eg Australia, New Zealand) have adopted exclusion distances beyond 500m up to 3km. Parsons et al (op. cit.) point out, further, that the JNCC guidelines do not take account of the volume of the airgun battery used. Compton et al (2007) suggest that, *'there is a clear need for case by case calculation of where a safe sound pressure level is achieved based on site-specific sound speed profiles and airgun parameters, in order to identify safety radii that are appropriate, precautionary and that can be effectively monitored. The calculation of safety radii based on sound pressure levels represents a far more scientific way forward than the arbitrary designation of a 500m radius.'*(p.258).

Compton et al (op. cit.) note that the soft-start/ramp-up has become a standard mitigation tool, but that it's effectiveness should be the subject of further research. Similarly, Weir (2008, cited in Parsons, 2009) state that soft-start, *'is currently implemented as a common sense procedure, and there is little information on its efficacy in evoking an appropriate response from marine mammals'*(p.5). Compton et al (op. cit.) express concern about the potential for the procedure to lead to habituation which may have the unintended consequence of leading to exposure to damaging noise levels. Parsons (2009) suggests, in this context too, that certain species may seek to avoid a noise disturbance vertically, rather than horizontally, ie by surfacing or diving, which may leave them more vulnerable to certain acoustic impacts.

Though this is a requirement in guidelines for certain other countries the current UK JNCC guidelines do not require operators to shut down if a marine mammal or group approaches the source once the survey is operating at full power. Compton et al (op. cit.) state simply that this represents a lack of precaution. Parsons et al (op. cit.) are similarly forthright, stating that, *'This is a mitigation measure that could and should be initiated on all seismic survey vessels with immediate effect'*. It would certainly seem that

the failure to require shut down of a seismic survey when an animal enters a previously applied exclusion zone, and in the context of the assumption that soft-start is of value, represents a clear contradiction and appears incompatible with legal requirements to avoid intentional disturbance of cetaceans.

With reference to visual monitoring in relation to initial exclusion zones both prior to and during seismic survey operations, both Compton et al (op.cit.) and Parsons et al (op.cit) note that this can be highly problematic under various circumstances that affect visibility. Species also vary in their detectability – Parsons et al refer to the harbour porpoise, one of the most frequently encountered cetacean species in UK waters, as being particularly cryptic. They recommend that guidelines should be amended to include requirements to substantially reduce or postpone seismic activities under conditions of low visibility including certain sea states, fog and so on. Currently the JNCC guidelines do not require in the UK that operations are shut down at night and Weir and Dolman (2007) present some anecdotal evidence that this occurs. The SEA report makes reference to new guidance, that may come into effect, that is contained in the draft June, 2008 revision of the guidelines that would bear on license requirements. The increasing expectation of use of PAM appears to be likely to be valuable particularly in the light of evidence discussed by Compton et al (op. cit.) that combination of visual and PAM monitoring can increase number of animals detected by between 5 and 8 times. (In the context of application of mitigation technologies, SOS notes the interesting discussion provided in the SEA report concerning the potential for significant reductions in emitted noise in pile-driving by use of protective 'sleeves' containing foam or other substances – it is to be hoped that these will be developed, tested and widely applied).

Even with appropriate analysis, evaluation and refinement of acoustic disturbance guidelines, where these have legislative force (as in the case of JNCC guidelines) it is essential that their application is monitored and enforced. There has been much concern about the extent to which this is actually the case. The authors so far referred to concerning mitigation methods and current guidelines have each expressed concern about this. Evidence that the concern is warranted has been provided by an incidental analysis that Stone (2003) undertook alongside their long-term examination of relationships between seismic survey activity and marine mammal behaviour. This investigation found that standard assumed practices often did not occur including failures to implement exclusion zones and inadequate or non-existent use of soft-start. The extent to which recommended/required practices were implemented correlated closely with the status of MMOs or other assigned staff on board survey vessels, with those most closely tied (in terms of employment) to the surveying organisation least likely to implement mitigation measures fully. A table summarizing these results adapted from Stone (2003) is presented below :

Table 3. Percentage of occasions on which seismic survey mitigation measures were implemented according to status of marine mammal observer.

<b>Observer:</b>	<b>Dedicated MMO</b>	<b>Fisheries Officer</b>	<b>Crew member</b>
Delay to survey if cetacean within 500m	70%	0%	0%
For large gun arrays implementation of 20 minute soft-start	93%	80%	32%
For site surveys implementation of 20 minute soft-start	31%	3%	1%

### Spatio-Temporal Mitigation

Parsons et al (2009) accept that, *'mitigation measures currently in place 'may, in some cases, reduce some of the acute impacts of marine noise noise pollution' (p2)*. However, they also point out, *'But they do not mitigate against the chronic degradation of habitat caused by repeated use of this far-traveling and high-intensity noise' (p.2)*. They further state that, *'Current guidelines and mitigation standards also do not take into account cumulative exposures or synergistic effects with other exposures' (p2)*. This report has discussed a range of evidence concerning effects of increased ambient noise in the marine environment. This has included evidence for behavioural change by marine mammals at long-distance from seismic and pile-driving sources, experimental evidence of masking effects and theoretical concern for the consequences of masking in the wild, evidence of compensatory mechanisms (in terms of frequency or intensity changes of communications) now observed in a number of cetacean species where ambient noise levels have increased due to human activity (particularly shipping), and theoretical concerns for impacts on populations as a result of reduced ability to 'keep in contact' with conspecifics at long distances (and others). While the SEA report has focused on addressing effects of high intensity noises at close proximity in determining strategic recommendations, expert sources on which they rely (e.g Southall et al, 2007) are not sanguine about the potentially biologically significant effects on marine mammals of 'mid-intensity' noise sources whether localized and of short duration, or where it may alter marine acoustic habitat on a sustained basis.

That such concern is warranted in relation to UK waters and OGED and wind-farm construction activity is emphasised by data provided in the SEA report concerning levels of activity and audibility of noise from these operations. The SEA presents analysis that indicates that over the last decade there were approximately 63 million individual seismic survey 'shots'. It is pointed out that, *'Assuming a 10s shot interval, the total survey period (2D + 3D) is equivalent to between 188 days/year (2000) to 1195 days/year (2006) – i.e. on average during 2006, more than three surveys were carried out concurrently in the whole of the UK waters. In addition to this UK seismic noise budget, noise propagating from surveys in contiguous national waters (particularly Irish, Faroese and Norwegian deep waters) will be present'*. With respect to pile-driving associated with wind-farm construction activity there have been approximately one million hammer strikes to date with a further 4.4 million currently consented. Predicted seismic shot activity is estimated at approximately 3.8 million shots a year, while, with anticipated growth in wind-farm construction, the hammer 'strike rate' would be predicted to build

progressively to 5 million strikes a year at a peak in 2017, then reducing over a period of years to the order of 1 million per year (see pp. 85-89). The SEA report also provides estimates of the area in which seismic sound activity can be anticipated to be potentially audible to marine mammals. They state that, '*Typical spatial extents of 3D seismic surveys are of the order of 25km in any direction (625km<sup>2</sup> area). Assuming propagation distances of audible sound to around 100km in all directions (see above), the theoretical instantaneous area of audibility is a circular area of 31,400km<sup>2</sup>, and the total area of audibility during a survey is a rectangular area of 50,625km<sup>2</sup>*' (p.80).

Many commentators with expertise in understanding of cetacean behaviour and population dynamics have called, and are now calling more urgently, for mitigation to include or emphasise restrictions in space or time (e.g. Weilgart, 2007; Tyack, 2008; Parsons et al, 2009, Simmonds and Elliott, 2008; Agardy et al, 2007; Compton et al, 2007; Harwood et al, 2002; Wright et al, 2007 and others). Most emphasise that such restrictions are likely to represent the single most powerful means of mitigation that is precautionary and would impact most strongly in terms of helping to achieve or maintain favourable conservation status. In this connection a global scientific workshop on spatio-temporal management of noise was held in 2007. The report from this workshop (Agardy et al, 2007) provides a set of guidelines for approaching the evaluation of need for spatio-temporal mitigation, and a set of general steps for acquiring appropriate data and implementing particular actions in different contexts around the world. They define different sorts of spatial restriction. An important suggestion that they make that is pertinent to the SEA and it's strategic recommendations is that many Marine Protected Areas (MPAs) would require buffer zones if they are most effectively to reduce levels of noise impacting on protected species by human activities in surrounding waters. For example, they point out that SACs are almost exclusively less than 1000km<sup>2</sup> in size, such that high intensity low frequency noise, and some mid-frequency noise too, are likely to propagate at levels well above ambient background within them even where sound sources are well outside these areas. The workshop report implies that such restrictions could be valuable in many cases even if implemented on a temporary basis.

It is to be noted that climate change may bear very significantly on viability of marine mammal populations. The extent and nature of effects, as the SEA report acknowledges at several points, are, of course, very difficult to predict, but alterations in trophic webs, significant displacement to higher latitudes, and potential exposure to increased pathogenic risk have all been suggested as possible consequences (amongst others) (eg Simmonds and Eliot, 2008). Many marine populations are already very vulnerable and are a very long way from 'favourable conservation status' given effects of many decades of negative anthropogenic effects. Simmonds and Eliot (2008) suggest that what is essential is that climate change considerations are incorporated into conservation plans and strategies, and that efforts are made, '*to urgently increase the resilience of ecosystems and species to climate change*' (p.207). They suggest that is particularly important that a highly precautionary approach is reflected in management actions. Following Hansen et al (2003) this is suggested to include the provision of adequate and appropriate protected spaces. This is entirely consonant with the development of buffer zones for acoustic disturbance in relation to relevant MPAs. Though the SEA report concludes, '*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*', this appears to be insufficiently precautionary particularly with respect to local prohibitions on activities. SOS suggests that at a strategic level consideration is given to the assessment and

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development of acoustic buffer zones around pertinent MPAs, and to the designation of other areas of reduced acoustic input.

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SOS SEA Consultation Response

Our Ref: SEA00269/ER/ND  
SG Ref: SEAUK00013

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22 April 2009

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Dear Mr O'Carroll

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

I refer to your Environmental Report consultation submitted under the above Regulations in respect of the UK Offshore Energy Plan. This was received by SEPA via the Scottish Government SEA Gateway on 30 January 2009.

SEPA has used its Scoping consultation response of 28 January 2008 to consider the adequacy of the Environmental Report and this is used as the framework for detailed comments which can be found in Appendix 1. Please note, this response is in regard only to the adequacy and accuracy of the Environmental Report and any comments SEPA may have on the plan itself will be provided separately.

As the Plan is finalised, the Department for Energy and Climate Change, as SEA 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. SEPA normally expects 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](http://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 wish to discuss anything in this response please do not hesitate to contact me on 01786 452431 via SEPA's SEA Gateway at [sea.gateway@sepa.org.uk](mailto:sea.gateway@sepa.org.uk).

Yours sincerely,



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## Appendix : Comments on the Environmental Report

The Environmental Report, including the associated annexes, is extremely comprehensive in terms of both its coverage and its level of detail. As noted in our scoping response, it is considered that the approach to the assessment is sound and this has been borne out by the comprehensive nature of the report. SEPA welcomes the comprehensive nature of the report and considers that the key issues have been covered well.

Accordingly, SEPA has only a small number of comments, which are set out below:

*Roles and Responsibilities* – As you will be aware, the recently established Marine Scotland<sup>1</sup> is the lead marine management organisation in Scotland. It was established on April 1 2009 as a Directorate of the Scottish Government, to integrate core marine functions involving scientific research, compliance monitoring, policy and management of Scotland's seas. It is surprising that the roles of Marine Scotland and the provisions of the proposed Scottish Marine Bill<sup>2</sup> are not discussed in more detail in the Environmental Report although we acknowledge that some of these changes have occurred since publication of the Environmental Report. The Scottish and UK Government's agreement on Scotland's executive responsibility for planning and nature conservation out to 200 nautical miles<sup>3</sup> will also have a key influence and this should be described in order to provide clarity about roles and responsibilities with respect to the planning and management of Scotland's marine waters. These new structures and responsibilities will be key to delivering the 23 recommendations from the SEA as they apply to Scotland.

*On Shore Effects* - In our scoping response, we considered that the Environmental Report should contain appropriate reference to the potential on shore impacts, specifically from the need to develop infrastructure for the servicing of offshore renewables development and the transmission of electricity generated. The Scottish National Planning Framework 2 SEA considered the environmental effects of grid reinforcements to support renewable energy developments. There appears to have been only relatively short discussion of these issues.

*Relationship of SEA with Decision Making* – In the scoping response, we commented on the need to be very clear about how the SEA process and the plan preparation process would be integrated. Accordingly SEPA welcomes the identification of 23 recommendations arising from the SEA that will be put in place as the plan is implemented. However, it is unclear the mechanism by which these recommendations will be implemented. In order for this to take place, SEPA would be keen to see, in the SEA Statement, an implementation framework which sets out what recommendations should be taken forward, which party will be responsible for their implementation and when the recommendation can be expected to be brought forward. This would provide a clear framework for the mitigation actions and ensure that the adverse effects that they are designed to mitigate do not occur. SEPA would wish to see clear coverage of this in the SEA Statement when the plan is adopted. Commitment to delivery of these recommendations is key to the success of the SEA.

*Recommendation 1* – This is welcomed.

*Recommendation 2* – This recommendation seeks to address issues arising with the “massive scale” of offshore windfarm development required for an additional 25GW generating potential. It is surprising that no environmental factors are included within the “presumption against” list given

<sup>1</sup> [www.scotland.gov.uk/About/Directorates/Wealthier-and-Fairer/marine-scotland](http://www.scotland.gov.uk/About/Directorates/Wealthier-and-Fairer/marine-scotland)

<sup>2</sup> [www.scotland.gov.uk/Topics/Environment/16440/marine-bill-consultation](http://www.scotland.gov.uk/Topics/Environment/16440/marine-bill-consultation) - This was also subject to a SEA

<sup>3</sup> [www.scotland.gov.uk/Topics/Environment/16440/marine-bill-consultation/newmarineresponsibilities](http://www.scotland.gov.uk/Topics/Environment/16440/marine-bill-consultation/newmarineresponsibilities)

the sensitivities of some sites. We acknowledge that this is to a certain extent covered in some of the other recommendations (most notably the precautionary approach set out in recommendation 3 and the buffer zone proposed in recommendation 4 both of which we broadly support), but inclusion of well defined environmental impacts within the list in recommendation 2 would we feel be helpful in providing effective protection of the environment.

*Recommendation 13* – This is welcomed and is consistent with our scoping comments

Table 2.2 refers to the fact that new technologies can, once proven, be expected to rapidly become accepted practice. While we would not expect a full explanation of these in the Environmental Report, some evaluation of new technologies on the horizon and their potential environmental effects would have been useful.



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Dear Mr O'Carroll,

**DECC: Consultation on the UK Offshore Energy SEA Environmental Report**

**Scottish Government SEA Gateway: 00013 Environmental Report – DECC – UK Offshore Energy**

I refer to your letter of 30 January 2009, regarding the above consultation, and sent to the Scottish Government SEA Gateway on the same day. In accordance with Section 15(2) of the Environmental Assessment (Scotland) Act 2005, I have reviewed the report on behalf of Scottish Natural Heritage (SNH) in its role as a Consultation Authority under the above Act.

Our general comments on the Environmental Report and its principal recommendations, insofar as they affect Scotland, are set out below. Additional comments on issues relating to Landscape and Seascape are provided in the annex to this letter. We would note, however, that, while the report embraces plans for future oil and gas exploration and production and for gas storage across the UK, including that in Scottish territorial waters (i.e. <12nm from the coastline), the focus of the report is on offshore windfarm construction, excluding development in Scottish territorial waters (on which the Scottish Government (SG) will prepare its own SEA in due course) and on which SNH might be expected to advise. Accordingly, although we highlight a few concerns with respect to the potential impacts of Round 3 windfarm developments beyond territorial waters in Scotland upon features and/or development within territorial waters, our response is focused largely on the approach adopted for the SEA and its implications for oil and gas exploration and for gas storage (insofar as this is covered). For commentary on the adequacy or otherwise of the SEA for future offshore windfarm development around the UK and beyond 12nm in Scotland, we would refer you to and endorse strongly the response submitted separately by the Joint Nature Conservation Committee (JNCC).

General Comments on the Environmental Report.

NB. These are offered without prejudice to our responses to future oil and gas licensing rounds or proposals for oil and gas exploration or offshore windfarm construction in or adjacent to Scottish

territorial waters. SNH reserves the right to respond to individual project Environmental Impact Assessments and, if required, Appropriate Assessments on a case specific basis.

### SEA Approach

1. Notwithstanding the comments below, we commend DECC on the breadth of coverage and level of detail of this report and its associated annexes and supplementary technical reports, the generally robust and methodical approach taken to the assessment and the overall quality of the published documents.
2. As part of the SEA approach, a detailed set of SEA Objectives and Indicators is presented in chapter 3.5 (table 3.1) against which “environmental considerations can be described, analysed and compared”. While the stated purpose of these is as a tool for measuring the future effectiveness of the SEA nonetheless we believe these could and should have been used also as a means of testing the plan itself and informing the recommendations. Assuming these are sound and relevant, we recommend that they be applied in this way in the Post-Consultation report as a means of helping to evaluate, more clearly, the implications of the plan.
3. Given the length of the report there appears to be relatively little discussion on the environmental impacts of new coastal infrastructure required to service new offshore developments nor evidence that this has influenced the recommendations in any way (e.g. in terms of determining areas of greater or lesser sensitivity to development). This is in spite of the issue being mentioned in the SEA Scope section (3.6 on page 35). We accept the argument in s5.9 that there are few implications for infrastructure required to support the oil and gas industry, this being adequate for the foreseeable future. Nonetheless, for offshore windfarm construction in the Round 3 areas off the Tay and Forth in SE Scotland and in the Outer Moray Firth, the onshore impact of ancillary connections and development could have a significant effect on the landscape character of the coast. Equally, the range and quality of natural heritage interests and designations along adjacent coastlines could influence the scale and location of any coastal infrastructure required to support these developments.
4. Annex 4 of the Environmental Report lists numerous other initiatives (plans and programmes) that need to be considered in preparing the SEA. This list is comprehensive, but there is no evidence that these initiatives have indeed been considered, in any systematic manner at least, in the development of the recommendations.

### Information Gaps and Omissions

5. While the provisions of the Scottish Marine Bill <http://www.scotland.gov.uk/Publications/2008/07/11100221/0> are broadly consistent with those set out in the UK Marine Bill (with the exception of the provisions relating to coastal access), nonetheless we are surprised at the scarcity of references to the Scottish Marine Bill, the measures it contains and to the role of Marine Scotland. The devolution agreement reached in November 2008 gave Scottish Ministers additional responsibilities including outwith 12nm for planning and Marine Protected Areas. We recommend that these arrangements should be described in the SEA so that all those involved, including industry, regulators and statutory consultees, have a clear understanding of the roles and responsibilities in waters adjacent to Scotland. This should help to support more effective marine planning and management in this area.
6. In s5.14.1, the potential for cumulative impacts is recognised between Round 3 windfarm developments >12nm in Scotland and sites leased by the Crown Estate (CE) within 12nm, as part of their leasing round for Scottish territorial waters, a process that was underway but not yet completed when the SEA was published (Jan 2009). Since that time, the location of the successful ‘exclusivity leases’ in Scottish territorial waters has been announced by the CE and there is a potential focus of development immediately inshore of the Round 3 windfarm sites off the Tay and Forth in SE Scotland. As such, there is significant potential for cumulative effects on birds, landscape / seascape and other interests and it is crucial that these are considered in the Post-Consultation report and development of final recommendations.

7. The SEA makes only passing reference to the Crown Estate's leasing round for marine (wave and tide) renewable development in the Pentland Firth and Orkney Waters <http://www.thecrownestate.co.uk/newscontent/92-pentland-firth-tidal-energy-project-2.htm> due presumably to the relatively recent announcement of this. As the SEA was being completed, the Scottish Government let a contract for the preparation of a Marine Spatial Plan for this area intended, in part, to inform marine renewables deployment in the area but also to serve as a model for the Marine Spatial Plans advocated within the Scottish Marine Bill <http://www.scotland.gov.uk/News/Releases/2009/01/28095052> . Although limited to Scottish territorial waters, this Plan could, when completed, have a bearing on the location of future oil and gas exploration activity in this region, if any. As such it is important that dialogue is maintained between DECC and Scottish Government to ensure the respective plans are mutually compatible.

### SEA Findings and Recommendations

8. Perhaps because of the volume of work undertaken in the course of the SEA and presented as part of the consultation, the process by which the conclusions and recommendations have been reached is not always obvious and the scientific basis or rationale for the recommendations made not always clear. Similarly, the recommendations do not appear to be presented in any logical or structured manner. A matrix approach (e.g. as advocated in the Scottish Government SEA Toolkit: <http://www.scotland.gov.uk/Publications/2006/09/13104943/0> ) would be clearer and would show more transparently how the recommendations have been arrived at.
9. The three industries / activities encompassed by this SEA are not considered separately in the report. Because of the apparent focus of the assessment upon offshore windfarm development, information and recommendations pertinent specifically to oil and gas exploration and to gas storage (the two issues being considered in Scottish territorial waters and hence of particular relevance to us) are hard to discriminate. Indeed it is not clear that there are any specific recommendations relating to gas storage *per se* other than the need to clarify their status under the EIA Regulations. It would have been helpful therefore if separate sections could have been presented summarising the recommendations of the SEA for the three industries / activities concerned in order to better assess their implications for that sector and how these might then be delivered.
10. In the Post-Consultation report to be prepared by DECC following this consultation exercise, we believe that, to encourage ownership and delivery, the recommendations (structured according to sector), are collated into an implementation plan indicating how they are to be taken forward, when and by whom, with clear targets and milestones to facilitate review. Moreover, the monitoring requirements set out in s6.2 should be incorporated within the same plan, again with a clear indication of how and when they will be undertaken, whether by DECC or by others.
11. Twenty-three recommendations are made in s6.1, most of which we support insofar as they apply to Scottish territorial waters<sup>1</sup> but with the following exceptions:
  - a. Rec. 2. This recommendation cites 5 grounds for a presumption against offshore windfarm development. Surprisingly, none of these relate to the natural heritage interest or sensitivity of the site concerned. Although the SEA does not encompass windfarm development in Scottish territorial waters, nonetheless we believe that, as a general principle, a presumption against windfarm development on the basis of natural heritage impact, in certain clearly defined circumstances, should also exist. Indeed, under the Habitats Regulations, there exists, in effect, a presumption against any development that will have an adverse affect upon the integrity of a Natura site.

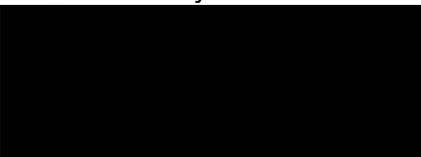
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<sup>1</sup> As above, offshore windfarm development within Scottish territorial waters is outwith the scope of this SEA. Except for the comments herein, which relate to impacts of windfarm development beyond 12nm upon the natural heritage and/or development within Scottish territories, we refer you to the response from JNCC for commentary on the recommendations relating to offshore windfarms and adequacy or otherwise of the approach taken to develop these.

- b. Rec. 4. We note the recommendation (presumably relating only to England and Wales) of a coastal buffer zone of 12nm, for offshore windfarm development. While the principle is commendable, we would not endorse such an approach or figure in Scotland. With greater seascape visibility distances, in many locations, than in England and Wales (table 5.7) there may be circumstances where a greater buffer distance is warranted as, for example, off coastlines of particular landscape or amenity significance such as National Scenic Areas (NSAs) or Coastal Footpaths. Equally, there may be other locations where windfarm development within this buffer distance is acceptable, subject to appropriate mitigation. Accordingly we feel that it is more important in Scotland to determine suitable distances from shore for windfarm development on a site by site basis.
  - c. Rec. 4. SNH supports the recommendation that detailed site-specific information gathering and stakeholder consultation is required before the acceptability of specific major Round 3 wind farm projects can be assessed.
  - d. Recs. 10 and 15. Both of these presume that consent will be given to development in environmentally sensitive areas, subject to appropriate mitigation measures being in place. In practice, depending upon the sensitivity of the site and the nature of the activity planned, developers should be aware that development may, in exceptional circumstances, be refused (e.g. it may not always be possible to identify mitigation that both enables development and meets a site's environmental objectives). Thus while strongly supportive of the sentiments reflected in these recommendations we advise that they should be re-worded to reflect this possibility.
  - e. Rec. 15. With respect to the identification and designation of further offshore SACs and SPA extensions, it is recommended that, "Wind-farm developers should be aware that SAC/SPA designation may necessitate, subject to the conclusions of any appropriate assessment, suitable mitigation measures so as to avoid adverse effects on a designated site or species". While endorsing this, we would emphasise that the same requirements would also apply to the oil and gas and gas storage industries.
  - f. Rec. 20. "Siting and consenting processes for offshore wind farms must remain flexible to allow for technological innovation, including in mitigation measures". Though not directly applicable to Scotland, except insofar as it may apply to Round 3 windfarm developments beyond 12nm, it would be helpful to have further clarification on what this means in practice.
12. We agree with DECC that one of the key potential impacts of future oil and gas exploration is that of acoustic impact from seismic exploration on cetaceans (as well as, potentially, other marine life). We do not, however, agree with the contention that 'neither regional nor local prohibitions on the activities under consideration are justified by acoustic disturbance considerations' (s5.3.6 and elsewhere). There may be areas within Scottish territorial waters, for example within the inner Moray Firth, in which the prohibition of seismic exploration activity is warranted because of the risk to important marine wildlife. We would be happy to discuss this issue further with DECC.

Should you have any queries regarding this response, or wish to discuss any of these matters further, please do not hesitate to contact Dr George Lees of our Coastal & Marine Ecosystems Unit, on 01738 458621, or by e-mail at: [george.lees@snh.gov.uk](mailto:george.lees@snh.gov.uk).

Yours sincerely



**Ron Macdonald**  
Head of Policy and Advice

## **Annex A. Additional Comments Relating To Landscape / Seascape**

### General comments

SEA OBJECTIVES (Section 3.5). There is one landscape/seascape SEA Objective (page 34), against which the environmental effects of the plan should be assessed. Whilst commendable in its content and aspiration, this Objective has not been used to test the plan through the SEA process. There is no reference, as the SEA progresses, to how it relates to the Objectives.

The SEA INDICATORS stemming from this Objective are unsatisfactory as they will be difficult to monitor. For example how might the "Extent of visual resource potentially affected by the particular developments" be monitored? Definition of the "visual resource" and how it's "extent" is measured would help to clarify this indicator. Similarly, it would be hoped that through implementation of the recommendations in Section 6 the "Number of areas of landscape sensitivity affected by proposed developments" (indicator 3) would be minimal, so is this a meaningful indicator?

SEA SCOPE Section 3.6 (and page x of non-technical summary) outlines how the various activities necessary for the offshore energy technologies interact with the natural and broader environment. The physical presence of structures and their physical intrusion is mentioned. Their potential to effect changes to landscape/seascape character should also be mentioned.

### **ASSESSMENT**

SNH is content with the SIEVE MAPPING approach taken to the spatial part of the assessment. The two Round 3 wind energy areas identified off Scotland appear to represent areas where offshore wind energy development may be acceptable from a landscape/seascape viewpoint, although this view is subject to more detailed assessment of individual projects and provided that other comments in this response regarding cumulative effects and visibility limits are taken into consideration.

The SUMMARY TABLES in section 5.6 bear no relation to SEA objectives/indicators. There is no evidence that they have been used to test the plan. Also the 5 categories have not been justified, for example, what constitutes a "potential minor positive impact"? There is also no mention of cumulative effects.

Section 6.1 gives RECOMMENDATIONS relating to the findings of the SEA and from a landscape/seascape perspective it is agreed that Alternative 3 (to license but spatially restrict) is the preferred option, albeit with number of mitigation measures to prevent, reduce, and offset significant adverse impacts.

### **ONSHORE ANCILLARY FACILITIES**

The Environmental Report does not consider the onshore impact of ancillary connections, although these are mentioned in the SEA Scope section (3.6 on page 35). It is felt that this can have a significant effect on landscape character of the coast. In Box 5.1 Sources of potentially significant effect, gas storage should be included under the SEA landscape/seascape topic if onshore connections are necessary.

### Offshore Oil And Gas

These proposals are for the installation of producer and injector wells, but they are likely to be predominantly sub-sea facilities, well offshore and beyond sight of land. No landscape/seascape/visual impact comment is therefore offered in this response in respect of offshore oil and gas. However, although offshore oil and gas proposals are likely in deeper water than that where windfarms are currently feasible, there may be potential for cumulative effects with offshore wind proposals and these should be assessed on a project level basis.

### Gas Storage

Again, no significant landscape/seascape/visual implications are highlighted by the SEA. However, if onshore connections are required, and the SEA is not clear in this respect, recommendations made in the relevant landscape/seascape character assessments should be adhered to.

### Offshore Wind

#### **LANDSCAPE/SEASCAPE CHARACTER**

SNH is pleased that the Scottish seascapes study (2005) is referenced in the SEA. It should be highlighted, however, that although the seascape units identified within the study are still considered sound, the forces for change and the scenario on which the sensitivity analysis is based should not be used to inform this SEA or the assessment of individual projects.

## CUMULATIVE EFFECTS

SNH recognises that the SEA Environmental Report was published prior to the current Crown Estate inshore Award of Exclusivity Agreements in January 2009. It would appear that there is scope for significant cumulative effects of these with the Round 3 wind energy areas identified in the SEA, as 5 of the 10 Exclusivity areas abut or are close to the outer Forth and Moray Firths. These areas are potentially visible from the coast and their interaction requires careful consideration which is not covered in the Recommendations section.

## REGIONAL SEAS SUMMARY (Section 5.6)

With respect to landscape and seascape issues, SNH has the following detailed comments on the Regional Seas areas off Scotland;

### Regional Seas 1

- No reference is made to long distance paths; e.g. the Southern Upland Way, which is generally walked from west to east which means that at its eastern end there are views towards the sea, the Fife Coast Path or Speyside Way. These are all considerations when considering sensitivity and should be shown on Figure 5.21.
- Coastal local landscape designations in Fife, Forth and Lothians are not referenced.
- The Moray Firth section underplays sensitivity expressed in the afore-mentioned seascapes report, especially in relation to the Beatrice offshore windfarm as a benchmark. The third generation of offshore windfarms will be much larger in all respects.

### Regional Seas 6

- Forces for change do not mention the Scottish segment at all.
- The large amount of existing and proposed onshore wind development and tourism aspects need to be highlighted.
- The generally high and medium sensitivity of the seascape needs to be further highlighted.
- There are extensive local landscape designations – regional scenic areas, sensitive landscape areas, AGLV – which are not mentioned in the text.

### Regional Seas 7 and 8

- There is no mention of designations in the text for these summaries. National Scenic Areas and Areas of Great Landscape Value cover extensive stretches of the coast in these Regions.



Offshore Energy SEA Consultation  
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Date: 21.04.2009

Tel: 0141 614 0420

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By post and by email to [sea.2009@berr.qsi.gov.uk](mailto:sea.2009@berr.qsi.gov.uk)

Dear Sir/Madam

### **Offshore Energy SEA Consultation**

ScottishPower Renewables welcome the principal recommendations of the SEA Environmental Report.

The SEA is a comprehensive study and a stand-alone document. Following consultation and finalisation of the document it will prove invaluable to developers and decision makers in the marine environment. However, we are entering into a new era of marine legislation which includes the new Marine Act, marine spatial planning, the MMO, NPS policy guidance and the IPC determining body. National Policy Statements (NPSs) will address **strategic** issues associated with specific types of development and we would be very keen to ensure that these strategic messages are maintained in isolation from the site specific data contained within the SEA. **The spatial aspects of marine development should quite clearly stay with the SEA and eventually the Marine Spatial Plans, and not with the emerging NPS.**

We found the baseline detail of the SEA Report encouraging, however the strategic assessment was found to be inadequate in places.

Our detailed comments are attached, but they key messages are as follows.

- **25GW:** The 25GW Government target of additional UK offshore wind by 2020 is reflected in the Crown Estate Round 3 programme. There is clearly further scope for offshore wind development extending Round 1 & Round 2 sites, new sites (as yet undetermined) within the 12nm coastal waters/the Scottish Territorial Waters and the wider Renewable Energy Zone. This SEA should clearly be limited in application to the Round 3 programme only, with future programmes for offshore wind subject to further SEA as appropriate.
- **12nm buffer:** The rationale behind the definition of the 12nm buffer is unclear and therefore it appears to be an unnatural boundary. The recommendation of a 12nm buffer is not evidence led in the report and the decision for using the limit of 12nm is not fully transparent. Whilst it can be useful to identify clear boundaries for developers, these are only useful when they are fully understood. **It is our opinion that development opportunities do exist within the 12nm boundary.** We therefore recommend that (subject to a

clear rationale) the 12nm boundary could be maintained subject to the understanding that development opportunities may also exist within the 12nm boundary. Each proposal should explain their site selection criteria and should be considered on its merits.

- **Oil and Gas/other users:** Throughout the report there is a clear bias toward oil and gas development over renewables eg. an automatic presumption against development within 6nm and the lack of consideration of the emissions from burning oil and gas. Indeed it is implied in the recommendations of the report that renewables have no right to sterilise seabed while other users are apparently permitted and have presidency (notably renewables have a reasonable defined lifecycle through their lease unlike other industries). It should be recognized that **these industries can co-exist** and there needs to be flexibility in policy to allow this.
- **Shipping:** The Environmental Report has introduced a term 'primary navigation routes' without an explanation of where these are and we have assumed these are more than just IMO designated routes. The Appendix 3 data makes no reference to primary navigation routes. We agree that adequate and safe routes must be maintained for shipping but we strongly suggest the location of these 'primary navigation routes' should be the subject of further investigation and managed in the context of a Marine Spatial Plan, which also considers mitigation and traffic management opportunities.
- **Timing:** The finalisation of the Environmental Report should invoke the requirement to initiate (if not already in progress) the Appropriate Assessment. We are concerned that the lack of information on some of the areas under assessment in the SEA may lead to delay of the AA and therefore Government decision, which influences the Crown Estates R3 process and ultimately may impact 2020 targets. We would also hope that decisions can be made in a timely manner to facilitate early progress on R3.
- **Next Steps:** We are uncertain as to how the Government will translate the findings of the SEA and its decision report into policy. As the Offshore SEA process falls within a period of policy change we are keen to ensure that it is recognised and used as its defined purpose only. We are concerned that the recommendations could be misinterpreted by use in National Policy Statements which would be inappropriate. We do however note the recommendations of the report in terms of the role of marine spatial planning for other potential nature conservation designations and the potential co-use of some areas with energy developments.

Should you require any further information or clarification on this submission, please do not hesitate to contact me.

Yours faithfully,

Gillian Sutherland  
Project Manager  
ScottishPower Renewables

## Offshore Energy SEA Consultation

### ScottishPower Renewables Detailed Comments

The following comments are primarily referenced to Section 6.1 of the Environmental Report, followed by general comments.

Reference/ subject	Comments
P213. Recommendations  Point 1 Co-ordination	The SEA report favours oil and gas in its assessments with an automatic presumption against development within 6nm around all platforms (which is an aviation issue only). This implies that siting of offshore wind is 'flexible' unlike O/G locations which is obviously not the case. <b>It should be recognized that the industries have the opportunity to co-exist and there should be flexibility to allow this.</b> A good example of this in practice is with onshore wind farms and commercial forestry.
P213. Recommendations  Point 2 Assumption against OWF	<p>a. Shipping: <b>The proposed data centre is welcomed and information should be publicly available.</b> We agree with a 1nm limit on Primary Navigation Routes although the <b>definition of a primary navigation route is critical</b>, developers must be kept up to date with progress. The location of the primary navigation routes requires further assessment for mitigation such as potential relocation/realignment and other mitigation options. Mitigation options would have been useful as recommendation eg. Traffic separation schemes. It is unclear in Section 5.7.4 what the source of AIS data is; there is reference to the SEA 2007 AIS data yet the Technical Appendix 3h is based on the 4 week 2008 data. Requires clarification.</p> <p>b. Fishing: No level of strategic significance defined as the assessment automatically assumes a coastal buffer. 'Caution is required' is a bit vague;</p> <p>c. Civilian radar: lack of strategic assessment, can be dealt with in EIA but would have been useful to have overall guidance for plan. <b>We acknowledge the difficulty and would highlight the BWEA sub group on aviation as a key resource for strategic discussions.</b></p> <p>e. MOD radar: Government need to address with MOD.</p>
P213. Recommendations  Point 3 Precautionary Approach	We question the extensive application of the precautionary principle to all uncertain issues, it gives a conservative assessment which can be too vague. Guidance was expected from the SEA looking further into approaches of adaptive management and proportionality. It is subject to misinterpretation. It should be recognised that OWF developers have put a lot of effort into researching issues despite some of them still not being fully understood;

<p>P213. Recommendations</p> <p>Point 4 12nm buffer</p>	<p><b>The ‘bulk of new generation capacity’ needs to be defined.</b> We acknowledge the potential benefit in defining boundaries however these should not be so prescriptive as to exclude development.</p> <p>The reasoning for the 12nm buffer is not clearly set out and needs to be evidence based. It appears to have been decided and then assessments made retrospectively instead of the assessments defining any spatial restriction.</p> <p>The assessment of the coastal buffer should comment on the residual environmental impact on the key aspects it is designed to mitigate. eg. Given the coastal buffer the landscape impact is insignificant, fishing impact is restricted to large vessels operating outwith 12nm.</p> <p>Looking strategically at the opportunities for wind if there is scope for development then within the 12nm and we would expect the SEA to recognize and identify it, perhaps by stating what capacity is available eg. XGW/or a % within 12nm and/or identifying which regional areas.</p>
<p>P213. Recommendations</p> <p>Point 6 Appropriate Assessment</p>	<p>We are concerned about the process and timing of Appropriate Assessment (AA) for the SEA and impact on the timing of the Government decision and on the R3 Crown Estate process. Assuming that the existing mechanism used for Oil/Gas SEA AA's is adapted, we are concerned that the uncertainties/lack of data from some of the area may hold up the assessment and delay the timescales.</p> <p><b>We acknowledge the recent news that The Crown Estate will be responsible for undertaking the AA for this SEA and would expect the existing guidance/tools to be utilised (as appropriate) by the appointed body.</b></p>
<p>P214. Recommendations</p> <p>Points 7/22. Marine Mammals</p>	<p>SPR agree to work closely with JNCC/DECC and their advisors to agree criteria for a cumulative pulse noise ‘dose’. However this approach will require extensive consultation between other operators in region (eg.seismic) with offshore windfarm developers/government advisors and may require difficult choices over programming of activities.</p>
<p>P214. Recommendations</p> <p>Point 8 Waterbirds</p>	<p>Agreed</p>
<p>P214. Recommendations</p> <p>Point 13 Climate Change</p>	<p>In the assessment on CO2 emissions there is a clear omission of data from the burning of oil/gas yet a full life cycle analysis of a windfarm and its impact is included. A stronger argument could be made of benefits from offshore wind in operation, recognising the low operational emissions from operation of wind farms compared to traditional methods of electricity generation.</p> <p>It is inappropriate to omit the environmental impact of extracting and burning 15-25 billion boe of oil and gas (see calculations of CO2 **below) on the basis that it would be imported and therefore burnt anyway as this is still a major environmental impact at a strategic level. Calculations for indicative atmospheric emissions resulting from this SEA programme should have been included.</p> <p><b>The programme for offshore wind should be framed within the 2020 targets for renewable energy.</b></p>
<p>P214. Recommendations</p> <p>Point 14 MSP</p>	<p><i>SPR are concerned that the recommendations of the SEA report are not automatically fed into National Policy Statements without due consideration, although notably the NPS should not deal with spatial aspects.</i></p> <p>This infers that renewables is least priority with ‘all’ other users which is concerning. <b>SEA is a valuable tool but the NPS needs to be even more ‘strategic’.</b></p>
<p>P214. Recommendations</p> <p>Point 15: SPAs</p>	<p>Noted, will keep upto date with consultations and developments, recognising opportunity for development to proceed with appropriate assessment and mitigation.</p>
<p>P214. Recommendations</p> <p>Point 19. Extensions to R2; R1:</p>	<p>Agreed, these require site specific assessments as a separate process.</p>

P110.  Shell Flat	For clarification, the sentence “ The proposal to construct the Shell Flat wind farm has subsequently been withdrawn” is misleading and the comment is not required. The project was relocated further to discussions between the developer and statutory agencies and the relocated project was subsequently withdrawn due to other concerns, not birds.
Physical presence (birds)	<b>The reasoning for the 12nm buffer must be clearly set out.</b> The buffer does not adequately reflect the conclusions of the preceding sections, with the reference to other users leading this buffer position. The buffer is a mitigation to reduce impacts but the 12nm limit is not led by bird assessments.  We agree that Cumulative Impact Assessment must consider territorial developments and this information should be fed into the Scottish Territorial Waters SEA.
Landscape	The assessment in 5.6 does not clearly set out reasoning for adopting 12nm buffer nor a landscape justification for this (other than it being used elsewhere), indeed it actually states: P.132 ‘The visibility of structures from the coast does not preclude development, and any consideration of coastal ‘buffers’ is perhaps too broad brush to take into consideration many anthropogenic and natural variations along the coast.....’ <b>The assessment lacks conclusion on all influencing factors for the plan.</b> A sensitivity assessment of the coast would have been useful.
Other users- Onshore	The onshore strategic guidance is too vague although appreciated information is limited, particularly on grid. <b>Further guidance on spatial restrictions</b> would have been useful eg. cables through terrestrial designated sites -could have identified highly sensitive coastal areas to avoid. For grid, <b>the SEA does not recognise the alternatives</b> to deployment of 25GW of offshore wind and their impact on the grid eg. still upgrades required.
General	<b>Inconsistent approach to assessment</b> - sometimes prescriptive (eg. MM & noise) otherwise left open ended (shipping); where some areas can only be appropriately dealt with during EIA say so = not a strategic issue, just need to state.
General	It needs to be made clear that the ‘Offshore Energy’ SEA’s recommendations are only for the respective plan/prog ie.additional 25GW by 2020. Any implications for Scotland Inshore and other plans (eg. R4, extensions) should be made with caution. <b>There is a risk of misuse and misinterpretation.</b>
General	It should be recognised that in order to meet the 25GW objective applications for projects greater than 25GW will need to be submitted to achieve it, to account for losses/reductions in projects during the consenting process.
**	With only a very rough calculation and estimate that burning the remaining UK North Sea oil & gas reserves of 15-25 billion barrels of oil equivalent(boe) would release 5.9-9.9 billion tonnes of CO2. This is equivalent to 10-18 years of total UK CO2 emissions at 2005 emissions levels (based on the following). 1 boe = 6.1 GJ of energy (approx) 15-25 billion boe = 91.5-152.5 billion GJ of energy 1 GJ = 0.0175 Tonnes of Carbon (approx) 91.5-152.5 billion GJ = 1.6-2.7 billion tonnes of Carbon = 5.9-9.9 billion tonnes of CO2 [1 tonne of carbon x 44/12 = 1 tonne of CO2] UK 2005 Net CO2 emissions = 554.2 million tonnes

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**From:** Martin Small  
**Sent:** 22 April 2009 18:40  
**To:** sea.2009@berr.gsi.gov.uk  
**Subject:** UK OFFSHORE STRATEGIC ENVIRONMENTAL ASSESSMENT

Dear Sir/Madam,

1.1 The South Downs extend from Winchester to Eastbourne and, together with part of the Western Weald, are currently designated as the East Hampshire AONB and the Sussex Downs AONB, a combined area of 1,374 sq.km. As such, the two AONBs represent one of the largest areas of protected landscape in England. The Sussex Downs AONB reaches the sea at the Sussex Heritage Coast, which include the internationally known Beachy Head and the Seven Sisters. On 31st March 2009 the Secretary of State announced his intention to confirm the designation of the South Downs as a National Park.

The South Downs Joint Committee came into being on 1<sup>st</sup> June 2005 as a result of an Agreement between the then Countryside Agency and the 15 local authorities across the South Downs. The Joint Committee has taken on the roles of the former Sussex Downs Conservation Board and the East Hampshire AONB Joint Advisory Committee. It therefore represents, for the first time, a single management organisation promoting and facilitating the conservation and enhancement of the South Downs. Set out below are the comments of the Joint Committee on the UK Offshore Strategic Environmental Assessment.

The Joint Committee is generally supportive of the principle of offshore wind energy generation. However, it is concerned at the potential impact of an offshore wind turbine on the Sussex Heritage Coast. The Joint Committee therefore welcomes the recognition of the sensitivity of of this stretch of coastline in the Environmental Report (page 140). The Joint Committee is also concerned at the potential impact of the onshore connection infrastructure, and considers that it is essential that this is taken into account when considering potential or actual proposals for offshore wind energy development. The Joint Committee also considers that the impact of any proposed wind farm on the Seven Sisters Voluntary Marine Conservation Area should be fully assessed, and is concerned that there appears to be no mention of the VMCA in the Environmental Report.

Finally, the Joint Committee considers that the name "Hastings Zone" is misleading, as the zone is the other side of Beachy Head to Hastings. The nearest urban areas to the zone are Shoreham, Hove and Brighton.

Thank you.

Yours faithfully,

Martin Small

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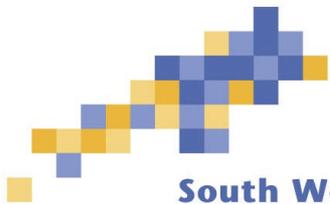
Martin Small  
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**South West of England**  
Regional Development Agency



Offshore Energy SEA Consultation  
4<sup>th</sup> Floor Atholl House  
86-88 Guild Street  
Aberdeen  
AB11 6AR

22<sup>nd</sup> April 2009

Dear Sir,

**RE: Offshore Energy SEA Consultation**

Summary

Thank you for providing us with the opportunity to respond to this consultation. This is a joint response from the South West RDA and Regen SW, the south west sustainable energy agency.

**We are deeply concerned that the proposal for a 12 nautical mile buffer zone, within which major wind farm development “would not normally occur”, will effectively stop development of offshore wind in the South West and in many other regions.** Given the central role of offshore wind in increasing renewable energy capacity in the medium term, this would threaten the ability of Government to meet its target of achieving 15% renewable energy by 2020 and will certainly prevent the south west being able to achieve 15% of its energy demand from renewable sources by 2020.

**We therefore urge that this proposal, which is presented without any evidence, is removed and that consideration of a suitable distance from shore is done on a case by case basis.**

Implications of proposal for a 12 nautical mile buffer zone

Our primary concern with the Offshore Energy SEA Consultation is with regard to the proposed 12nm buffer zone, within which major wind farm development “would not normally occur”.

We fully support sensitive receptors being considered in the development of offshore wind energy as an essential component of sustainable deployment of this technology. However, we believe that buffer zones should only be applied on the basis of suitable evidence. In the absence of that evidence (as is the

case for this SEA), the consideration of suitable distance from shore should be dealt with on a site by site basis.

Although stated as not representing an exclusion zone, the adoption of a 12nm zone – within which development is effectively discouraged – is likely to make consents for offshore wind projects hard to obtain and to deter developers from taking forward projects.

Furthermore, sites within the proposed buffer zone include some of the earliest and most deliverable projects within the programme. The Carbon Trust study referenced by the SEA states that “...Economically, the most attractive sites are those that are near-shore with shallow water and mid-distance, mid depth sites with higher wind speeds.... In order to locate all of the 29GW of capacity on the most economically attractive sites the study suggests that a seaward buffer zone would need to be reduced in some places....”.

The consequences of applying the 12nm buffer zone would be to remove the economically attractive sites for offshore wind turbines. In particular it would eliminate all of the near term opportunities for early development of Round 3 projects which are all located in zones 6, 7 and 8 where the sites are closer to shore and can connect into the existing National Grid transmission system, without the need for extensive grid reinforcement or for untested, high capacity DC links.

Of particular concern is that the buffer zone would remove both sites within the south west England region (Zone 7: West Isle of Wight and Zone 8: Bristol Channel) fall primarily within 12 nautical miles with only deep waters falling outside this limit. Thus the south west will be significantly affected by this proposal with the likely result that no offshore wind will be developed in the south west under Round three.

### **In summary, the consequences of the 12 nautical mile buffer zone are:**

An inability to deliver national targets:

- Over reliance on zones which require significant investment in infrastructure is likely to result in failure to deliver within the 2020 timeframe.
- An unrealistic assumption that nearly 60% of the 25GW target for Round three could be developed in the Southern North Sea, the majority of which would be in the zone three (a proposed SAC).
- Total dismissal of three zones which could be developed quickly due to existing grid infrastructure and close proximity to shore.

An inability to deliver regional targets:

- Regen SW’s analysis in the Road to 2020 clearly demonstrates the huge importance of offshore wind. Without zones seven and eight being taken forward in Round three, the region will NOT be able to meet a 15% renewable commitment.

### Flaws in the SEA

We are also concerned that the SEA proposes a 12nm buffer zone with no evidence and with no consideration of the economic implications.

Offshore wind brings with it significant economic opportunities. For example, a project in the Bristol Channel zone may bring additional GVA of over £30m per annum to the region in terms of the operations and maintenance alone - in addition to the obvious benefits that construction of the project would bring.

There are also significant potential synergies with wave and tidal energy, which would not be realised within the region if offshore wind development is prematurely constrained. The wave and tidal sector has the potential to bring substantial benefits to our region and the UK in the longer term, but is currently in its infancy and is thus particularly sensitive to such risks and precedents.

**In summary we believe the SEA does not make the case for a 12 nautical mile limit due to:**

**Insufficient evidence:**

- There is no clear evidence put forward in the SEA to justify the 12 nautical mile threshold. "*the relative sensitivity of multiple receptors in coastal waters...*" does not constitute evidence.

**Failure to follow due process:**

- The SEA failed to complete a comprehensive assessment of the costs and benefits of offshore wind in comparison to other marine activities and interests as required, resulting in an unfounded precautionary approach being adopted.
- There has also been no consideration of the economic consequences of applying this recommendation.

Background: Renewable Energy in South West England

South West England is a leading region in terms of developing a low carbon economy. Within the South West Regional Economic Strategy 2006-2015, Environmental Technologies (including Renewable Energy) is identified as one of the eight priority sectors selected for specific intervention. The region was the first in England to set up a dedicated sustainable energy agency (Regen SW).

DECC's 2008 Renewable Energy Strategy Consultation recognises RDAs as playing "a significant role in the contributing to the development and delivery of national energy policy at regional level". The South West RDA's Corporate Plan 2008-2011 sets out three strategic priorities: Productivity-led growth, Priority Places, and Growth within Environmental Limits.

The south west sustainable energy agency, Regen SW, has primary objectives to deliver megawatts and jobs by supporting the sustainable energy sector. The south west region was the first European region to analyse how we could deliver on the government's obligations stemming from the EU directive. Regen SW produced the Road to 2020 report, which clearly demonstrates how the region could achieve 15-20% of its energy demand from renewable energy. This relies on a significant contribution from offshore wind.

Thus the development of offshore wind energy is a strategic priority for South West England, both in terms of the development of a low carbon economy and in meeting our share of the 2020 renewable energy targets.

Yours sincerely

Claire Gibson  
Director of Sustainable Resources  
South West RDA

Merlin Hyman  
Chief Executive  
Regen SW

Offshore Energy SEA Consultation  
The Department of Energy and Climate Change  
4<sup>th</sup> Floor Atholl House  
86-88 Guild Street  
Aberdeen  
AB11 6AR

21<sup>st</sup> April 2009

Dear Sir

### **Consultation response to the Offshore Energy SEA Environmental Report**

The SEA Environmental Report is, in the main, a comprehensive document setting out the range of environmental issues relating the future leasing of offshore sites for the development of wind farms and the licensing of offshore gas and oil extraction. The SEA will have an important influence on the Government's view on the future of the Round 3 zones (including the achievement of renewable energy and climate change targets), the formulation of evolving renewables and marine policy, and the development and subsequent consideration of development order applications made to the IPC.

Our principal concern relates to the message throughout the document indicating a preference for projects beyond a 12nm coastal buffer and implication that those within 12nm should expect to have to undertake more detailed assessment and stakeholder consultation.

It is our view that the report is unclear as to why the specific distance of 12nm has been selected and lacks sound technical justification for promoting it. It is noted that this distance marks the extent of territorial waters and that there is limited correlation with international offshore wind farm experience. However the validity of applying European case studies to the situation in England and Wales is questionable and it needs to be acknowledged that the leases that the Crown Estate will enter into in Scottish waters will be for wind farms within 12nm of the Scottish coast. The Government therefore needs to consider the rationale for buffering based on this report and the implications for three of the Round 3 zones and the Scottish situation. Adhering to this buffer without good reason or clarification could have significant cost implications for the consortia bidding for zones wholly or partly within 12nm of the coast, the consortia offered the leases and the subsequent achievement of the Governments targets.

Whilst the SEA suggests 12nm as the appropriate distance for a coastal buffer, it also highlights that each zone should be assessed on its own merits. Somewhat ambiguously it suggests that in some areas, projects within 12nm would be acceptable, and that in other locations a coastal buffer in excess of 12nm may be

justified. It would appear that the SEA attempts to provide flexibility on the point of buffer distance, however, if this is the aim, it is questionable as to why the distance of 12nm is specifically mentioned throughout the text. This is of particular concern where, at several points, text states “...a coastal buffer zone of 12 nautical miles (some 22km) is recommended, within which major wind farm development would not normally occur.”

The SEA document references the 12nm threshold within the sections on the following issues: landscape and visual, ecological, shipping, and recreation and tourism. These issues are considered in the following paragraphs.

The potential landscape/seascape and visual effect is presented in the SEA as a key driver behind the setting of the 12nm coastal buffer. This appears to be contrary to the DTI Guidance on the assessment of impact of offshore wind farms and also to the development distances relating to the sensitivity of seascape units set in the Round 2 SEA.

The DTI Guidance suggests that for 150m turbines, a major visual effect is likely to occur within 7nm of the coast, between 7nm to 13nm a moderate effect is anticipated and beyond 13nm a minor effect is possible. Similar distance categories were set for minimum offshore limits for wind farm development for each seascape unit during Round 2, (with reference to CCW Guidance and consultation) at 8km (4.33nm), 13km (7nm) and 24km (13nm) for high, medium and low sensitivity of seascape units respectively.

The threshold of 12nm falls within the zone considered by guidance to have a moderate effect on landscape/seascape and visual receptors, which suggests this level of effect is deemed to be potentially acceptable. On this basis, it is unclear why development within any part of the ‘moderate effect’ zone (i.e. between 7nm and 13nm) is not potentially acceptable. For example why is 12nm considered more appropriate than 7nm or 10nm? (10nm being a mid point in the 7nm to 13nm zone). If the SEA was seeking to minimise visual impacts, based on current guidance why wasn’t the threshold set at 13nm? (the threshold between potential moderate effect and minor effect). An absence of evidence within England and Wales from Round 1 and 2 (which we understand to be part of the justification for departing from earlier advice) to support the 12nm buffer on the grounds of landscape and visual effect tends to make the professional justification of the distance on this basis challenging and suggests that 12nm has been chosen more for administrative than sound technical or environmental reasons. It is accepted that some seascapes will be more sensitive than others, and that individual projects will need to assess this in their environmental impact assessments, however a general 12nm buffer whether proposed or implied is unjustified for all coastal areas.

With regards to the ecological basis of the 12nm buffer, it is accepted that for some species there is likely to be more significant interest in shallower coastal waters. However, for other species, such as some cetaceans and seabirds, there is a preference for deeper water such as that found beyond 12nm. The current limited knowledge of marine ecology beyond 12nm, combined with the proposed ecological designations of

marine areas significantly further offshore (such as Dogger Bank) should re-emphasise the unsuitability of a 12nm coast buffer cited for ecological reasons.

The specific conditions (water depth, tidal flow, temperature, seabed habitat etc) required by many important marine species means that it is especially important that each potential development site be assessed on its own merits and the use of a generic buffer is avoided. It appears that the territorial waters extent has been inappropriately adopted as the definition of 'coastal waters' in an ecological context, although professional justification reflecting the significance of ecological interest specifically within 12nm is tenuous.

The SEA implies that projects within 12nm will require additional assessment and stakeholder consultation due to their proximity to the coast, yet it also states that each location should be assessed on its own merits. It is the site-specific EIA scoping process as opposed to generalisations of the SEA that should identify the range and level of detail of assessments. The EIA scoping identifies important environmental factors that are most likely to be affected by the scheme, ensuring that all potentially significant effects are taken into account and that only those that are likely to be significant are examined in detail. In addition, the implication that a project within 12nm should undergo more detailed or more extensive public consultation appears to be without foundation. This creates unnecessary ambiguity, may result in increased costs (time and money) for developers within the 12nm zone and appears to be at odds with the recently published consultation guidelines for Nationally Significant Infrastructure Projects, which does not advise different scales of engagement for different projects.

With respect to shipping, recreational and tourism interests, whilst the SEA report notes that generally the inshore zone is busy and crowded in places we are concerned that this is used as a further justification to encourage wind farms to locate beyond 12nm. If the public can't visually distinguish between 10nm, 12nm, 14nm (or rather that it would in most cases be difficult to identify a significant difference between projects at these distances) we are unsure why this is identified as an issue for tourism and recreation. Sailing, fishing and shipping can co-exist and have no rights to the use of the water. Therefore we are unsure why the SEA gives prominence to these sectoral interests over the wider benefits of climate change and renewable energy generation. In certain cases and locations these interests may be important however the relevant place to assess significance is in the environmental impact assessment and the place to weigh the competing interests is in the planning determination.

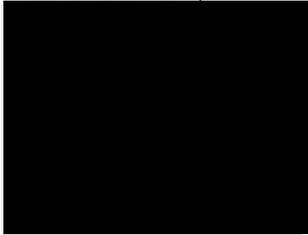
It could be argued that under the SEA, the three zones within the Round 3 process where all or part of the zone lies within 12nm are significantly disadvantaged with regards to development potential.

We are concerned that some key consultees and individuals will use the SEA as justification to consider the '12nm buffer zone' as an exclusion zone. This will be a particularly unwelcome problem for the developers of the three zones: Bristol Channel, West of Isle of Wight and Hastings, to manage.

A further unwelcome response to this threshold, particularly if it is given enhanced status following the Governments response to the SEA and / or finds its way into the

National Planning Policy Statement on Renewables, could be to force development further out into deeper water increasing the engineering challenge, construction risk and costs. In the case of the Bristol Channel, West of Isle of Wight and Hastings zones this may have significant effects on project viability, which in turn will result in the Government failing to achieve its stated renewable energy and climate change targets. For this reason we urge very careful consideration to be given to the need for any buffer to be proposed or inferred as an outcome of this SEA.

Yours faithfully



**Adrian French**  
Director

# Consultation on the 'UK Offshore Energy Strategic Environmental Assessment Environmental Report: Future Leasing for Offshore Wind Farms and Licensing for Offshore Oil & Gas and Gas Storage'

## Consultation response to the Department of Energy and Climate Change from The Crown Estate

April, 2009

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### Summary

- 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.
- It is expected that The Crown Estate's Round 3 offshore wind leasing programme will provide 25GW of additional renewable energy generating capacity by 2020. Round 3 is, therefore, a strategically important initiative in the context of Government's targets for offshore renewable energy and achieving transition to a low carbon economy.
- The greatest challenge to the delivery of Round 3 is building and maintaining 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 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 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 recommendations of the Environmental Report are broadly supported, although The Crown Estate believes that the 12nm Coastal Buffer identified in Recommendation 4 is undesirable and unnecessary, for the following reasons:

- If rigidly interpreted it is too prescriptive and may prejudice future strategic planning policies such as, for example, National Policy Statements under the Planning Act 2008 as well as marine spatial planning proposals under the Marine and Coastal Access Bill.
- The assessments in the Environmental Report do not lead to the conclusion that a 'blanket' 12nm Coastal Buffer is the best way to manage potential impacts of offshore wind farm development on interests such as landscape and seascape, ecology or shipping. Emphasis should instead be placed on the need for more detailed case-by-case, site-specific assessment of the potential environmental and technical implications of proposed wind farm developments in line with the variable nature of landscape, ecological and other economic uses of British coastal waters.
- If Government is minded to adopt a Coastal Buffer as indicated in Recommendation 4 then its intent should be unambiguous. As written, it does invite different interpretations (largely due to slightly different wording in the Non-Technical Summary and Section 6.1). It should be made clear that the intention is that the bulk of the 25GW of additional offshore development is delivered outwith inshore waters rather than there being a restriction on the size of any specific development that may be located within those inshore waters.
- With respect to Recommendation 19 (extensions to Round 1 and 2 sites), our view is that the emphasis should be on site specific investigations. It is not helpful to generalise the restrictions that might apply to the extensions of these existing sites. We do not agree that, in all cases, the most appropriate direction of extension would be to seaward nor that it is unlikely that Round 1 sites would be extended.
- It is our view that it is entirely reasonable (and consistent with the purpose of SEA) to suggest that future, more detailed, technical and environmental investigations for proposed developments close to the coast is acceptable. In this regard we suggest that the unnecessary restrictions contained in Recommendations 4 and 19 are removed and that the wording of Alternative 3 be amended to provide greater flexibility, for example: "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**".
- The Environmental Report emphasises the strategic importance of Dogger Bank for future offshore wind farm development. It should be noted that there are proposals to include large sections of Dogger Bank within the Natura 2000 network (as a Special Area of Conservation). The Crown Estate has separately provided input to the Impact Assessment for this proposed designation emphasising the strategic and economic importance of Dogger Bank. Although it is recognised that socio-economic interests are not a material consideration in the designation of Natura 2000 sites, the strategic importance of this region for renewable energy emphasises the need for a strong evidence base underpinning designation and the need for a high level of certainty about the interest features for which it is potentially designated and their conservation objectives.

## Supporting information

### 1. 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 £7 billion (2006 / 07 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 all UK taxpayers; in 2006 / 07 this amounted to £200.1 million.

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 approximately 55 per cent 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 £46 billion 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. This knowledge 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.

### 2. Round 3

On 4 June 2008 The Crown Estate (TCE) announced proposals for the third round of offshore wind farm leasing to deliver up to 25GW of new offshore wind farm sites by 2020 (hereafter referred to as "Round 3"). TCE has subsequently invited potential development partners to bid for one or more of nine (9) Development Zones, identified through the Marine Resource System (MaRS) by the Crown Estate. These zones will be finalised following the Government's decision on the SEA, once DECC has considered comments received during the public consultation and published a Post Consultation Report, and subject to the outcomes of any Appropriate Assessment that may be required.

### 3. The Crown Estate's Response

Our comments focus on those aspects of the report and its recommendations that relate to offshore wind energy.

In this respect the Environmental Report is 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 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.

We have three key comments on the Environmental Report:

1. The recommendations of the Environmental Report with respect to offshore wind energy are broadly supported with the following exceptions:
  - **Recommendation 4.** The case for a 12nm Coastal Buffer is not adequately made and the intent of this recommendation is not, in any case, clear. Our key concerns are:
    - If rigidly implemented it is too prescriptive and may prejudice future strategic planning policies such as, for example, National Policy Statements under the Planning Act 2008 as well as marine spatial planning proposals under the Marine and Coastal Access Bill.
    - The assessments in the Environmental Report do not lead to the conclusion that a 'blanket' 12nm Coastal Buffer is the best way to manage potential impacts of offshore wind farm development on interests such as landscape and seascape, ecology or shipping. Emphasis should instead be placed on the need for more detailed case-by case, site-specific assessment of the potential environmental and technical implications of proposed wind farm developments in line with the variable nature of landscape, ecological and other economic uses of British coastal waters.

**Further more detailed comments on the proposed Coastal Buffer are included below in Annex A.**

- **Recommendation 19.** It is our view that it is not helpful to generalise the restrictions that might apply to the extensions of Round 1 and 2 sites. It is not clear to The Crown Estate that, in all cases, the most appropriate direction of extension would be to seaward nor that it would be unlikely that Round 1 sites would be unlikely to be extended. It is our view that, in light of the diverse settings of existing sites, that the emphasis should be on site specific investigations.
2. It is our view that it is entirely reasonable (and consistent with the purpose of SEA) to suggest that future, more detailed, technical and environmental investigations for proposed developments close to the coast is acceptable. In this regard we suggest that the unnecessary restrictions contained in Recommendations 4 and 19 are removed and that the wording of Alternative 3 be amended to provide greater flexibility. An example of how this might be achieved is provided below (additional wording underlined):

“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**”.

3. Our final point relates to the potential effect of the proposed designation of Dogger Bank as a Special Area of Conservation (SAC). The Environmental Report emphasises the strategic importance of Dogger Bank for future offshore wind farm development. It should be noted that there are proposals to include large sections of Dogger Bank within the Natura 2000 network (as a Special Area of Conservation). The Crown Estate has separately provided input to the Impact Assessment for this proposed designation emphasising the strategic and economic importance of Dogger Bank. Although it is recognised that socio-economic interests are not a material consideration in the designation of Natura 2000 sites, the strategic importance of this region for renewable energy emphasises the need for a strong evidence base underpinning designation and the need for a high level of certainty about the interest features for which it is potentially designated and their conservation objectives.

## 4. Closure

The greatest challenge to the delivery of Round 3 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.

We trust that you will find these comments constructive. We would be very willing to provide Government with additional information on any of the points we have raised above and be very pleased to discuss these matters with you further. All of this response may be put into the public domain and there is no part of it that should be treated as confidential.

## 5. Contact

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## **Annex A: Detailed Comments on the Proposed Coastal Buffer**

### **1. Rationale for the Coastal Buffer**

Whilst sensitivity associated with landscape / seascape and bird interests appear to be the main drivers for Recommendation 4, the Environmental Report also indicates that restriction of development within 12nm would also mitigate potential effects on the navigation of small fishing and non-commercial vessels, commercial fishing activity, tourism and recreation.

The Environmental Report itself clearly caveats that there may be scope for offshore wind development within 12nm, and conversely, that a Coastal Buffer in excess of 12nm may be justified for some areas / developments. It would be desirable, in light of the quantity of information assembled during the SEA that there was greater clarity about where these areas might be located.

We are concerned that a blanket Coastal Buffer is too prescriptive at the SEA level and would prejudice future strategic planning policies (for example in the drafting of National Policy Statements under the Planning Act 2008 as well as marine spatial planning proposals under the Marine and Coastal Access Bill) which would both benefit from a more fine-grained consideration of spatial planning issues.

We would prefer that reference to a 12nm Coastal Buffer be replaced with a statement of the need for more detailed case-by case, site-specific assessment of the potential environmental (e.g. bird sensitivities, landscape / seascape effects) and technical (e.g. navigational routes and safety) implications of wind farm developments that are closer to the coast.

The Environmental Report includes various references to the need for a Coastal Buffer and we include some specific comments on these references which collectively form the rationale for Recommendation 4.

#### **1.1. National Policy**

Section 5.7.3 of the Environmental Report makes specific reference to a number of national policies in its consideration of a Coastal Buffer, namely the policies contained within:

- Planning Policy Guidance Note 20: Coastal Planning (PPG20); and
- Planning Policy Statement 22: Renewable Energy (PPS22).

It is not clear that the policies contained in PPG20 are relevant to the consideration of the planning of offshore wind farms (although it is recognised that PPG20 may be relevant to certain onshore development e.g. substations).

For planning purposes as a general rule, the limit of the coastal zone in the seaward direction is mean low water mark. Above mean low water mark, local planning authorities have powers to control the development and use of land under the Town and Country Planning Act 1990 (paragraph 1.6. Decisions on development proposals below mean low water mark are generally outside the scope of the planning system, although they are subject to control by a number of agencies, usually related to the type of activity (paragraph 1.9).

Likewise, as the land use planning system does not generally extend beyond Mean Low Water Mark (MLWM), the policies contained in PPS22 do not extend to developments for offshore renewables. The relevance of PPS22 in the consideration of a 12nm Coastal Buffer is therefore questionable. Nevertheless, TCE does acknowledge the importance of national designations and that the siting of offshore wind farms should not compromise the objectives of designation of the area. However, at SEA level, TCE does not consider that it is possible (or warranted) to determine whether the development of offshore wind farms will compromise these objectives. Realistically this can only be ascertained through case-by-case, site-specific investigations and rigorous assessment against the objectives of designation of the area.

## **1.2. Landscape / Seascape**

The potential adverse effects of offshore wind farm development on landscape / seascape are expressed as a concern in the Environmental Report. As stated in the Non-Technical Summary (p. xiii):

*The major development of offshore wind farms envisaged by the draft plan / programme could result in significant effects on landscape / seascape...The assessment has considered the theoretical maximum visibility of offshore wind turbines (of a range of sizes and heights) during day and night based on curvature of the Earth, the relative effectiveness of the 8 and 13km seascape buffers adopted in the Round 2 SEA, based on evidence from Round 1 and 2 developments, the relative sensitivity of the coast and hinterland based on protected / valued landscape designations, and international practice in wind farm siting. Significant adverse effects are likely without mitigation; however, for a variety of impact reduction reasons a general guideline of a 12 nautical mile buffer zone is recommended for large (>100MW) wind farm developments. This is not to exclude wind farms from being built closer to shore but to reduce conflicts with a range of ecological and other receptors (including landscape / seascape) and avoid potential public opposition and extended consenting timescales.*

Section 5.6 of the Environmental Report subsequently provides a thorough account of the three principal considerations for an assessment of the likely impacts of wind turbines on the seascape / landscape of the UK coastline: the limit of visual perception from the coast (i.e. are the turbines visible and what influences their visibility); the individual characteristics of the coast which affect its capacity to absorb a development; and, how people perceive and interact with the seascape.

It is unclear how the analysis in Section 5.6 leads to the recommendation for a blanket 12nm (~22km) Coastal Buffer. We would argue that the issues identified below (extracted from Section 5.6) imply the need for a more fine-grained approach to landscape and seascape:

- The Environmental Report identifies that the nacelle of a 160m turbine at 25-30m from the coast would still be visible (Section 5.6.1.1). Table 5.6 also indicates that, at sea level, the theoretical viewable distance to nacelle of a 160m turbine with a 90m diameter rotor is 26km, and the theoretical viewable distance to blade tip of that turbine is 49km. This does not account for the influence of haze and other meteorological factors on viewable distance.
- Section 5.6.3 of the Environmental Report also states that “the 35km buffer represents an indicative maximum actual visibility based on the studies discussed above, though this is not

*necessarily as far as an individual may be able to see... The visibility of structures from the coast does not preclude development, and any consideration of coastal 'buffers' is perhaps too broad brush to take into consideration the many anthropogenic and natural variations along the coast (at local to regional scales) and the variety of development scenarios which might take place (e.g. height, pattern of turbines). What determines the capacity of a stretch of coastline to accommodate a given development scenario is people's perception of the view. This may be controlled by whether turbines are viewed from an urban or industrial landscape or a more remote or 'wild' area, the occupation of the viewer and their motivation for being in the viewing location (e.g. work, leisure), and indeed where the context of the coast and turbines meet (e.g. leisure craft travelling on coastal routes will have intervisibility with the coast and sea)."*

- Table 5.10 identifies the distance from shore of a number of offshore wind farms (with turbines of varying size) that have been approved or constructed in the Baltic and North Seas. TCE believes that it would be beneficial for a similar analysis to be undertaken of UK constructed and approved offshore wind farms. In addition, some consideration of UK attitudes towards offshore wind farm development would be useful. Some discussion of attitudes towards renewable energy is provided in Section 5.6.5 which states *"surveys of awareness and attitudes to renewable energy, specifically onshore wind, indicate that people are generally in favour of the use of renewables, including wind power, indicating that the general population perceives advances in renewables as necessary (possibly linked with perceptions / knowledge relating to climate change / depleting hydrocarbon reserves)"*.
- Offshore wind farms are likely to be visible in the context of other existing wind farms, and other marine users such as commercial shipping and fishing vessels and a range of smaller recreational craft.
- Section 5.6.5 of the Environmental Report recognises that the characteristics which determine the 'compatibility' or degree to which a wind farm development alters or harmonises with the character of a seascape in which it is observed are highly variable at the regional and local scale and are difficult to account for in a comprehensive manner at a strategic level.
- The potential effects on landscape / seascape will be considered by decision-makers in the context of other likely significant effects. For example, potential medium adverse effects of offshore wind farms on landscape / seascape (Table 5.8 indicates that average distance where 'medium' magnitude of effect occurred for Round 1 and 2 sites is 14.2km for 5-6MW turbines) should be weighed against the substantial environmental and socioeconomic benefits of increasing renewable energy generation on a national scale, with consequent reductions in carbon dioxide emissions.

### **1.3. Bird Sensitivities**

The Environmental Report expresses concerns over the potential adverse effects of offshore wind farm development on bird sensitivities. As stated in the Non-Technical Summary (p. xiii):

*Overall, the assessment of these effects concludes that based on available evidence, displacement, barrier effects and collisions are all unlikely to be significant to bird populations at a strategic level.*

*However, there are some important uncertainties in relation to bird distribution, variability in migration routes and timings, the statistical power of monitoring methods, and the sensitivity of this conclusion to modelling assumptions (notably avoidance frequency in modelling of collision risk and several important factors in modeling of population dynamics). Therefore, recognising that a large proportion of the bird sensitivities identified are concentrated in coastal waters, a coastal buffer zone of 12 nautical miles (some 22km) is recommended, within which major wind farm development would not normally occur.*

Notwithstanding the uncertainties identified above, there is a growing body of information about the distribution of bird populations around the British coastline, particularly those that are likely to be of strategic importance, such as breeding colonies of seabirds, wintering aggregations of seaduck and divers and the migratory routes of some species. As with landscape this issue would have benefited from a more fine-grained treatment which reflects the uneven distribution of bird interests around the British coastline rather than the imposition of a blanket restriction.

## **2. Definition of the buffer**

If Government is minded to adopt a Coastal Buffer as indicated in Recommendation 4 then its intent requires clarification. Recommendation 4 (section 6.1, page 214) includes the following passage:

*Reflecting the relative sensitivity of multiple receptors in coastal waters, this report concludes that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km). The proposed coastal buffer zone is not intended as an exclusion zone, since there may be scope for further offshore wind development within this area, but as mitigation for the potential environmental effects of development which may result from this draft plan / programme. The environmental sensitivity of coastal areas is not uniform, and in certain cases new offshore wind farm projects may be acceptable closer to the coast. Conversely, a coastal buffer in excess of 12nm may be justified for some areas / developments...*

In the Non-Technical Summary, however, under the sub-heading “Landscape / Seascape” the following point is made:

*... for a variety of impact reduction reasons a general guideline of a 12 nautical mile buffer zone is recommended for large (>100MW) wind farm developments. This is not to exclude wind farms from being built closer to shore but to reduce conflicts with a range of ecological and other receptors (including landscape/seascape) and avoid potential public opposition and extended consenting timescales.*

Although these passages are inconsistent in the way they describe the nature of the Coastal Buffer, it is our understanding that the intent is actually to direct the majority of new wind farm construction, as opposed to large wind farms, *per se*, away from inshore areas where there is a greater concentration of environmental sensitivity and competing uses.

It is important that this proposed restriction is clearly articulated because whilst the Round 3 leasing programme is expected to deliver the bulk of the capacity beyond 12nm it does also include several development zones (including both of those proposed on the south coast of England) that are wholly or partly located within 12nm.

It is also important that the intent is made clear so that future planning activities, including the formulation of relevant National Policy Statements and Marine Spatial Planning (as foreshadowed by the Marine and Coastal Access Bill) are not prejudiced.



**UK Offshore Energy Plan  
SEA for Offshore Oil and Gas Licensing and Wind Leasing  
Environmental Report Consultation**

**Response by  
The Royal Society for the Protection of Birds  
22 April 2007**

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### **About the RSPB**

The Royal Society for the Protection of Birds (the RSPB) is the charity that takes action for wild birds and the environment. We are the largest wildlife conservation organisation in Europe with over one million members. We own or manage approximately 135,000 hectares of land for nature conservation on 200 reserves throughout the UK.

### **The RSPB's commitment to renewable energy**

The RSPB believes that climate change is the greatest long-term threat faced by people and biodiversity. Without rapid action to reduce greenhouse gas emissions, one third of all land based species may be committed towards extinction by 2050. We have welcomed the UK Government's plans to cut emissions by 80% by 2050 and we support the Government's pledge to deliver the UK's share of the EU renewable energy target for 2020. The UK Government's Renewable Energy Strategy has proposed that, to contribute its fair share to the target, it will seek to generate 15% of its energy (and up to 40% of electricity) from renewable sources. This will require a revolution in the way that we generate and use energy. The RSPB advocates that this revolution should take place in a way that minimises damage to the natural environment based on a mix of technologies as well as demand reduction and energy efficiency.

Given this context, the RSPB supports government's aspirations to generate 33GW of renewable electricity from Offshore Wind Farms by 2020.

### **The role of the UK Offshore Energy Plan SEA**

The role of this Strategic Environmental Assessment (SEA) process is to ensure that environmental considerations are incorporated into the Draft Plan so that the Government's 33GW target is delivered with minimal impacts on the marine environment. Although SEA is a regulatory process, and not a policy process for UK renewables, we believe it has a critical role to play in filling information gaps to support both the assessment of the Draft Plan and the faster delivery of a Marine Protected Areas (MPA) network and future marine plans.

The forthcoming system of marine spatial planning will play a valuable role in providing a joined-up process by which conflicts between present and future offshore energy developments can be resolved. In the meantime, this SEA process should serve the industry and the marine environment by playing a strategic role in helping to determine that areas which have been licensed stand a good chance of receiving consent at the project stage, and in identifying how any adverse impacts of future developments can be reduced and any positive outcomes enhanced.

## **Introduction**

The RSPB welcomes the Strategic Environmental Assessment (SEA) of the UK Offshore Energy Plan ('Draft Plan') covering the implications of further wind farm leasing, oil and gas licensing, and gas storage licensing in UK waters. Overall, we agree with the SEA's conclusion that there are no overriding environmental considerations that would preclude the UK Offshore Energy Plan from being adopted, given adequate avoidance and mitigation of potentially significant effects. However, we consider that significant displacement, barrier and collision effects on birds cannot be ruled out in the absence of a strategic-level Cumulative Impact Assessment (CIA) of the offshore wind element of the plan.

While the Environmental Report (ER) successfully collates large amount of data, it fails undertake a robust assessment and i) evaluate a wide range of spatial alternatives for each activity, ii) undertake a satisfactory assessment of likely cumulative effects, particularly for birds, and iii) adopt a rationale for judging the significance of effects. Moreover, the recommended avoidance and mitigation measures are inadequate to address potentially significant effects, particularly for birds.

The RSPB is seriously concerned that no Appropriate Assessment of the Draft Plan has been carried out to date, despite our advice that this would be required. We are of the opinion that the proposals may have a likely significant effect on Special Protection Areas and their bird populations, and that a strategic AA, based largely on the data compiled for the SEA is possible.

We would welcome the opportunity to discuss our comments further, in particular, the detailed recommendations made below.

### *Structure of this response*

Key issues, data needs and recommendations are summarised below. Further below, we make detailed comments on key sections of the ER.

## SUMMARY OF ISSUES

### SEA conclusions

- **We agree with the SEA's conclusion that there are no overriding environmental considerations that would preclude the UK Offshore Energy Plan from being adopted, given adequate avoidance and mitigation of potentially significant effects.**
- **However, significant displacement, barrier and collision effects on birds cannot be ruled out in the absence of a strategic-level Cumulative Impact Assessment (CIA) of the offshore wind element of the plan.** The assessment of Alternative 3, the preferred alternative, concludes that there are potential negative effects due to barrier effects and changes in food availability, and potential minor negative impacts upon birds due to collision and behavioural changes. However, the overall conclusion is that these effects are not significant at a strategic level. We believe that some of these potential negative/minor negative effects are as likely to be significant at the biogeographical scale as they are likely to be insignificant and as such, we cannot make a definitive determination either way.
- **We agree that existing oil spill controls are adequate and additional controls are not necessary at the strategic level.**

### Spatial considerations

- **The proposed 12nm non-exclusionary buffer zone:** We welcome recognition of generally greater sensitivity within 12nm from an ecological, fisheries and navigation and landscape point of view, but also the flexibility for consideration of developments within this area on a case-by-case basis.
- **The proposed 6nm exclusion zone around oil and gas infrastructure seems excessive** in our view and may also put additional pressure on current and proposed Marine Protected Areas. We realise that this generic buffer is linked to helicopter safety and do not wish to unnecessarily promote unsafe conditions, but consider that the 6nm buffer, like the 12nm buffer, should be a 'soft' constraint that can be negotiated on a case-by-case basis.

### Appropriate assessment

- **Appropriate Assessment of licensing/leasing proposals:** The RSPB is extremely concerned that no Appropriate Assessment of the Draft Plan has been carried out to date, despite our advice that this would be required. We are of the opinion that the proposals will have a likely significant effect on Special Protection Areas and their bird populations, and that a strategic AA, based largely on the data compiled for the SEA is possible. Therefore, in the absence of a strategic AA, the RSPB finds it difficult to see how DECC can proceed to leasing and licensing decisions and comply with the legal requirements of the Habitats Directive.

### SEA approach

**The assessment is not robust.** In our response to the UK Offshore Energy Plan SEA scoping report in January 2008, we emphasized the need *"for the assessment to consider a wider range of reasonable alternatives for each activity, [and] focus on evaluating cumulative effects..."* While the ER successfully collates large amount of data, it fails to i) assess a wide range of spatial alternatives for each activity, ii) undertake a satisfactory assessment of likely cumulative effects, particularly for birds, and iii) adopt a rationale for judging the significance of effects. Moreover, the recommended avoidance and mitigation measures are inadequate to address potentially significant effects, particularly for birds.

- **The alternatives considered minimalist, non-spatial and fail to address each activity separately.** We are seriously concerned that the alternatives considered in the ER are minimalist at best and fail to address each activity separately (i.e. offshore wind, oil and gas, and gas storage). We are also concerned that the SEA does not consider spatial alternatives to licensing and leasing using the Round 3 Crown Estate map of proposed development zones as one alternative amongst many.
- **The assessment of potential cumulative effects on birds is inadequate:** The claim made in section 5.5.4 that there are unlikely to be cumulative effects on biogeographical populations is not supported by a robust assessment. This effect cannot be ruled out for specific species depending on the scale of multiple wind farms and other developments affecting species across occupied sea areas, including transboundary effects. We note that most of the RSPB's objections to Offshore Wind Farm proposals have related to the cumulative effects of multiple wind farms on the relevant SPA population (e.g. Sheringham Shoal), rather than relating to population level impacts of individual wind farms. Adequately addressing cumulative effects is key to minimizing any potential adverse environmental impacts of offshore wind farms.
- **The methodology for determining significance of effects is unclear.** The ER does not define the significance criteria used to assess the likely environmental effects of the Draft Plan. For example, it is unclear how a minor negative effect is distinguished from a major negative effect and how their relative significance is decided. More detailed significance criteria should have been developed, taking into account the SEA Directive's requirements in Annex 1.
- **In our view, negative transboundary effects on birds cannot be ruled out.** This is because i) bird populations are transboundary, and ii) the Round 3 zone extends to the edge of UKCS, e.g. Dogger Bank, therefore potentially abutting other Member State offshore wind farms and oil and gas proposals as well as existing infrastructure and the effects of fishing activities.
- **Existing arrangements are inadequate to monitor the likely environmental effects of the Draft Plan.** The ER finds that existing monitoring arrangements are sufficient to understand the evolution of baseline conditions in respect of biodiversity effects across the SEA area. However, we disagree as most Food and Environment Protection Act (FEPA) monitoring requirements are compliance monitoring and not necessarily helpful in advancing our knowledge of effects/impacts on birds.
- **We welcome the receptor-based assessment, the adoption on many fronts of the precautionary approach and the incorporation of SEA Steering Group and COWRIE contributions.**

#### SEA Recommendations

- **Recommendation 6 (Marine Protected Areas):** Recommendation 6 needs to make it explicit that in some cases, Natura 2000 sites (and other MPAs) may not be leased at all. As currently drafted, this recommendation seems to indicate that environmental objectives are secondary to economic ones.
- **Recommendation 14 (Marine Protected Areas):** This recommendation runs counter to some other recommendations and is inconsistent with the precautionary approach and should be rephrased to state: "*Where offshore wind developments do not impact on the conservation objectives of MCZs, wind farms may be located in such areas...*" While offshore wind farms and Marine Conservation Zone objectives can be compatible, they cannot be defined as 'coincident'.

- **Recommendation 19 (expansion of Round 1 and Round 2 sites):** We agree that Round 1 sites should not be expanded and note that seaward expansion of Round 2 sites, while preferable to landward expansion, may cause adverse cumulative effects on some bird populations. Therefore, Round 2 expansions should be considered on a case-by-case basis.
- **Recommendation 21 (offshore database):** We strongly support this recommendation and urge the Crown Estate to tie in data deposition requirements within offshore wind farm consents. There needs to be a long-term resolution of how this database is used and managed (currently there is a backlog of data and the database is not used effectively).

#### Ornithological data needs

- **Additional surveys are essential to cover all those SEA areas that may attract interest from offshore wind developers (within suitable depth parameters), and that have not already been covered in Rounds 1, 2 and 3 surveys.** There is a need to continue surveys beyond this year and to review priority areas. The programme put forward for 2007 / 08 should be extended to provide data over a minimum of two to three years before planning applications are submitted in order to address gaps in knowledge about the distribution and abundance of birds at sea
- **In order to utilise the same survey platform before and after construction, a solution must be found to the problem of low flying in post-construction wind farms.**
- **Additional boat surveys are necessary to enable simultaneous collection of behavioural observations and environmental variables.** These types of boatsurveys are more suitable for identifying some species of seabirds, and therefore should be integrated into data collection programmes.
- **In terms of practical survey work, it will be necessary to strike an appropriate balance between expedient coverage of large survey areas, and adequate coverage to enable robust density estimations.** Transect separation will be the means to address this potential conflict, but caution is needed in increasing transect separation too much and thereby missing concentrations – a potential problem especially for species with clumped distributions.
- **There is scope for expanding current tracking studies (mainly using GPS loggers) to other species and other colonies with funding input from government and industry to assist with information provision for R3.**
- **A GIS atlas of bird distribution and abundance would be an extremely useful component of a constraints assessment for offshore energy, whilst also enabling information gaps to be identified.** If such an atlas is to be relevant to R3, it needs to be progressed as soon as possible.
- **It is recommended that a minimum of two years data collection precede a planning application, but that data collection should continue during the pre-construction period.**

## RSPB'S RECOMMENDATIONS

1. **Undertake Appropriate Assessment of the Draft Plan:** In our view, the Draft Plan is likely to have significant effects, and may potentially have adverse effects on coastal and offshore Natura 2000 sites, and therefore will require a strategic-level Appropriate Assessment. The SEA Environmental Report contains most of the data necessary for a strategic-level AA.
2. **Undertake a strategic-level Cumulative Impact Assessment:** A strategic level Cumulative Impact Assessment (CIA) should be undertaken, ideally led by DECC, as CIA at the project level is unlikely to adequately predict likely cumulative effects. This CIA could underpin the assessment of in-combination and cumulative effects for the Appropriate Assessment of the Draft Plan. Note that a strategic CIA does not need to be entirely quantitative and can be based on a straightforward evaluation of whether additive effects are likely or not. For example, the SEA could have predicted, without the use of Populations Viability Analysis, that cumulative effects on gannet near Dogger Bank may be significant depending on levels of activity. We believe that it is possible to carry out a strategic CIA now, e.g. of the Crown Estate potential development zones for Round 3, together with Scottish Territorial Water proposals, using a combination of quantitative and qualitative methods. We would be happy to discuss this point in more detail.
3. **Publish a research plan for collecting environmental data in the marine environment:** This research plan should address the data needs outlines in the RSPB Round 3 offshore wind farm report (Annex 1). We would be happy to discuss these points further.
4. **Coordination and effective long-term use of the offshore environmental database:** There needs to be a long-term resolution of how the offshore database is used and managed. We strongly support Recommendation 21 and recommend that the Crown Estate tie in data deposition requirements within offshore wind farm consents. We note that data collected for Offshore Wind Farms and marine SPA designation should be integrated to i) progress the designation of marine Special Protection Areas (SPAs) and ii) to provide baseline information to determine suitability of proposed development zones for Round 3 offshore wind.
5. **The current Scottish Territorial Waters SEA should adopt an appropriate buffer zone based on environmental rationale:** We recommend that the ongoing SEA for Scottish Territorial Waters (STW) adopt an appropriate buffer zone for STW based on environmental rationale.
6. **The current Northern Ireland offshore and marine renewables SEA should provide a starting point for the future planning of marine renewable energy projects in NI.** The forthcoming NI Marine Bill and system of marine spatial planning will play a valuable role in providing a joined-up process by which conflicts between present and future offshore energy developments are resolved. In the meantime, the NI offshore wind and marine renewables SEA process should be used to integrate environmental issues into the formulation of marine renewable energy policy.
7. **Develop guidance for EIAs for offshore wind farms, oil and gas and gas storage:** In our view, additional guidance is needed on the above.
8. **Pre-application data collection:** We recommend a minimum of two years data collection preceding a planning application plus ongoing annual pre-construction data-collection (Langston 2008, C. Barton pers. comm.)
9. **In our view, existing arrangements are inadequate to monitor the potential effects of the Draft Plan.** The inadequacies of monitoring arrangements should be addressed

through incorporating detailed monitoring and reporting requirements into leases and licenses.

10. **Future SEAs in the marine environment should carry out fresh assessments of new proposals:** DECC proposes to update this SEA on a rolling basis. As long as this is carried out with due process, includes any new information or data and the potential environmental effects of future plans are freshly assessed, we support this proposal.

## **DETAILED COMMENTS ON THE ENVIRONMENTAL REPORT**

### **2.1 Overview of the Draft Plan & relationship to other initiatives**

We acknowledge that the UK Offshore Energy Plan is a high level plan. However, in our response to the scoping report in January 2008 we highlighted the importance of adding further detail to the Draft Plan as it covers licensing for three very different activities. In particular, though we recognise that predictions of oil and gas activity are best estimates made on current knowledge and understanding, we suggested that the assessment would be improved if it were able to predict the likely impacts should activity be half or double that predicted. The draft plan as described in section 2.1 does not include predictions of oil and gas activity, and consequently the assessment falls short of adequately assessing the likely effects of such activity.

### **2.2 Further spatial considerations - Marine Protected Areas (MPAs)**

There are likely to be conflicts between energy licensing applications (oil and gas, offshore wind, CCS), and the, as yet incomplete, Natura 2000 network and forthcoming Marine Conservation Zones (including highly protected MCZs) network. The RSPB is extremely concerned that no Appropriate Assessment of the licensing/leasing proposals has been carried out to date, despite our advice that this would be required. The RSPB is of the opinion that the proposals will have a likely significant effect on Special Protection Areas and their bird populations, and that a strategic AA based on the data compiled for the SEA is possible. Therefore, in the absence of a strategic AA, the RSPB finds it difficult to see how DECC can proceed to leasing and licensing decisions and comply with the legal requirements of the Habitats Directive. In addition, any locations known to incorporate nationally important features should be treated as if they were designated MCZs until the network has been completed.

## **3. SEA approach**

We welcome the receptor-based assessment, the adoption on many fronts of the precautionary approach and the incorporation of SEA Steering Group and COWRIE contributions.

However, while this SEA successfully collates vast amounts of environmental and socio-economic information, it falls short of rigorously assessing the Draft Plan's effects on the environment.

In our response to the UK Offshore Energy Plan SEA scoping report in January 2008, we emphasized the need "for the assessment to consider a wider range of reasonable alternatives for each activity, [and] focus on evaluating cumulative effects..." However, this SEA fails to consider a wide range of alternatives for each activity (section 5.16), nor has it undertaken a satisfactory assessment of likely cumulative effects (sections 5.5.4 & 5.14), particularly for birds. The rationale for determining the significance of effects is also unclear because it is not adequately defined. These points are discussed in more detail below.

## **4. Environmental information**

Despite data collation and collection through previous SEAs 1-7, there are still significant information gaps, especially for seabirds at sea, that will necessitate new data collection. To some extent, this has been recognised, with some additional aerial and, for the purpose of the SEA, boat-based bird surveys. A project involving satellite tracking of whooper swans on migration between the UK and Iceland is underway, funded through COWRIE.

We fully agree with the recommendation in this section to integrate data collected for various purposes, notably for Offshore Wind Farms (OWFs) and marine SPA designation, which is necessary to progress the designation of marine Special Protection Areas (SPAs) and to

provide baseline information to determine suitability of proposed development zones for R3 offshore wind.

## 4.2 Overview of environmental baseline

### *i) Additional aerial and boat bird surveys*

Additional surveys are essential to cover all those SEA areas that may attract interest from offshore wind developers (within suitable depth parameters), and that have not already been covered in Rounds 1, 2 and 3 surveys. There is a need to continue surveys beyond this year and to review priority areas. Survey areas need to provide contextual information as well as information specifically for the proposal area. Many of the proposed Crown Estate (CE) zones are of sufficient size to encompass both potential wind farms plus a wider contextual area. However, some of the zones in the English Channel in particular are relatively small and will therefore require larger areas surveyed to enable the information for the zone to be placed in a wider context, i.e. is the zone typical or does it contain higher or lower densities of a particular bird species.

The programme put forward for 2007 / 08 should be extended to provide data over two to three years before planning applications are submitted in order to address gaps in knowledge about the distribution and abundance of birds at sea (updating the European Seabirds at Sea (ESAS) database and providing data at a finer resolution more suited to the requirements of offshore wind energy). Recent analysis by the BTO for COWRIE<sup>1</sup> has highlighted that several years of baseline data are necessary in order to detect any post-construction effects on birds. Therefore, as discussed at a recent meeting of the Scottish Renewables Forum, it is recommended that a minimum of two years data collection precede a planning application (Langston 2008, C. Barton pers. comm.), but that data collection should continue in order to provide up to five years pre-construction data.

Just as with earlier rounds of offshore wind farms, aerial surveys enable more rapid coverage of large areas and are generally considered better at detecting species susceptible to disturbance (notably divers and seaducks). However, some of the large concentrations of divers in the Thames were observed from boats and, in the case of the large offshore zones relevant to R3, both approaches have their limitations in terms of coverage because of the longer distance offshore before reaching survey areas. In particular, in order to utilise the same survey platform before and after construction, a solution must be found to the problem of low flying in post-construction wind farms.

Currently, COWRIE and some industry members are assessing the suitability of HiDef video survey from higher elevations as compared to conventional aerial survey techniques in order to determine whether the HiDef approach will deliver high quality results. This problem of low flying in post-construction wind farms has presented an unforeseen problem and one not faced by the Danes, who used extensive boat surveys. Boat surveys enable simultaneous collection of behavioural observations and environmental variables, are more suitable for identifying some species of seabirds, and therefore should be integrated into data collection programmes.

### *ii) Achieving both expedient and adequate coverage of large survey areas*

The critical issue in terms of practical survey will be striking an appropriate balance between expedient coverage of large survey areas, with adequate coverage to enable robust density estimations. Transect separation will be the means to address this potential conflict, but caution is needed in increasing transect separation too much and thereby missing concentrations – a potential problem especially for species with clumped distributions. This

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<sup>1</sup> Maclean IMD & Rehfish MM (2008). Developing Guidelines for Ornithological Cumulative Impact Assessment: Draft Discussion Document. British Trust for Ornithology Research Report No. 513 for COWRIE, 41pp. BTO, Thetford.

will to some extent be overcome by adopting transects across environmental gradients and by collecting data for wind farm proposal areas at a finer resolution than for coverage of the whole zone, e.g. 4km separation across the zone and 2km between transects across proposal sites. We note that the ESAS survey snapshots for the SEA were conducted at 5km separation (C. Barton pers. comm.)

### *iii) Tracking studies*

The use of satellite tags to obtain positional information about several species during their migration to/from the UK and to identify foraging areas at sea by birds from onshore breeding colonies (notably SPAs) is underway. For example, there is a study underway to follow whooper swans during their migration between Iceland and the UK (e.g. Pennycuick et al. 1996<sup>2</sup>, Pennycuick 1999<sup>3</sup>), as species of concern relating to the possible cumulative effects of the proposed Walney and West of Duddon Sands offshore wind farms in the Round 2 area of SEA 6. A similar study on pink footed geese has been proposed, but so far not progressed any further.

There are several tracking studies (mainly using GPS loggers) on several seabird species associated with several breeding colonies. There is scope, as recommended in Langston 2008<sup>4</sup>, for expansion of these studies to other species and other colonies with funding input from government and industry to assist with information provision for R3. Most work to date, mainly by academic research institutions, with involvement of CEH, RSPB, JNCC and some other organisations, has been to identify foraging areas associated with specific SPAs.

Additionally, there have been radio tracking studies of terns in relation to several R2 offshore wind farm proposals (Perrow et al 2006)<sup>5</sup>.

### *iv) Radar tracking of bird migration*

Whilst generally of limited potential for identifying bird species responsible for the tracks observed on radar, nonetheless, military radar has been used in the past to determine migration volume across the North Sea (e.g. Lack 1959<sup>6</sup>, 1960<sup>7</sup>, 1963<sup>8</sup>).

### *v) GIS atlas of bird distribution*

A GIS atlas of bird distribution and abundance, pulling together all available information, would be an extremely useful component of a constraints assessment for offshore energy, whilst also enabling information gaps to be identified (thereby updating the DTI gaps analysis by Pollock & Barton 2006<sup>9</sup>). Inclusion of down-weighted ESAS data where older than 10 years would be advisable. A proposal for this work was prioritised for progression by DECC RAG, but unfortunately stalled when it is was becoming most relevant to produce a

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<sup>2</sup> Pennycuick, C. J., Einarsson, O., Bradbury, T. A. M. & Owen, M. 1996. Migrating Whooper Swans *Cygnus Cygnus*: Satellite Tracks and Flight Performance Calculations. *J. Avian Biol.* 27: 118-134

<sup>3</sup> Pennycuick, C. J., Bradbury, T. A. M., Einarsson, O. & Owen, M. 1999. Response to weather and light conditions of migrating Whooper Swans *Cygnus Cygnus* and flying height profiles, observed with the Argos satellite system. *Ibis* 141: 434-443

<sup>4</sup> Langston 2009. Round 3 offshore wind farm developments and birds at sea. April 2009 reissue of formerly confidential RSPB report November 2008. RSPB, Sandy.

<sup>5</sup> Perrow M. R. Skeate E. R., Lines P., Brown D. and Tomlinson M. L. 2006. Radio telemetry as a tool for assessing impacts of windfarms: the case of Little Terns *Sterna albifrons* at Scroby Sands, Norfolk, UK. *Ibis* 148:57-75.

<sup>6</sup> Lack, D. 1959. Migration across the North Sea studied by radar: 1. Survey through the year. *Ibis* 101: 209-234

<sup>7</sup> Lack, D. 1960. Migration across the North Sea studied by radar: 2. The spring departure 1956-59. *Ibis* 102: 26-57

<sup>8</sup> Lack, D. 1963. Migration across the southern North Sea studied by radar: 4. Autumn. *Ibis* 105(1): 1-54

<sup>9</sup> Pollock, C. & Barton, C. 2006. An analysis of ESAS seabird surveys in UK waters to highlight gaps in coverage. Report to the DTI by Cork Ecology.

GIS atlas of bird distribution. If such an atlas is to be relevant to R3, it needs to be progressed as soon as possible.

#### 4.2.1 UK Context – Biodiversity, habitats, flora and fauna

With respect to the description of bird fauna on p.40, there are additionally birds that occur on passage, during their migrations between more northerly breeding areas and southerly wintering areas, when they stopover in the UK (applies also to p.vii).

In addition, in the description of Regional Sea 2 & 3 (p.45-46) there is no mention of migratory waterbirds.

#### 4.3 Relevant existing environmental problems

Table 4.1 on environmental problems relevant to offshore oil and gas licensing and wind should also note under the 'Fishing and changes to fishing communities' heading on p.52 that there are various bird species also susceptible to fishing bycatch, although totals in UK waters are unknown.

The 'Vulnerability of seabirds, coastal waterbirds etc' heading on p.52 should include that SPAs also include birds on passage (Stroud et al. 2001)<sup>10</sup> and coastal colonies also provide safe areas for moulting.

#### 4.4 Likely evolution of the baseline

The inferences for waterbirds in this section are not borne out by Austin et al. 2008, with the notable exception of ringed plover which continues to decline. Note that ringed plover and turnstone are both species whose declining population trends (until recent years for turnstone) were attributed as being indicative of short-stopping due to climate change. Dark-bellied Brent geese have shown a strong increase in recent years following declines during the 1990s. Shelduck is showing a pattern of decline from a stable level held for quite a few years; this merits keeping a close watch to determine whether this trend continues. Bar-tailed godwit is a species of international importance at several UK sites that is showing a steady decline of considerable concern

### 5. Assessment & significance of effects

#### *i) Overall conclusions*

The SEA Environmental Report concludes that a further round (R3) of offshore wind development should proceed within a spatially restricted area. The only spatial restriction proposed is the recommendation for limited development with 22km of the coast. We agree with the conclusion that there are no overriding environmental considerations that would preclude the UK Offshore Energy Plan from being adopted, given adequate avoidance and mitigation of potentially significant effects.

With respect to birds, the assessment concludes that the Draft Plan's "...displacement, barrier effects and collisions are unlikely to be significant to birds at a population level." (p.127). The ER does acknowledge that there are important uncertainties in relation to bird distribution (and temporal variability) as well as the sensitivity of this conclusion to modelling assumptions (notably avoidance frequency in modelling collision risk; and several important factors in modelling of population dynamics). In our view, the above conclusion does not adequately reflect the likely significance of the Draft Plan's effects on birds at a population level. While significant displacement, barrier and collision effects **might be unlikely**, significant effects cannot be ruled out in the absence of a strategic-level Cumulative Impact Assessment (CIA) of the offshore wind element of the Draft Plan.

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<sup>10</sup> Stroud, D. A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H. & Whitehead, S. 2001. *The UK SPA network: its scope and content*. JNCC, Peterborough.

## ii) Significance of effects

While some rationale for determining significance is cited in certain sections of the ER, the report does not adequately define the criteria used to determine significance during the assessment. For example, it is unclear how a minor negative effect is distinguished from a major negative effect. More detailed significance criteria should have been developed, taking into account the SEA Directive's requirements in Annex 1 to include secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, positive and negative effects, and that assessments take account of magnitude, sensitivity of the receiving environment, and whether they likely to be reversible or irreversible, probable or improbable, frequent or rare. See p.42 of the [Wales Rural Development Plan SEA](#) for an example of generic significance criteria.

### 5.1 Assessment approach and methodology

At a strategic level, a distinction has been drawn between impacts which may be significant in terms of conservation status of a species or population (and hence are significant in strategic terms), and impacts which may be significant to individual animals, but which will not influence sufficient numbers to have a significant effect on population viability or conservation status (and hence strategically significant).

There are two levels of assessment necessary. There is a legal requirement to determine the risk of an adverse effect on an SPA. There is also a need to assess the effect on the relevant biogeographical population, which may or may not be likely for an individual project, but necessitates cumulative impact assessment.

#### 5.3.2.4 Other receptors

Page 76 states that:

*“Direct effects on seabirds because of seismic exploration noise could occur through physical damage, or through disturbance of normal behaviour. Diving seabirds (e.g. auks) may be most at risk of physical damage. The physical vulnerability of seabirds to sound pressure is unknown, although McCauley (1994) inferred from vocalisation ranges that the threshold of perception for low frequency seismic in little penguins would be high, hence only at short ranges would penguins be adversely affected. Mortality of seabirds has not been observed during extensive seismic operations in the North Sea and elsewhere. A study has investigated seabird abundance in Hudson Strait (Atlantic seaboard of Canada) during seismic surveys over three years (Stemp 1985). Comparing periods of shooting and non-shooting, no significant difference was observed in abundance of fulmar, kittiwake and thickbilled murre (Brünnich's guillemot). It is therefore considered unlikely that offshore seismic noise will result in significant injury or behavioural disturbance to seabirds.” (p.76)*

This section makes an assumption that it is visual, rather than noise, cues that lead to a disturbance response, which may not be correct in all cases. Separation of noise and visual stimuli in disturbance response by birds is often not possible.

### 5.5 Physical presence – ecological implications

This section states that:

*“Furthermore, some receptors (birds and marine mammals) are the focus of considerable attention from a range of NGO and conservation organisations with occasional lack of distinction between conservation, welfare and ethical concerns. This assessment aims to draw balanced conclusions based on credible scientific evidence, while recognising that some precautionary concerns are valid given current uncertainties and information gaps.” (p.108)*

This criticism stems from the perceived NGO opposition to any additive increase in mortality, however small. However, there is often considerable uncertainty around estimates, which may differ by orders of magnitude, leading to accountable significance levels ranging from

major to negligible. If there is not reasonable confidence in the figures presented, conservation organizations are obliged to take the precautionary approach where potential receptors are notified or qualifying interest features. The reference population is critical to determining level of effect and the SEA confuses the need to assess both;

- a) potentially biologically significant effects at the scale of the relevant biogeographical population; and
- b) the legal requirement to maintain favourable conservation status at the level of individual or multiple SPAs or qualifying sites.

#### 5.5.2.1 Displacement and barrier effects

The Shell Flat case study on p.138 highlights several points:

- a) the risks associated with proposing OWFs in areas of particular nature conservation importance, in this case particularly high densities of common scoter, at a time when knowledge of impacts was scarce and inadequate to avoid applying the precautionary principle;
- b) there were protracted negotiations to find a satisfactory resolution to Shell Flat;
- c) the authors imply that environmentalists unnecessarily impeded progress of this development proposal, when there were other constraints also squeezing the location of options; and
- d) the essential requirement for research and monitoring at consented sites to improve knowledge.

Recent Danish studies have provided some insights to common scoter behavioural response to OWF, but even these robust studies missed the opportunity to obtain longer-term information to enable a distinction to be made between short-term and longer-term effects and so resolve the uncertainty relating to displacement effects on common scoter and red-throated diver.

Subsequent surveys indicate that common scoters may now be distributed in comparable densities inside and outside the development; and the possibility cannot be excluded that changes in food availability rather than displacement by disturbance led to the observed changes in distribution (Petersen *et al.* 2007)<sup>11</sup>. It is also possible that these changes reflect habituation to wind farm presence and associated activities.

We note that the DECC RAG study at Aberdeen University investigating aspects of energetic costs of potential barrier effects is absent from the list of case studies in this section. We would appreciate clarification as to why, and assume that it is because the study is not yet available.

#### 5.5.2.2 Bird collision risk

In Table 5.3 it should be made clear that (presumably) the interpretations are those presented in the respective ESs from which the information is drawn, i.e. “worst case scenario”, “precautionary collision avoidance”, “SNH Collision Risk Model (CRM) assumes no avoidance” etc.

The SNH collision risk model at stage one does assume no avoidance, but the guidance for applying the model does not assume that there is no avoidance behaviour. The point of contention is the appropriate avoidance rate to use for most species; there are very few for which a robust and comprehensive avoidance rate is available. Avoidance is the key factor in

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<sup>11</sup> Petersen, I.K., Clausager, I. & Fox, A. D. 2007. *Changes in bird habitat utilisation around the Horns Rev 1 offshore wind farm, with particular emphasis on Common Scoter*. Report to Vattenfall A S by NERI, University of Aarhus, Denmark.

the CRM that has a large impact on the model outputs for just a small change in avoidance rate. Avoidance is not only likely to be highly species specific, but also variable seasonally and for different age/status of birds within species. Only through thorough post-construction monitoring at consented wind farms, will this situation be improved.

The main conclusions which can be reached from Table 5.3 are that;

- a) numerical predictions are highly sensitive to assumptions on avoidance rates; and
- b) excluding scenarios with zero avoidance, the maximum predicted collision rates for any species are of the order of a few tens (per year, per development).

Most of the RSPB's objections to OWF proposals have related to cumulative effects of multiple wind farms and impacts on the relevant SPA population (e.g. Sheringham Shoal), rather than implying biogeographical population level impacts. In the case of Walney, our concern related primarily to migratory waterbirds, notably whooper swans which do not appear in the Table 5.3 and for which the question raised was whether data were adequate to assess volume of movement through the wind farm. This prompted a COWRIE study now underway to determine collision risk for swans on migration between the UK and Iceland. We note that not all OWF are included in this table, e.g. London Array.

Additional references relevant to, but not quoted in, this section include Drewitt & Langston (2008, *Annals of the New York Academy of Science*)<sup>12</sup>.

### 5.5.3 Spatial considerations - the proposed 12nm buffer zone

The conclusion of the spatial mapping exercise is that the generation target of 25GW (additional to Round 1 & 2 capacity) can be achieved, even with the implementation of a 12nm buffer zone around our coasts. The major potential receptors identified are birds (5.5.3, p.118). Therefore, the ER acknowledges that potential effects are likely to be related to bird distribution and the relative sensitivities of species.

*i) Table 5.4 - Species-specific Sensitivity Index and other information pointing to focal species in relation to proposed wind farms.*

The Garthe & Hüppop (2004) sensitivity index would require extension to a wider range of species and to be updated from a UK perspective. We welcome the acknowledgment on p.119 that the scores in Table 5.4 represent an initial assessment that is not suitable for updated baseline data collection.

The Offshore Vulnerability Index (OVI) depends on ESAS data and therefore suffers from all the problems associated with over-reliance on ESAS data. It is currently the best data available for many offshore areas but is recognized to be of limited value owing to age of data (most >20yrs), coarse spatial resolution and gaps in data (DTI "Gaps Analysis" Cork Ecology); see the critique in Langston 2008. At the very least, there needs to be sample resurvey to determine the suitability of continuing to depend on ESAS data in terms of how relevant it is to today's distributions and abundance.

*ii) Table 5.5 showing priority risks in relation to Round 3 wind leasing*

We largely agree with Table 5.5 showing priority risks in relation to Round 3 wind leasing, which is largely based on Langston 2008 and converted to regional seas (p.123). It would be advisable to include a caveat here relating to future findings of baseline surveys. However, we agree that this table reflects current knowledge based on existing data.

*iii) The 12nm / 22km proposed buffer zone*

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<sup>12</sup> Drewitt, A. L. & Langston, R. H. W. 2008. Collision effects of wind-power generators and other obstacles on birds. *Annals of the New York Academy of Sciences* 1134: 233-266.

Because of the sensitivity of multiple receptors, and the complexity of decisions regarding major infrastructure near the coast, the SEA concludes that the 25GW should be sited well away from the coast and recommends a 22km or 12nm buffer zone in which proposed wind farms of 100MW or more would not normally be permitted. The recommended R3 buffer is not exclusionary and we note that Crown Estates recently granted 10 exploration licences for offshore wind within Scottish Territorial waters, i.e. within 12nm. These licenses are all for big developments between 280-1500MW. The only areas recommended as an exclusion zone for oil and gas, is the area 14 degrees west of the Hebrides (a recommendation made in SEA7).

In our response to the SEA scoping report in January 2008 we expected the existing exclusion buffer zones of 8-13km set up during Round 2 to be retained for future offshore wind leasing rounds, unless further general or site specific survey or research showed that it was not necessary. The Round 2 SEA recommended a coastal buffer zone based on the ecological rationale of protecting sensitive habitats and species, e.g. to ensure that feeding seabirds were adequately protected, as well as to reduce impacts on seascape from the coast. Developments in Round 2 were permitted at a minimum distance offshore of 8km, increasing to 13km in areas of particular sensitivity such as those in close proximity to Areas of Outstanding Natural Beauty (AONBs) and areas where the seabed was less than 20m below the sea surface, in order to incorporate common scoter in the Irish Sea. Specifically in the North West strategic area, Liverpool Bay, developments were also restricted to water depths greater than 10 m to reduce the potential for overlap with common scoter concentrations.

The R3 22km buffer zone reflects the great sensitivities of inshore waters, not only for ecological receptors but for all interests including fisheries, navigation and other users, and highlights to developers the additional risk/likelihood of conflict in coastal waters. We welcome the flexibility of this non-exclusionary buffer zone.

*iv) The 6nm exclusion zone around oil and gas infrastructure*

We realise that this generic buffer is linked to helicopter safety and do not wish to unnecessarily promote unsafe conditions, but understand that the buffer can be negotiated on a case-by-case basis. Therefore, a *de facto* 6nm exclusion zone seems excessive in our view and may also put additional pressure on current and proposed MPAs (Table 5.17).

*v) Scottish territorial waters and offshore SEA*

A similar 22km buffer zone will not be workable for Scottish territorial waters as it would automatically exclude the vast majority of potential offshore wind farm sites. We recommend that the ongoing SEA for Scottish Territorial Waters (STW) adopts an appropriate buffer zone based on environmental rationale.

As noted above, that Crown Estates recently granted 10 exploration licences for offshore wind within Scottish Territorial waters, i.e. within 12nm. It seems these exploration licensed areas are all >20m deep and unlikely to hold many, or regular, seaducks/divers. However, some are known to be important seabird feeding areas, e.g. Wee Bankie, off the Firth of Forth. All areas have so far been poorly surveyed.

*iv) Northern Ireland offshore wind and marine renewables SEA*

We note that there is an ongoing SEA of offshore wind and marine renewables in Northern Ireland (NI) waters. The SEA coverage will extend out from baselines to 12 nautical miles and will focus on several sites, including the north coast. It is expected to be completed in early 2010, including the public consultation phases. We recommend that this SEA also adopt a buffer zone based on environmental rationale.

Given that this SEA is Northern Ireland's first offshore SEA, we hope that the process will reflect SEA good practice (see Box 1 below).

The forthcoming NI Marine Bill and system of marine spatial planning will play a valuable role in providing a joined-up process by which conflicts between present and future offshore energy developments could be resolved. In the meantime, the NI offshore wind and marine renewables SEA process should be used to integrate environmental issues into the formulation of marine renewable energy policy. This SEA should provide a starting point for the future planning of marine renewable energy projects in Northern Ireland.

**Box 1: Selected SEA good practice points (SEA: Learning from Practice, RSPB, 2007<sup>1</sup>)**

- In line with the aims of the SEA Directive, ensure the assessment process gives a high level of protection to the environment and contributes to sustainable development. SEA should result in a more environmentally-sustainable plan.
- Review progress towards this goal at each stage. Consult with interested parties during the scoping stage of SEA. This helps build consensus on relevant environmental problems.
- Involve professionals with relevant expertise to help ensure issues are properly assessed.
- Establish an SEA steering group, consisting of a range of interest groups including the RSPB. Steering groups provide valuable, and cost-effective advice, on all aspects of the SEA, including its scope, assessment methods and the need for additional studies, such as the potential collision risk to birds.
- Evaluate the proposed alternatives. If no alternatives are presented by the plan makers, several should be developed and evaluated as part of SEA. These should include the 'most environmentally beneficial' alternatives. Ensure the level of detail and the assessment methodologies are appropriate to the nature and scale of the plan.
- Robustly assess potential cumulative effects.
- Use the 'Positive Planning' approach to safeguard biodiversity and other environmental assets. This means proposing methods to reduce likely adverse impacts at source, then mitigating impacts that cannot be reduced further, and finally compensating for residual impacts.
- Use the results of higher-tier SEA, such as the UK Offshore Energy Plan SEA, to inform the assessment, and make clear links with lower-tier SEA and/or EIA for resulting projects, as appropriate.

#### **5.5.4, 5.5.4.2 & 5.14 Cumulative impact considerations**

##### *i) The ER's assessment of cumulative effects*

The SEA identification and evaluation of the potential cumulative effects of multiple offshore licenses is unsatisfactory, particularly with respect to birds. The claim made in section 5.5.4 that there are unlikely to be cumulative effects on biogeographical populations is not supported by a robust assessment. This effect cannot be ruled out for specific species depending on the scale of multiple wind farms and other developments affecting species across occupied sea areas, including transboundary effects.

This section highlights the use of PVA in assessing cumulative impacts without adequate emphasis on the logistical problems of obtaining the necessary information for some of the key species. Although PVA is the ideal tool to assess cumulative effects, without the basic

modelling requirements, specific to each species, the outputs of such models will be of doubtful veracity.

*ii) The need for a strategic-level Cumulative Impact Assessment (CIA)*

We recommend that a strategic level Cumulative Impact Assessment (CIA) is undertaken, ideally led by DECC, as project level CIA is unable to adequately predict cumulative effects. This CIA could underpin the assessment of cumulative and in-combination effects for the Appropriate Assessment of the Draft Plan.

A strategic CIA does not need to be entirely quantitative and can be based on a straightforward evaluation of whether additive effects are likely or not. For example, the SEA could have predicted, without the use of PVA, that cumulative effects on certain species near Dogger Bank may be significant depending on levels of activity. Causal chain analysis can be used to quantitatively assess the risks of significant cumulative effects on a series of receptors, e.g. the list of priority bird species in Table 5.5 (please see the RSPB note on causal chain analysis in Annex 3 and 'Guidelines for Cumulative Effects Assessment in SEA of Plans' by L.Cooper<sup>13</sup> for an overview of CEA methodologies).

We believe that it would be possible to carry out a strategic CIA now, e.g. of the Crown Estate potential development zones for R3, together with Scottish Territorial Water proposals, using a combination of quantitative and qualitative methods. The spatial scale for the CIA should be a set of functional units within the Round 3 strategic zone. These functional units could be based on the division of Regional Seas. However, it is important that the potential for cumulative impacts between zones is also evaluated.

We would be happy to discuss this point in more detail.

*ii) Potential cumulative effects of the Draft Plan on birds of particular concern in UK waters*

- The sandbanks off the **greater Wash** face a substantial share of the 25GW target put forward in the Draft Plan. In the greater Wash area, cumulative collision and barrier impacts on migrating waterbirds, in particular may be important. Although migration is over a broad front for some species, the concentration of windfarms in the greater Wash is likely to become an increasing issue that needs to be dealt with effectively.
- The **Liverpool Bay and Thames Estuary** proposed SPAs are key considerations, particularly when in combination/ cumulative effects are taken into account. In the Thames, in combination/ cumulative impact risk is likely to preclude any further development within the proposed SPA, at least until further post-construction monitoring data from Round 2 is available, and this is reflected in the absence of any proposed zone in this area.
- Cumulative effects may be important in the **North West**, particularly with respect to migrating whooper swans and pink-footed geese, although the potentially most concerning proposed development zones have been withdrawn, at least for R3.
- **Cumulative effects of concern** are tern (Firth of Forth, including STW proposals), gannet (especially North Sea) collision with rotors, potential displacement of red-throated diver (Norfolk & Suffolk) and shearwaters (in particular in Bristol Channel & Irish Sea, and collision and barrier effects on migratory waterbirds. It is possible that in the future wind farms will be found along a sizeable portion of the migration route of the red-throated diver and cause transboundary cumulative effects.

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<sup>13</sup> <http://www.environment-agency.gov.uk/aboutus/512398/1504325/1504417/831980>.

- Also of concern are the **combined cumulative effects of wind leasing, oil and gas exploration and gas storage** on the marine environment.

*iii) Cumulative effects on other receptors*

This section concludes that cumulative acoustic effects on other receptors, i.e. not marine mammals, are unlikely. This contradicts other sources of information (e.g. Environmental Statements for Race Bank & Docking Shoal proposals) which suggest there is inadequate information to determine the extent and magnitude of cumulative acoustic effects on spawning and nursery areas for clupeids.

Pile driving effects on fish also include effects on spawning and nursery areas, and effects on piscivorous birds (Section 5.5.4.2).

### **5.5.5 Summary of findings and recommendations**

This section notes that:

*“Although there has recently been significant survey in coastal waters, the lack of modern data on waterbirds in offshore areas is noted. Developers need to be aware that access to adequate data on waterbird distribution and abundance is a prerequisite to effective environmental management of activities for example in timing of operations, and oil spill contingency planning. An important gap in understanding of relevance to wind farm siting is the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs. To give a specific example, the East Caithness cliffs SPA holds a seabird assemblage of international importance which during the breeding season regularly supports 300,000 individual seabirds including guillemot, razorbill, kittiwake, herring gull, shag (all at numbers of European importance) as well as puffin, great black-backed gull, cormorant and fulmar. The Smith Bank, some 20km from the cliffs, is generally sandy and recorded as having high densities of sandeels and seabirds; ecological energetics would suggest that the area would be an important feeding ground for auks and several other species from the Caithness cliffs with but definitive evidence of this is not available.” (p.127)*

We fully agree with this paragraph. It highlights the need to obtain up to date data and to plug data gaps, notably with respect to identifying foraging areas by breeding (sea)birds and, furthermore, to determine links with onshore SPAs (as well as identifying the marine SPA suite).

### **5.13 Accidental events**

We agree that existing oil spill controls are adequate and additional controls are not necessary at the strategic level (p.188).

### **5.15 Potential for transboundary impacts**

There is a legal requirement to consider transboundary effects through both the SEA and Habitats Directives, e.g. to consider effects on bird populations across multiple SPAs in several MSs.

Our view is that transboundary effects cannot be ruled out given that;

- a) biogeographical populations are transboundary; and
- b) the R3 zone extends to the edge of UKCS, e.g. Dogger Bank, therefore potentially abutting other MS OWF and oil and gas proposals and existing infrastructure.

### **5.16 Alternatives**

The ER recommends that DECC adopt Alternative 3, i.e. spatially restricting the zones offered for licensing through the exclusion of certain areas, rather than Alternatives 1 and 2 (p.123). We welcome this recommendation as Alternative 1 would result in failing to meet renewables targets, and Alternative 2 would have significant negative effects on the environment in the long term

However, so far the SEA process seems to be missing out the second step of the 'Hierarchy of Options' box on p.11; the consideration of alternative modes or processes. We are seriously concerned that the alternatives considered in the ER are minimalist at best and fail to address each activity separately (i.e. offshore wind, oil and gas, and gas storage). We are also concerned that the SEA does not consider spatial alternatives to licensing and leasing using the Round 3 Crown Estate map of proposed development zones as one alternative amongst many.

Table 2.2 (p.12) summarises how the assessment has applied the 'Hierarchy of Options'. In our view, the second and third steps of the hierarchy are not adequately addressed. In particular, the conclusion of step 3 only describes the distribution of wind, oil and gas resources rather than assessing where development should go.

The assessment of Alternative 3, the preferred alternative, concludes that there are potential negative effects due to barrier effects and changes in food availability, and potential minor negative impacts upon birds due to collision and behavioural changes (p.109). However, the overall conclusion is that these effects are not significant at a strategic level. As mentioned above, our view is that the criteria for determining significance are unclear and the data to make such an assessment are not robust. We therefore believe that some of these potential negative/minor negative effects are as likely to be significant at the biogeographical scale as they are likely to be insignificant and as such, we cannot make a definitive determination either way. Therefore, the most we can say is that there is no evidence that there is a significant effect, but equally, there is no evidence to show that there is not a significant effect

### **6.1 Recommendations**

As mentioned above, while the ER has successfully collated vast amounts of environmental baseline information, it has fallen short of adopting a rationale for judging the significance of effects, of assessing spatial alternatives for each activity and of assessing potential cumulative effects. Because of the flawed assessment, the recommended avoidance and mitigation recommendations are inadequate. In Table 1 below, we propose modifications to relevant the recommendations in Section 6.1.

### **6.2 Monitoring**

The ER finds that existing monitoring arrangements are sufficient to understand the evolution of baseline conditions in respect of biodiversity effects across the SEA area. However, this is not our view because effects monitoring is currently limited for OWFs in UK waters. Most FEPA monitoring requirements are compliance monitoring and not necessarily helpful in advancing our knowledge of effects/impacts on birds.

In RSPB responses to individual proposals, we try to influence and improve monitoring provisions in EIA Environmental Statement. However, with exception of monitoring at Kentish Flats, we are unsure as to whether such monitoring has been implemented. We conclude that monitoring arrangements are insufficient and should be addressed through detailed monitoring requirements being incorporated into leases and licenses.

## **ANNEXES**

**Annex 1: RSPB Round 3 offshore wind farm report**

**Annex 2: RSPB note on cumulative effects**

**Annex 3: RSPB note on causal chain analysis**

**Table 1: RSPB comments on relevant UK Offshore Energy Plan SEA recommendations (section 6.1)**

UK Offshore Energy Plan SEA Recommendation	RSPB comments
<p>3. Until there is a firmer base of information available to inform adaptive management, in respect of ecological receptors a precautionary approach to siting is recommended since the offshore wind industry is relatively young, with appreciable technological development expected in for example, turbine size, rotation speed, spacing and potentially rotational axis. <b>This precautionary approach dictates that unless suitable evidence indicates otherwise, avoidance (for the present) of areas known to be of key importance to waterbird and marine mammal populations, including breeding colonies, foraging areas and other areas essential to the survival of populations.</b>[emphasis added]</p>	<p>We particularly welcome this recommendation.</p>
<p>4. Reflecting the relative sensitivity of multiple receptors in coastal waters, this report recommends that the bulk of this new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km).</p>	<p>This is a useful recommendation which does not preclude development, but highlights a means to reduce the bird species of concern by limiting development within inshore waters. We welcome the flexibility of this non-exclusionary buffer zone which reflects the great sensitivities of inshore waters, not only for ecological receptors but for all interests including fisheries, navigation and other users.</p>
<p>6. For areas (zones and blocks) which contain good examples of habitats/species on the Habitats Directive Annexes, developers should be made aware that a precautionary approach will be taken and some areas with relevant interests may either not be leased/licensed until adequate information is available, or be subject to strict controls on potential activities in the field. Similarly, developers should note that DECC will continue to conduct Appropriate Assessments/screenings to consider the potential of proposed leasing/licensing and subsequent activities to affect site integrity</p>	<p>This recommendation should also note that other potential marine protected areas may not be leased/licensed until adequate information is available or may not be leased at all (also relevant for other MPAs)</p>
<p>8. [partial] Although there has recently been significant survey effort in coastal waters, the lack of modern data on waterbirds in offshore areas is noted. Developers need to be aware that access to adequate data on waterbird distribution and abundance is a prerequisite to effective environmental management of activities for example in timing of operations and oil spill contingency planning</p>	<p>We particularly welcome this recommendation.</p>
<p>9. There remain a number of subject areas for which the information base is limited and will need to be enhanced to support future marine spatial planning as well as project specific consenting. These information gaps include aspects of the natural world and human uses, with regional context and long-term trend data notably lacking. These gaps include:</p> <p>(c) Detail of bird migration patterns, and variability in space and time including flight heights in different weather conditions An understanding of the marine areas routinely used by breeding birds for foraging, in particular those adjacent to SPAs</p>	<p>We agree that these are important information gaps, although point (c) may be difficult to address for some species groups.</p>
<p>11. For the area to the west of the Hebrides (covered in SEA 7) it is recommended that 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. This is in view of the paucity of information on many potentially vulnerable components of the marine environment, and other considerations. Once</p>	<p>We welcome this recommendation.</p>

<p>further information becomes available, the possible licensing/leasing in these areas can be revisited.</p>	
<p>14. Efforts are (or will be) underway to identify offshore Marine Conservation Zones/Marine Protected Areas e.g. under the Marine Strategy Framework Directive, OSPAR and the <i>Marine and Coastal Access Bill</i>. Where the objectives of the conservation sites and renewable energy development are coincident, preference should be given to locating wind farms in such areas to reduce the potential spatial conflict with other users.</p>	<p>This recommendation runs counter to some other recommendations and is inconsistent with the precautionary approach. The recommendation should be rephrased to state:</p> <p><i>'Where offshore wind developments do not impact on the conservation objectives of MCZs, wind farms may be located in such areas...'</i></p> <p>While OWF and MCZz objectives can be compatible, they cannot be defined as 'coincident'.</p>
<p>15. Similarly, as part of the Natura 2000 initiative, further offshore SACs and extensions to SPAs are being identified. Such sites are not intended to be strict no-go areas for other activities and a number have been mooted in areas with significant potential for offshore wind farm development. Wind farm developers should be aware that SAC/SPA designation may necessitate, subject to the conclusions of any appropriate assessment, suitable mitigation measures so as to avoid adverse effects on a designated site or species.</p>	<p>The second part of this recommendation should be precise and list the tests of the Habitats Directive.</p>
<p>17. The Offshore Vulnerability Index (OVI) to surface pollutants developed by the JNCC should be reviewed in the light of results from recent aerial and boat based bird survey data, and updated if necessary. Consideration should also be given to whether the development of UK specific individual waterbird species sensitivity indices and mapping of a Wind Farm Sensitivity Index (WSI) in UK waters would be useful in support of <b>appropriate</b> [suggested insertion] site selection and consenting.</p>	<p>The existing initiatives to develop waterbird Population Viability Analysis for sensitive species should be progressed, including, if necessary, research to improve the accuracy of inputs to the models.</p> <p>While there are some issues with these indices, they are a good starting point. In our view, expert judgment will be key in supporting appropriate site selection and consenting. A workshop to discuss and resolve the above issues would be useful.</p>
<p>19. The potential for capacity extensions to existing Round 2 wind farm leases requires careful site specific evaluation since significant new information on sensitivities and uses of these areas is now available (see also recommendation 2 above). As a general rule, it is recommended that any such site extensions are to the seaward rather than the landward side. Round 1 sites are closer to the coast and it is anticipated that the majority would not be extended; any application for this would also require detailed site-specific evaluation.</p>	<p>We agree that R1 sites should not be expanded and note that expansion of R2 sites, while preferable to landward expansion, may cause adverse cumulative effects on some bird populations. R2 expansions should be considered on a case-by-case basis.</p>
<p>21. The information collected by offshore renewables and oil industry site surveys and studies is valuable in increasing the understanding of UK waters. The initiatives such as the UKDEAL, COWRIE and UKBenthos databases to ensure that such information is archived for potential future use should be continued and actively promoted during the consenting processes. Similarly, there should be encouragement for the analysis of this information to a credible standard and its wider dissemination.</p>	<p>We strongly support this recommendation and urge CE to tie in data deposition requirements within OWF consents. There needs to be a long term resolution of how this database is used and managed (currently there is a backlog of data and the database is not used effectively). Updating the database could be carried out alongside a strategic level Cumulative Impact Assessment.</p>
<p>23. To assist developers and the achievement of conservation objectives, DECC and others in Government should encourage the adoption of consistent guidance across the UK on the implementation Habitats Directive requirements, for example disturbance of European Protected Species (Annex IV species).</p>	<p>JNCC have written guidance clarifying a uniform approach for projects.</p>



# **Round 3 offshore wind farm developments and birds at sea**

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April 2009

**This report was originally released as a confidential report in November 2008, and represents the RSPB's preliminary view of The Crown Estate's potential development zones for offshore wind energy. The report will be updated in the light of the UK Offshore Energy Plan consultation and implementation, together with a wider assessment of priority bird species in UK and territorial waters, later in 2009.**

# Round 3 offshore wind farm developments and birds at sea

Rowena Langston, Conservation Science

## Introduction

In December 2007, the government announced a third round of offshore wind farm development as a key component of delivering 15% of the UK's energy (electricity, heat and transport fuel) from renewable sources by 2020. Strategic Environmental Assessment (SEA) is underway, and due to be published in early 2009. On 4 June 2008, the Crown Estate (CE) first released their suggestions for potential development zones (Appendix I), updated in September 2008 (Figure 1) pre-empting the outcome of the SEA process. CE hopes to accelerate the planning process by pre-qualifying interested developers and sharing the costs – and hence risks - of application, so it will be ready to move forward once the SEA is finalised. However, CE recognises the risk that some zones are likely to drop out as a result of the SEA and will be revising its zones in the light of other information.

This document focuses on seabirds and waterbirds in UK waters, on the basis of coastal breeding colonies and non-breeding coastal and marine distributions. The purpose of this document is to identify those bird species which will be priorities for data collation and collection as part of the Round 3 SEA and subsequent individual project EIAs, especially in the areas mapped by CE as potential development zones (Figure 1), but also in Scottish Territorial Waters. In particular, it will identify species and areas for which risks associated with wind farm development are considered most likely and identify some of the knowledge gaps. This information will help to: inform the RSPB's responses to Round 3 wind farm proposals; encourage a consistent approach in dealing with offshore wind energy casework; provide advice to government, statutory agencies, CE and industry on monitoring and research requirements; and, hopefully, expedite the process by targeting effort where it is needed most.

## Policy context

The RSPB believes that climate change is the greatest threat we face and that wildlife is likely to be the earliest victim. For example, science suggests that one third of land based species are threatened with extinction by 2050 unless action is taken to tackle climate change (Thomas *et al.* 2004). In addition, Huntley *et al.* (2007) suggest that;

- The centre of the potential range of the average European breeding bird is predicted to shift nearly 550 km north-east and is only 4/5 the size of the current range.

- For some species, the potential future range does not overlap with the current range at all. The average overlap is 40%.
- Projected changes for some species found only in Europe, or with only small populations elsewhere, suggest that climate change is likely to increase their risk of extinction.

The scientific consensus is that we need to prevent global temperatures rising by more than 2 degrees centigrade above pre-industrial levels and that global greenhouse gas emissions need to halve by 2050 with developed countries taking their fair share and reducing their emissions by 80 - 95% in this period. We continue to campaign for this scale of reduction, as part of the Stop Climate Chaos coalition, and are seeking this in the frameworks provided by climate change legislation across the UK.

Research that we have undertaken (IPPR, WWF & RSPB 2007) suggests that much more effort needs to be invested in reducing the amount of energy we use, in stabilising aviation emissions and decarbonising the electricity sector.

We need a revolution in the energy system which does not rely on the most polluting power stations such as coal fired power stations which do not have the capacity to store greenhouse gas emissions, but rather switches to investing in demand management, energy efficiency and renewable energy generation. This is why the RSPB supports the UK Government's plans to require a tenfold increase in energy from renewable sources (as obliged under the EU target for 20% of Europe's energy needs to come from renewable sources by 2020). Yet, we also want this energy revolution to take place in harmony with the natural environment. This is the core of our response to the Renewable Energy Strategy consultation and the RSPB's Climate Action Now campaign.

## **Bird distributions and movements in and around UK seas**

### ***Seabird breeding colonies***

The UK is of outstanding international importance for its breeding seabirds (Figures 1 & 2), notably Manx shearwater, northern gannet, great skua and lesser black-backed gull for which it supports over 50% of their respective biogeographical populations, as relevant to the EU Birds Directive (Reid in Mitchell *et al.* 2004).

### ***Non-breeding distributions of birds at sea***

European Seabirds At Sea (ESAS) data are acknowledged to be patchy in their coverage of UK waters, available at a fairly coarse spatial resolution, and now mostly in excess of ten years' old; many data are considerably older (Pollock & Barton 2006). Nonetheless, they represent the most comprehensive dataset available on the distribution and relative abundance of birds in UK waters (Stone *et al.* 1995), reflecting both the need to determine how representative they are of current distributions and to plug gaps in knowledge to ensure that proposed marine SPAs really are the "most suitable territories" (EU Birds Directive). Survey coverage offshore

has been particularly patchy in recent years, although there has been some limited resurvey of the outer Moray Firth, central North Sea and Dogger Bank for the Offshore Energy SEA (C. Barton, pers. comm.).

For Round 2 offshore wind farm development, the RSPB was instrumental in encouraging DTI/BERR/DECC (Department of Energy & Climate Change) to develop a coordinated programme of aerial surveys, in conjunction with developers and the WWT, over the three strategic areas of NW England (Liverpool Bay), the Greater Wash and the Greater Thames (DTI 2006, BERR 2007). This survey programme served the dual purpose of comprehensive coverage of large sea areas, providing contextual information as well as data for specific proposed sites for offshore wind farms, and more efficient deployment of scarce resources (skilled aerial survey ornithologists and suitable light aircraft). These aerial surveys were complementary to those carried out in targeted sea areas by the JNCC Seabirds at Sea team, and those commissioned by CCW. Aerial survey coverage of inshore waters has been good in recent years, at least for the winter months, notably in 2004/05 to 2007/08 (Figures 3, 4a & 4b – NB there is overlap of some JNCC survey coverage in these figures).

Land-based surveys, mainly collected by the Wetland Bird Survey (WeBS) or local *ad hoc* seawatching surveys and data from bird observatories, extend only a short distance offshore into coastal waters, mostly ranging from 500m to 2km, depending on weather conditions (e.g. Musgrove *et al.* 2003; Austin *et al.* 2008). These data provide an indication of species present in coastal waters and potentially of distributions further offshore.

### ***Bird movements, foraging ranges, feeding concentration***

Data from the UK ringing scheme provides information on origins and destinations, through recaptures and recovery of dead birds, but not routes taken between breeding and non-breeding areas, for many bird species (Wernham *et al.* 2002).

Foraging ranges vary both within and between species, and within and between seasons. Food availability and distribution in any one year will influence foraging range, as does the stage of the annual cycle (e.g. Ratcliffe *et al.* 2000). Provisioning growing chicks is a particularly demanding stage of the breeding season and different species have different adaptations to dealing with these pressures. For example, terns generally make many short foraging flights to provide multiple deliveries of food, whereas shearwaters may be away on a single foraging trip of more than 24 hours when they are feeding chicks. For terns, this leads to elevated flight activity between the breeding colony and proximate feeding areas, although the locations of the latter may change as prey availability changes. In a bad year, they may have to make longer flights to find food for their chicks, and chick survival is likely to be lower.

A wide range of seabird species has been recorded at increased densities at tidal mixing fronts, notably sub-surface and pursuit diving species such as northern fulmar, Manx shearwater, European storm petrel,

northern gannet and auks. Various fish species concentrate to feed on plankton blooms associated with these seasonal fronts. Species such as northern fulmar, European storm petrel and Leach's petrel often forage at the edge of the continental shelf. Shallow waters around sandbanks attract foraging seabirds that feed on sandeels, e.g. terns, divers, shags, auks, northern gannets, black-legged kittiwakes (various authors cited in Ratcliffe *et al.* 2000). Currently, there is fairly limited, but increasing, understanding of the complex relationships between marine features and seabird foraging behaviour.

Understanding foraging associations with particular environmental features in the oceans is essential for identifying offshore feeding aggregations for marine SPAs and for risk assessment of offshore wind farms. It is likely that multidisciplinary approaches will be necessary, together with combinations of techniques. For example, surveys of distribution and abundance alone are inadequate to determine the importance of a feeding location without also knowing which colony or colonies are the sources of feeding aggregations. Several studies of northern gannets illustrate this well, as birds from Bass Rock forage in parts of the North Sea that are closer to other gannetries than that at Bass Rock (Hamer *et al.* 2000). SPEA and SEO BirdLife in Spain have used a combination of approaches to identify marine Important Bird Areas (IBAs; SPEA & SEO 2006). Models of habitat suitability integrated with tracking data are promising for identifying feeding areas (Skov *et al.* 2008).

Increasingly, new technologies are being deployed to track birds, in particular to investigate foraging behaviour. Radiotelemetry has been used to track birds over relatively short distances and short timescales, e.g. little terns from breeding colonies at Great Yarmouth North Denes and Winterton in relation to Scroby Sands offshore wind farm (Perrow *et al.* 2006). GPS data loggers offer the ability to track birds over considerably greater distances and time frames, but necessitate recovery of the data logger to extract the information (Bluetooth technology is emerging, so potentially removing the requirement to recapture the bird). Data loggers are useful for site-faithful birds marked and recaptured in breeding colonies, e.g. Manx shearwater (Guilford *et al.* 2008) and black-legged kittiwake (Daunt *et al.* 2002). Satellite tracking offers the greatest potential to follow birds over potentially huge distances and over extended time periods, up to several years if solar powered devices are used, but at present only for birds of large body size, such as northern gannet (Hamer *et al.* 2000, 2001). This technology has particular value in elucidating bird migration routes. COWRIE has commissioned a research project to satellite-track whooper swans migrating to and from breeding grounds in Iceland, to determine the routes they use and contribute to a better understanding of collision risk in relation to wind farms in Liverpool Bay.

In terms of assessing risk associated with wind turbines, there is a need to distinguish the distance within which most foraging flights occur, rather than merely the extremes, as flight activity (number of flights, not just number of individual birds) levels are influential in determining risk. In the absence of colony-specific data, BirdLife International (BLI)'s recommendations for colony extensions, based on seabird foraging radii

(Ratcliffe et al. 2000, RSPB 2000), provide a useful reference point. Several recently published studies provide updated information (Table 1), although recent research on terns indicates that foraging range for Sandwich tern in particular may be greater than this (M. Perrow pers. comm.).

**Table 1:** Foraging radii around seabird breeding colonies. Table modified from Ratcliffe *et al.* 2000 & RSPB 2000.

Foraging Radius	Species
5 km	Little Tern Arctic Skua Black Guillemot
15 km	Manx Shearwater (rafting birds only) Cormorant Shag Black-headed Gull Common Gull
20 – 30 km	Common, Arctic, Roseate and Sandwich Tern*
40 km	Great Skua Herring, Lesser and Great Black-backed Gulls Kittiwake Guillemot Razorbill Puffin
> 100 km	Northern Fulmar Manx Shearwater European Storm Petrel Leach’s Petrel Northern Gannet

\*BLI unpublished review of tern foraging ranges

## Marine Protected Areas

At present, the main focus of work on marine protected areas for seabirds is the identification and designation of the Special Protection Area network into the marine environment. This work will extend to nationally important sites as and when relevant national level marine legislation is enacted.

Currently, offshore extensions to seabird breeding colonies are the main focus of attention for designating marine SPAs. The proposed colony extensions currently apply to those species for which sample sizes are adequate to determine densities of birds engaged in maintenance behaviour in the waters surrounding breeding colonies, namely northern fulmar *Fulmarus glacialis*, Manx shearwater *Puffinus puffinus*, northern gannet *Morus bassana*, common guillemot *Uria aalge*, razorbill *Alca torda* and Atlantic puffin *Fratercula arctica* (JNCC). These extensions are considered to represent concentrations of seabirds engaged in maintenance behaviours and do not necessarily reflect foraging ranges or main foraging locations, which will be the subject of separate SPA designations. Surveys extended up to just 4-5 km offshore (McSorley *et al.* 2003). To date, Scottish RSPB/RHWL/R3 & seabirds/17 November 2008

Natural Heritage (SNH) has proposed 31 colony extensions in Scotland, based on the modelled bird densities (Appendix II).

For northern gannet, significantly higher predicted average densities of birds, engaged in maintenance behaviour, were found within 2 km of the breeding colony than at greater distances, both around Grassholm off the Pembrokeshire coast and around Bass Rock in the Firth of Forth (McSorley *et al.* 2003). Thus, diminishing densities are likely further offshore, at least within the limited 4-5 km range of assessment around colonies, except at offshore feeding aggregations. In the case of Manx shearwater, the greatest use of waters around breeding colonies, notably for rafts formed towards dusk prior to visiting nests, was found to be 4 km around Skomer, 6 km around Rum, and 9 km at Bardsey Island (Reid & Webb 2005).

There are also proposals under development for marine SPAs in Liverpool Bay and the Greater Thames for wintering common scoters and divers respectively, as part of the plan for SPAs for inshore aggregations. Assessment of SPAs for offshore foraging areas, the third strand of SPA designation, is only in the early stages of investigation and is based primarily on spatial analysis of ESAS data.

As part of its work towards establishing SPAs, JNCC is using boat surveys, visual tracking of foraging flights and radio-tracking to identify foraging area extensions to SPAs for breeding red-throated divers *Gavia stellata*. They are carrying out aerial surveys to produce distribution and abundance data for terns *Sterna* species around key tern colonies. They are also collecting some additional field data to identify feeding aggregations of seabirds throughout the year in UK continental shelf waters. It would be valuable for JNCC to re-survey sample areas for which they have undertaken spatial analysis of ESAS data to determine whether similar patterns of distribution and abundance occur now. This would either increase confidence that the use of ESAS is fundamentally sound, or demonstrate that it is a flawed approach for defining SPA boundaries.

## **Risk factors in relation to offshore wind turbines**

The main potential risks for birds are collision; disturbance/displacement; barriers to movement of e.g. migrating birds, or disruption to functional links, for example between feeding and breeding areas; and habitat change with associated changes in food availability.

Location remains the most important risk factor, in particular distance offshore and the level of flight activity by species with, or at times when, elevated collision risk is likely. The problem is that we know rather little about the locations of offshore feeding concentrations in UK waters, notably for birds from specific breeding colonies, but can begin to make some expert judgements about the likelihood of risk. There is a high potential risk of collision with wind turbines if they are located in areas in which there is a high level of flight activity by birds most likely to collide with turbine rotors or be affected by the associated turbulence. High levels of activity may be due to either feeding frenzies or high turnover of individuals using the area.

Risk level is a combination of distribution and behavioural characteristics of the species, which may vary seasonally and spatially as well as being age- and sex-dependent (Stienen *et al.* 2008). The evidence for terns is that they are generally manoeuvrable in flight, but flights occur within rotor swept height. Most tern collisions with the wind turbines at Zeebrugge coincided with incubation and chick provisioning and are likely to be attributable to the increased flight activity into and out of the colony and time pressures on the adult birds leading to them taking the most direct flights between breeding and feeding areas (Henderson *et al.* 1996, Everaert & Stienen 2007). The elevated collisions of male common terns were attributed to sex-biased variation in foraging activity during egg-laying and incubation (Stienen *et al.* 2008). When feeding chicks, they will generally forage closer to their breeding colonies unless failure of food supply forces them to forage further afield, so the collision risk for terns in several of the potential development zones for offshore wind farms has to be reduced because of their distance offshore. In the case of northern gannets, they plunge dive from 10-40 m above the water and fly within the rotor swept height but often forage over 100 km away from their breeding colonies and so easily within the range of likely R3 offshore wind farms. Understanding the relative importance and consistency of feeding aggregations will be key to assessing the level of risk for northern gannets.

Wind turbine size and hence the height of the rotor swept area will be critical to the risk of collision for birds offshore. Offshore swell affects wave height and hence flight elevation of species that generally fly close to the sea surface and wave crests, for example Manx shearwater. So, whilst such species may be generally considered low risk in terms of collision with wind turbines, specifically in the case of the particular international responsibility that the UK has for Manx shearwater, any proposed wind farm development within the main feeding and loafing areas will require detailed assessment. Species whose flight activity currently extends to heights within the rotor swept area may be less likely to fly within the rotor swept area of the next generation of larger turbines.

Currently, there is limited practical experience of the effects of offshore wind farms on birds, but there are several useful studies from Denmark and Sweden. Radar studies at Nysted offshore wind farm, in Denmark, indicated a high degree of avoidance by large waterbirds during migration, mostly common eider, at least in fair weather (Desholm & Kahlert 2005). There was a significant reduction in migration track densities within the wind farm area post-construction (40.4% ( $n=1406$ ) of flocks entered the wind farm area prior to construction of the wind farm (2000-2002) compared with 8.9% ( $n=779$ ) during initial operation (2003) ( $\chi^2=239.9$ ,  $p<0.001$ ). The birds' avoidance response was initiated at greater distance from the wind farm during daylight ( $\leq 3$  km) than at night ( $\leq 1$  km). A significantly higher proportion of migrating flocks entered the wind farm at night (13.8%;  $n=289$ ), than during daylight (4.5%;  $n=378$ ) ( $\chi^2=17.1$ ,  $p<0.001$ ). Aerial surveys of bird distribution and abundance and visual observations complemented the radar studies during daylight. Whilst flight activity

is often depressed in poor weather, birds already migrating and caught in bad weather are likely to reduce their flight height.

Similarly, radar and visual observations at Utgrunden and Yttre Stengrund in the Kalmar Sound, Sweden indicated that most migrating common eider avoided flying close to these small wind clusters (respectively 7 and 5 turbines in parallel with the main direction of migration) (Pettersson 2005). This study provides a rare observation of collision by individuals in a flock of common eiders. A flock of approximately 310 eiders, in V-formation, flew past an outer turbine when several individuals in the outer flank, and therefore the rear, of the flock struck the rotating blade on its downward trajectory or were caught in the associated turbulence. Four birds were observed to fall into the water, of which at least two flew out and at least one was killed.

Data from aerial surveys carried out before, during and following construction of the Horns Rev offshore wind farm, in Denmark, were used to evaluate possible displacement effects of wind turbines on birds (Petersen *et al.* 2004). Distributional changes within the wind farm, the wind farm area plus 2km radius and the wind farm area plus 4km radius were assessed. Divers and common scoters showed almost complete avoidance of the Horns Rev wind farm area in the first three years post construction (DONG *et al.* 2006). As proportions of the total numbers present, the displaced birds represented a relatively small proportion, but concerns were expressed about the potential for cumulative impacts of multiple wind farms along the flyway for these species. Subsequent surveys indicate that common scoters may now be utilising the sea areas within the wind farm in comparable densities within and outwith the wind farm, although the possibility cannot be excluded that changes in food availability rather than the presence of the wind farm led to the observed changes in distribution (Petersen & Fox 2007).

Displacement from the wind farm area may result from disturbance due to the presence of turbines or increased levels of boat traffic, or helicopters, and maintenance crews, or result from changes to food supply that may, or may not, be a consequence of the wind farm. Seaducks and divers are noted for their susceptibility to disturbance and for forming "rafts" on the water surface of anything from a few individuals to several thousand (or even tens of thousands of) birds. Their predominant association with shallow waters  $\leq 20$  m restricts the likely overlap with Round 3 zones for wind energy development, albeit realistically most development will be limited to water depths no greater than 30-40m initially.

The pressure to develop offshore wind farms in a relatively short timeframe prompted the production of a species sensitivity index for birds which was then applied to the German sectors of the North Sea and Baltic Sea (Garthe & Hüppop 2004). The species sensitivity index provides a useful measure to assist in prioritising bird species for assessing the risks applicable to the UK's Round 3 offshore wind farm programme (Table 2). The modified score for the UK is an initial assessment, and is not a substitute for updated baseline data

collection (i.e. ESAS data), detailed EIA, and targeted research, but intended to make best use of available information until these sources improve that knowledge base. The relative importance of the UK for a species may mean that the cumulative impact score is high even for species thought to have low risk values because the consequence of any impact would be more likely to be significant for the biogeographical population. It would be useful to update and apply the Garthe & Hüppop index in a UK context and to reflect more recent wind farm studies.

The ultimate test of impact, either for an individual development or cumulatively across multiple developments, is whether there is the likelihood of a decline in population size. There are two spatial scales at which this is relevant, SPA site condition assessment and the wider biogeographical population. Population models have some utility (Beissinger & Westphal 1998), but are heavily dependent on the available information, which is variable for different bird species (McLean et al. 2007). Furthermore, assumptions have to be made that may or may not result in model outcomes that are realistic, see for example the population model for northern gannets at Troup Head in response to predicted collision mortality arising from the Beatrice pilot wind farm (Ratcliffe 2005).

### **Priority species relevant to the zones proposed for offshore wind**

Species of particular concern in relation to offshore wind development and therefore priority for environmental assessment, have been identified based on what is known of their distribution and ecology, notably their risk profile in relation to wind turbines, and conservation status in the UK (Table 2). Initially those species relevant to the CE zones are presented (Figure 1, Appendix III & supporting spreadsheet). The updated CE map (Figure 1) has dropped zones in Lyme Bay, off the Devon coast, in Cardigan Bay and off Whitehaven, but added Hornsea and West Isle of Wight. Species lists will require refinement in the light of further revisions by the CE, as a result of the SEA, and incorporation of regional information and updates from further surveys. Principal concerns are collision risk, displacement from habitat/feeding areas or major flight routes/frequently used flight paths between feeding and roosting areas for example (sometimes called the barrier effect), and especially the cumulative effects of these across multiple wind farms.

The application of an exclusion zone to inshore coastal waters and flexible siting of wind turbines within development zones to avoid areas of high bird use will reduce the risks to birds from R3 offshore wind development. The offshore energy SEA is considering the implications of variable exclusion zones for a variety of issues, especially landscape/seascape considerations ( $\leq 13$  km), military training areas, avian interest and inshore fisheries. However, currently it is unclear whether and how any exclusion zone will be applied because of the high level of potential constraints identified. It is notable that there is little overlap between the R3 provisional zones and the indicative areas of search for inshore marine SPAs in English waters (NE

unpublished), although this reflects the tendency for most development zones to lie outside territorial waters but within the UK continental shelf waters. Two potential wind farm zones could overlap with potential colony extensions in the Moray Firth and Firth of Forth, with a possible third area of overlap off the Suffolk coast. Presently, it is not possible to indicate likely overlap between the potential development zones and future offshore marine SPAs, although earlier work by RSPB/BLI recommended that extensions to seabird breeding colonies should encompass feeding areas such as the Minch, Smith Bank, Wee Bankie and Marr Bank (RSPB 2000).

Species are listed, based on proximity to nearest major breeding colonies (most are SPAs) and likely foraging range for seabirds (RSPB 2000, Stroud *et al.* 2001, McSorley *et al.* 2003, Mitchell *et al.* 2004, Guilford *et al.* 2008) and, for non-breeding seabirds and waterbirds, based on the onshore SPA network, offshore distribution (non-breeding) including marine IBAs (Stroud *et al.* 2001, Skov *et al.* 2005, Stone *et al.* 2005), and migration (Wernham *et al.* 2002). For reasons stated above, the nearest colony may not be the origin of a significant proportion of the birds recorded, but such distinction will be possible only following further investigation. In the absence of further research, there is a case to be made for including SPAs within the likely main foraging range (Table 1). The focus on major breeding colonies, those that are numerically most significant based on Apparently Occupied Nests (AON) or Apparently Occupied Territories (AOT) as per Mitchell *et al.* (2004), is an attempt to tease out areas and species of relatively greater biological significance from the UK coastline's almost uninterrupted conservation importance for breeding seabirds. The information presented here is indicative of likely occurrence and priority. All species that contribute to the qualifying interest of the SPAs within the likely range of birds using the potential development areas for wind farms will require consideration at the scoping stage of the EIA. The proposed "key features" approach to scoping provides a useful framework (A. Prior, unpublished 2008).

Migrating birds (e.g. waders) may enter the collision risk zone if forced to fly at lower elevation because they encounter strong headwinds or bad weather during a sea crossing, or when approaching land, and so need to be included in the EIA risk assessment. Migration may be low over the water when making short sea crossings or at high elevations, well above turbine height, when unimpeded; birds fly at the altitude that maximizes flight efficiency. Many migrants will fly along or within a few kilometres of the coast to avoid making a long distance sea crossing. For example, many waterbirds migrating from the Arctic or other northern breeding grounds migrate through the Baltic or down the Norwegian coast to the Wadden Sea before crossing to the UK. However, some birds cross the North Sea from Scandinavia. Radar could be a useful tool in elucidating current migration patterns across the North Sea, as well as tracking more local offshore movements.

**Table 2:** Species for which studies at wind farms, or other known aspects of behaviour, indicate higher risks (e.g. Garthe & Hüppop 2004) or for which priority conservation status and uncertainty about likely impacts contribute to them being identified as focal species in relation to proposed wind farms.

Species	Collision <sup>1</sup>	Displacement <sup>1</sup>	Barrier <sup>1</sup>	Habitat/ Prey <sup>1</sup>	SSI <sup>2</sup>	GB/UK Min % <sup>3</sup>	Cumulative Impact <sup>4</sup>
Black-throated Diver	*	***		*	44.0	*	***
Red-throated Diver	*	***		*	43.3	**	***
Velvet Scoter		**		**	27.0	*	**
Sandwich Tern	**			*	25.0	**	**
Great Cormorant	**	*			23.3	**	**
Common Eider	*	*		**	20.4	*	**
Great black-backed Gull	**				18.3	**	**
Common scoter		*		**	16.9	*	**
Northern Gannet	**				16.5	***	***
Razorbill		*		?	15.8	*	**
Atlantic Puffin		*		?	15.0	*	**
Common Tern	**				15.0	*	**
Lesser black-backed Gull	**				13.8	***	***
Arctic Tern	**				13.3	*	**
Little Gull	*				12.8	?	?
Great Skua	**				12.4	***	***
Common Guillemot		*		?	12.0	**	**
Mew (Common) Gull	*				12.0	*	**
Herring Gull	*				11.0	*	**
Arctic Skua	**				10.0	*	**
Black-legged Kittiwake	**				7.5	*	*
Black-headed Gull	*				7.5	*	*
Northern Fulmar	*				5.8	*	*
Great Northern Diver		***		*	ns	**	***
Manx Shearwater	?	?		?	ns	***	***
Balearic Shearwater	?	?		?	ns	?	?
European Storm-petrel		?		?	ns	*	*
Leach's Storm petrel		?		?	ns	*	*
European Shag		*		*	ns	**	**
Roseate Tern	**				ns	*	**
Little Tern	*				ns	*	*
Mediterranean Gull	*				ns	*	*
Long-tailed Duck		**		**	ns	*	**
Goldeneye		?		?	ns	*	?
Red-breasted Merganser		?		?	ns	*	?
Whooper Swan	**				ns	*	**
Bewick's Swan	**				ns	**	**
Pink-footed Goose	*				ns	***	***
Dark-bellied Brent Goose	*				ns	?	?
Light-bellied Brent Goose	*				ns	?	?

<sup>1</sup>assessment based on combination of experience from operational wind farms and Garthe & Hüppop 2004.

<sup>2</sup>ns = no Species-specific Sensitivity Index (SSI) score presented in Garthe & Hüppop 2004; NB this score takes account of SPEC status.

<sup>3</sup> The minimum % of the relevant biogeographical population breeding in Britain, is taken from Mitchell *et al.* 2004; UK non-breeding population estimates are from Baker *et al.* 2006 as a % of European populations from BirdLife International 2004, converted accordingly: \* < 25%; \*\* 25 – 50 %; \*\*\* > 50%.

<sup>4</sup>cumulative impact taken as the highest score across the table for each species

## **Data collection for environmental assessment**

In view of the paucity of recent data for most offshore areas, year-round baseline data collection will be needed for all species (not just those listed in Appendix III because they are thought to be the most likely priority species) in potential development zones and other areas proposed for wind farm development, to cover breeding and non-breeding distributions. Migration of seabirds, waterbirds and passerines occurs around the UK, notably across the North Sea and the Channel, so spring and autumn surveys will be needed. Radar may be a valuable adjunct in some cases, for example assessing migration traffic or tracking movements of individual species groups such as geese. As with Round 2, previously unknown bird concentrations may be identified during additional data collection.

Baseline survey requirements will need to extend offshore, owing to a high proportion of the potential development zones occurring outside territorial waters. This will present new challenges to determine how best to deploy the standard techniques. Light aircraft used for aerial survey have limited flying range which will constrain the number of transects that can be flown over outermost zones in one day, but boat-based surveys of the larger zones would require many days, increasing the risk of double-counting as birds move around within the zone and surrounding waters. Review of transect separation may be necessary, but bearing in mind implications for estimations of bird density. Plugging gaps in the inshore waters aerial survey programme remains a high priority for those potential development zones within territorial waters, e.g. in the Channel, and for identification of inshore SPAs. There are few inshore blocks that have received no coverage to date, but quite a few that have been surveyed only once, notably during summer. Whilst data collection for individual wind farms is the responsibility of the developer, coordinated survey effort maximises the provision of contextual information and makes best use of limited resources, as demonstrated for R2 (Figures 4a & 4b), so is to be encouraged for R3. Comprehensive survey of UK Continental Shelf (UKCS) waters is unrealistic, being impractical and hugely costly, but sample surveys are essential, as mentioned elsewhere in this paper, to validate the applicability of ESAS data to current patterns of distribution and abundance of seabirds. The requirements for information prompted by R3 (including Scottish Territorial Waters, although not strictly part of R3) and designation of marine SPAs are joint drivers for coordinated survey effort and funding.

Once the range of species present in each wind farm proposal area has been established, further studies should focus on addressing specific questions for priority species relevant to each zone or application area, as required to improve our understanding of the potential environmental effects of wind farms. The scoping stage of environmental impact assessments will be crucial to ensure that resources are targeted at the most relevant studies. Such studies include tracking individual birds to establish foraging areas for birds in relation to particular development areas and specific coastal breeding colonies.

## Recommendations

1. Comprehensive baseline data collection, using a combination of aerial and ship-based surveys using recommended methods (Camphuysen et al. 2004). Minimum of 2 years pre-construction data collection for potential development zones.
2. Survey programme to plug gaps in coverage and provide updated contextual information for UKCS waters. To include sample re-surveys of areas covered by ESAS, to determine whether broad patterns of distribution and abundance remain unchanged or whether there have been changes that cast doubt on the value of ESAS data for identifying marine SPAs or areas of potential greater sensitivity for wind farm development.
3. Encourage and facilitate further research into foraging ranges and areas used by priority species relevant to each development zone, making use of developing technology such as data loggers and habitat suitability modelling (also relevant to identification of marine SPAs).
4. Consider development of further sensitivity indices for birds in the marine environment.
5. Collate and, where necessary seek to improve, information on population size, survival and productivity, age structure and frequency of non-breeding to facilitate population modelling for priority species.
6. Encourage and facilitate further research into migration and other flight movements at sea, notably to elucidate routes and variation in these by bird species of conservation priority. Further deployment of satellite tracking with enhanced frequency of positional information shows most promise, but currently is technically restricted to larger seabirds and waterbirds. This is an extension of 3.
7. Deployment of radar offshore, on fixed platforms post-construction, to improve our understanding of avoidance responses by e.g. migratory waterbirds or seabirds commuting to foraging areas (Desholm *et al.* 2005, 2006). Resolve how best to obtain complementary visual observations or use of thermal imaging cameras.
8. Deployment of land-based radar<sup>1</sup> and complementary visual observations at several key locations, pre-construction, to observe departure and arrival bearings and flight elevation of migratory birds. This is primarily to determine whether flight height gain/loss occurs close to the coast, i.e. landward of the likely offshore wind development areas (allowing for weather conditions). Offshore deployment of radar to augment baseline data collection also potentially valuable for specific cases.
9. Encourage and facilitate the development of study techniques and, where applicable, mitigation measures for application in the marine environment and at offshore wind farms.

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<sup>1</sup> It is unlikely that this function can be fulfilled using the mobile avian radars, but will require more powerful radar.

## Acknowledgements

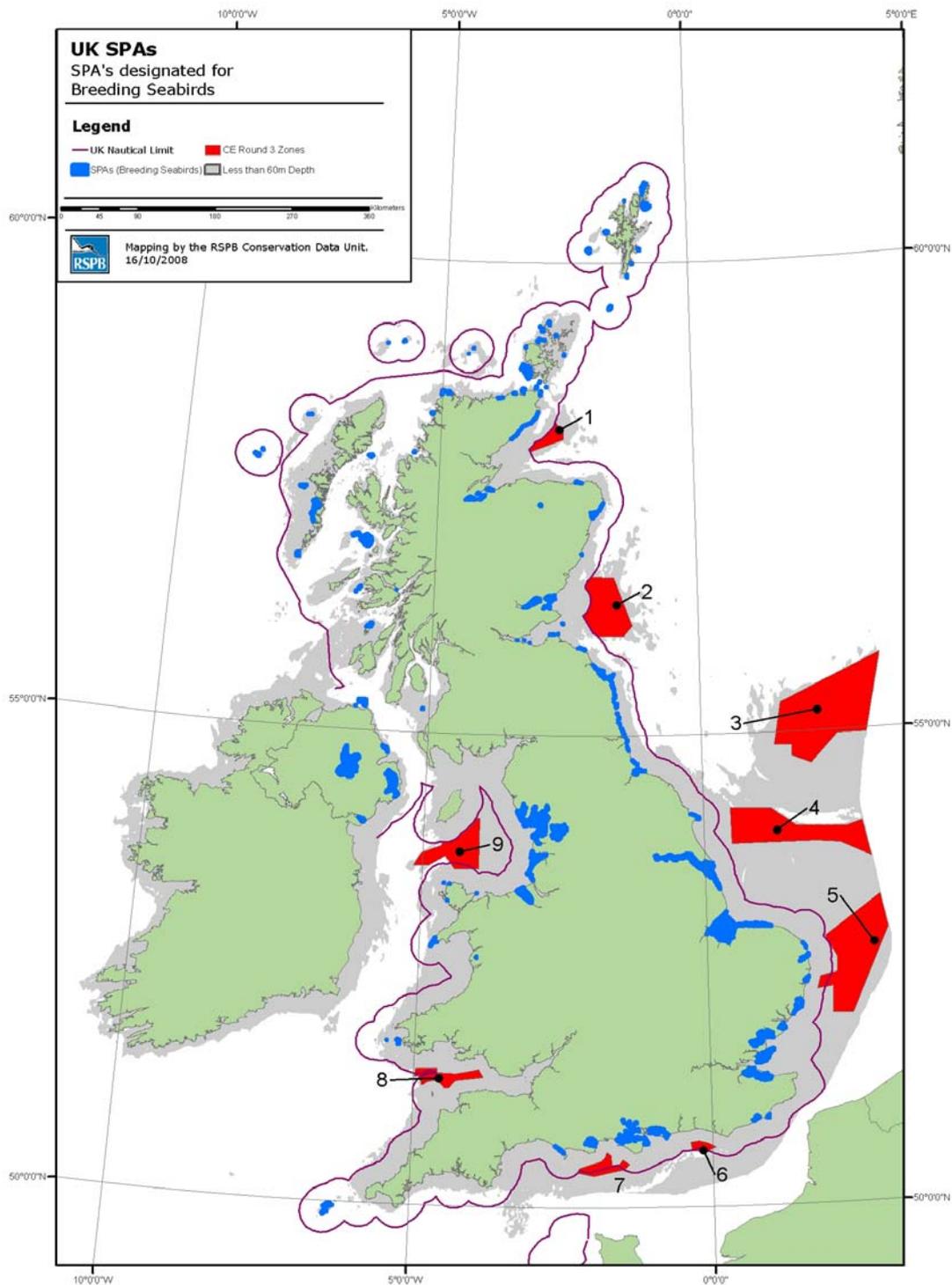
Thanks to David Fouracre, RSPB's Conservation Data Management Unit for preparation of the maps included here, and to Ian Mitchell, JNCC, for seabird colony and SPA data, Phil Bloor, BERR (now DECC), Andy Webb, JNCC, Rebecca Woodward, WWT, Hannah Cherry, The Crown Estate, for GIS data layers that contributed to map production. Thanks also to Gavin Bloomfield, Mark Bolton, Andrew Dodd, Ian Francis, Toby Gethin, Alison Giacomelli, Kate Jennings, Martin Kerby, Tim Melling, Aedan Smith, Sharon Thompson, Kirsty Turner and Mike Webb for feedback on aspects of the document, and to Martin Harper for providing the RSPB policy text.

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**Figure 1 Bathymetry (waters < 60m) and SPAs with breeding seabirds as qualifying features in relation to CE potential development zones, September 2008, for offshore wind in UK waters**

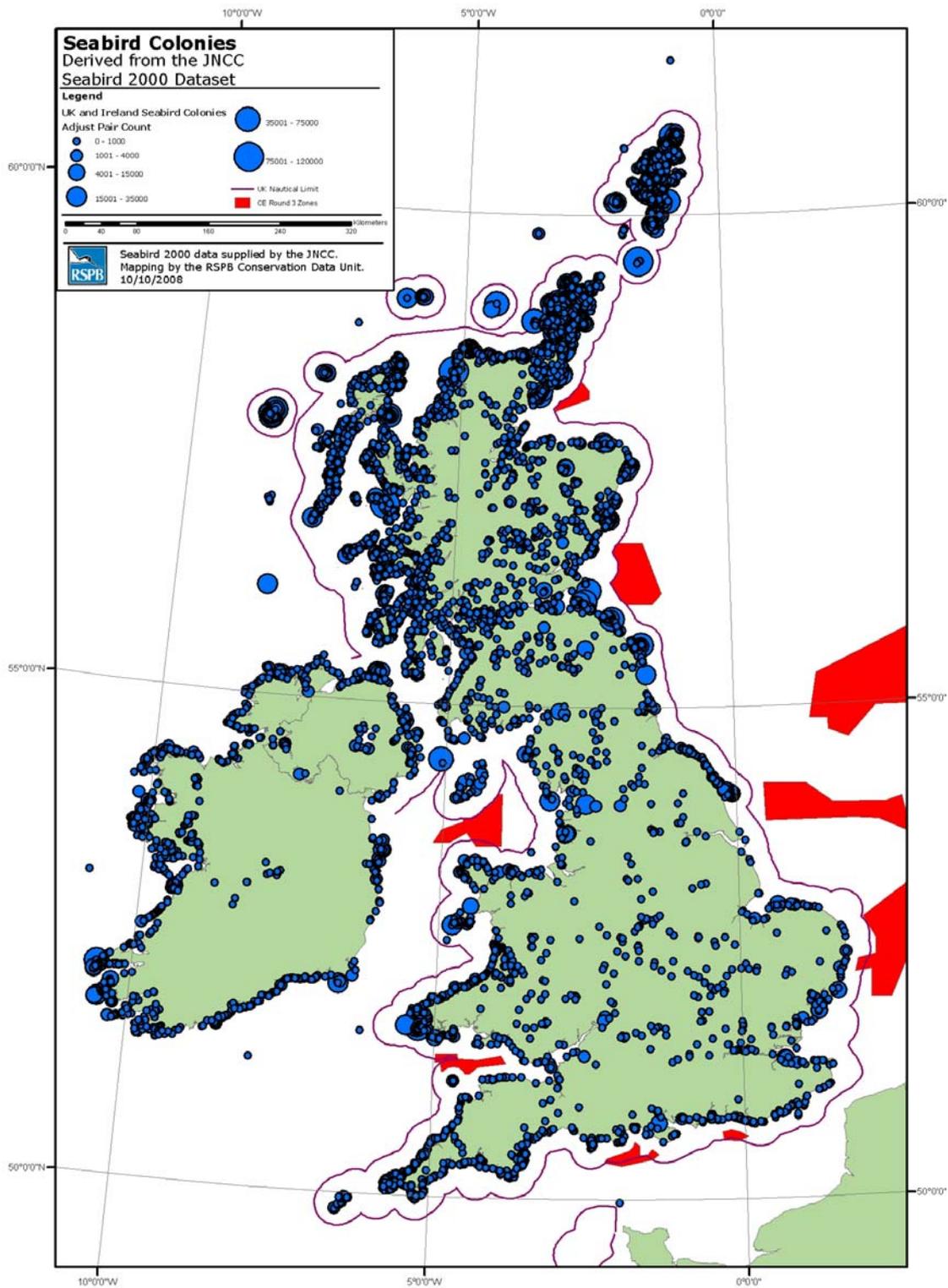
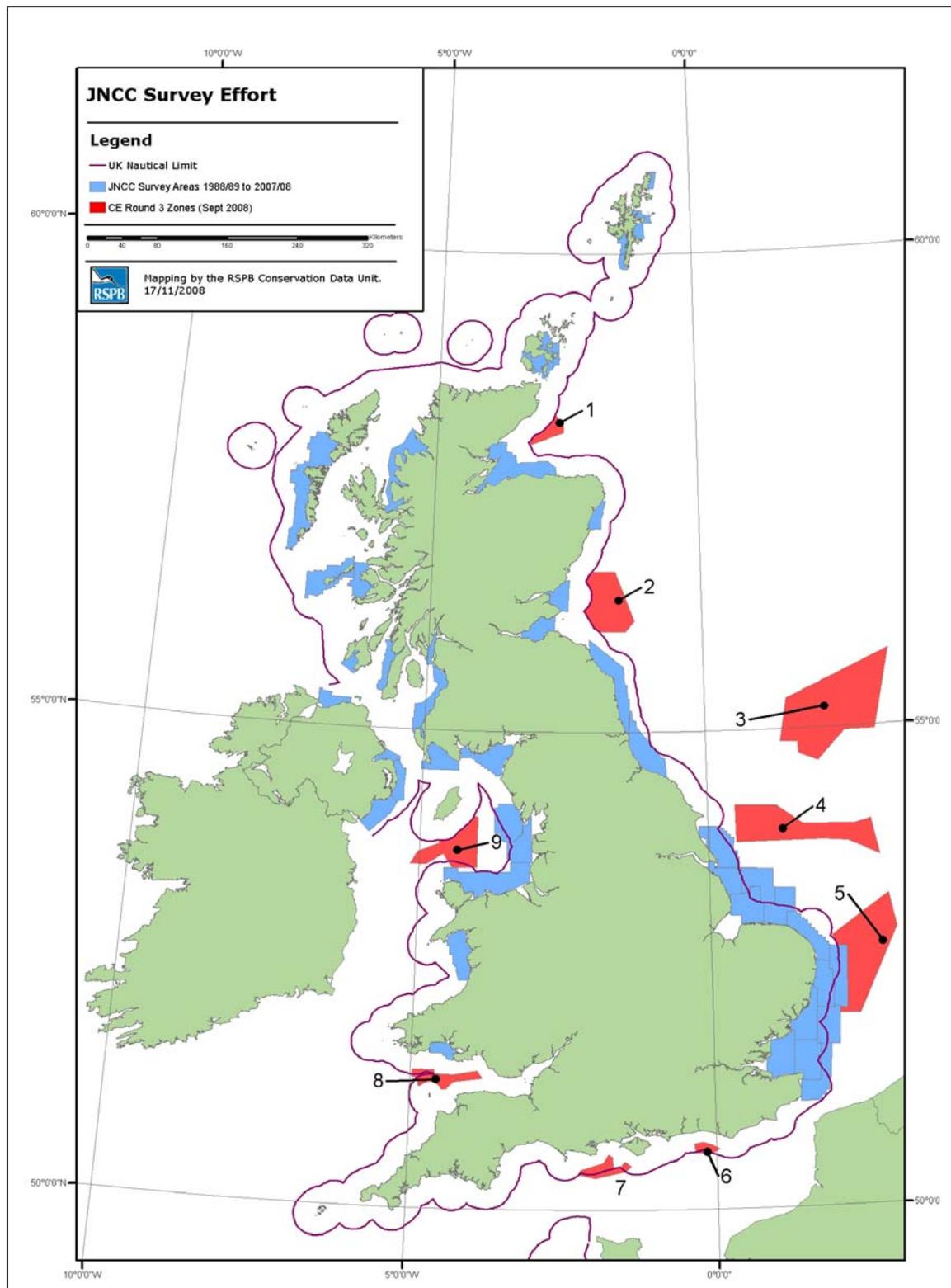
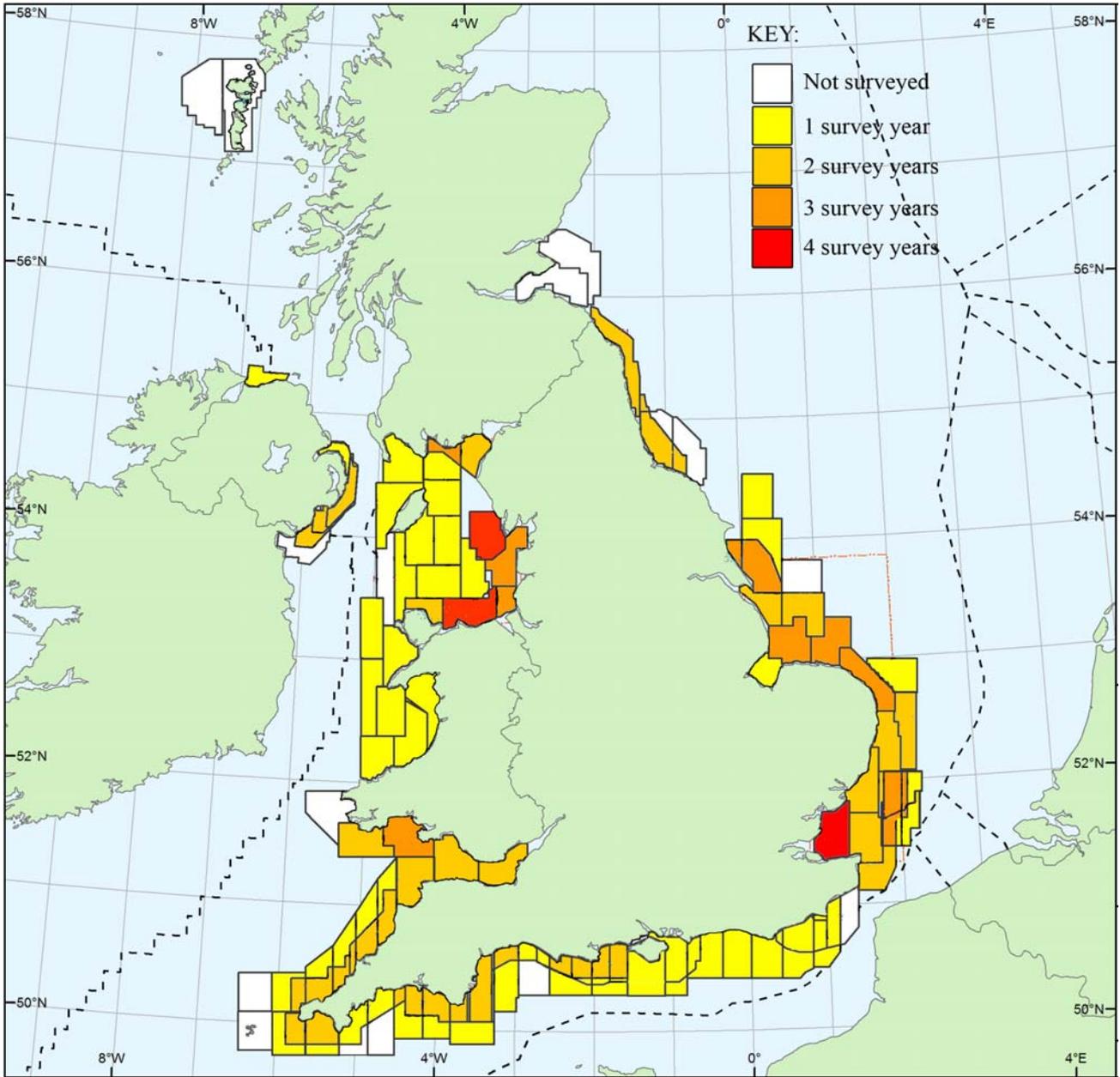


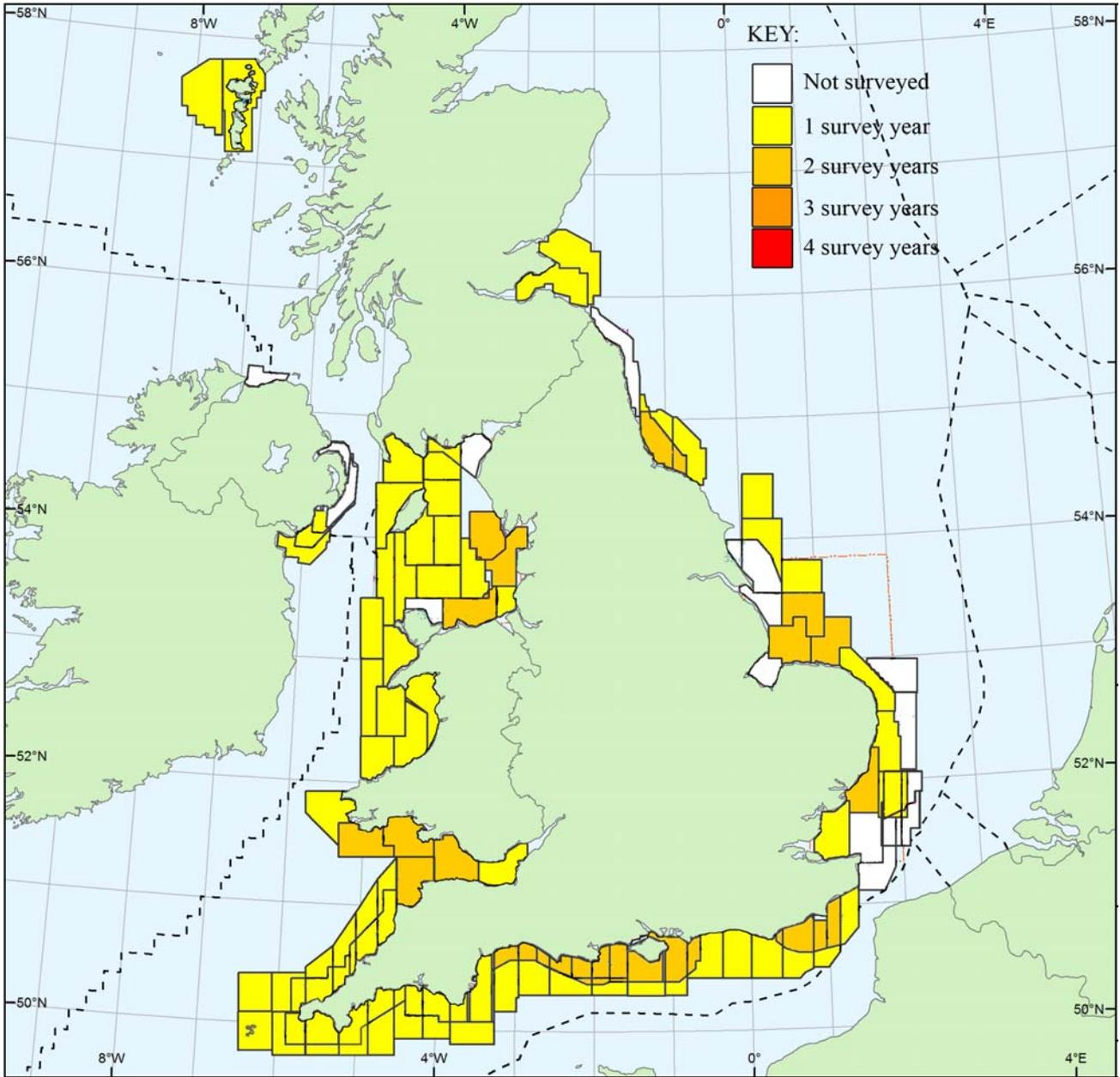
Figure 2: Seabird colonies in the UK (derived from the JNCC Seabird 2000 dataset)



**Figure 3: Aerial survey coverage of UK inshore waters 1988/89 to 2007/08 by the JNCC (NB, there is some overlap with Figure 4, notably for winter coverage)**



**Figure 4a** Winter survey coverage of UK waters by aerial surveys (unpublished information compiled from DECC, JNCC & WWT, figure courtesy of WWT)

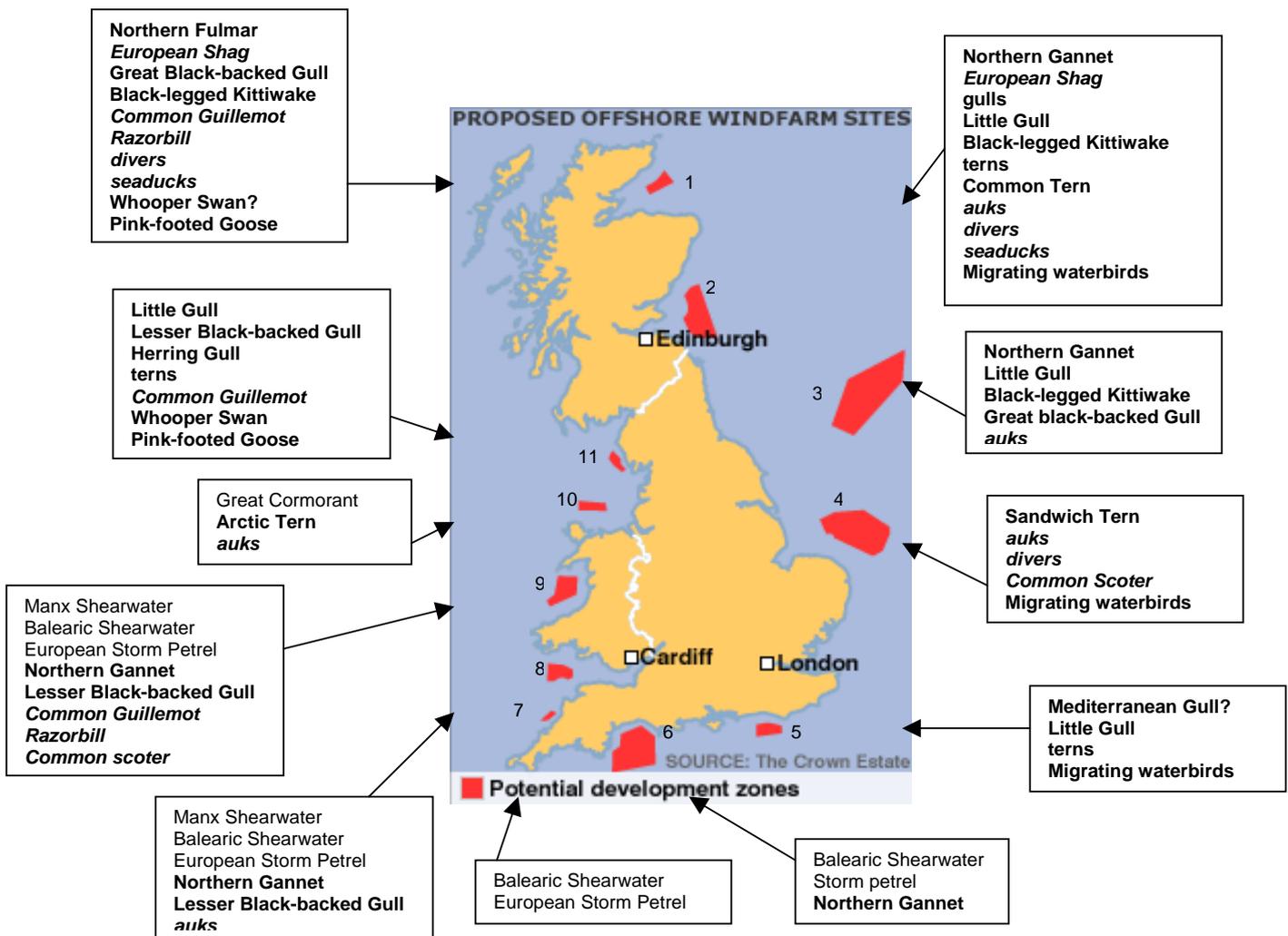


**Figure 4b Summer survey coverage by aerial surveys** (unpublished information compiled from DECC, JNCC & WWT, figure courtesy of WWT)

## Appendix I: First Round 3 offshore wind farm announcement, The Crown Estate, 4 June 2008

### Focal bird species for survey and research.

There is limited current information about offshore distributions, so these lists are not comprehensive, but aim to identify species of greatest potential concern in the areas indicated by the Crown Estate. Year-round baseline data collection will be needed for all species (not just those listed) and locations to cover breeding and non-breeding distributions. Migration of seabirds, waterbirds and passerines occurs around the UK, notably across the North Sea and the Channel, so spring and autumn surveys will be needed. Just as with Round 2, previously unknown bird concentrations may be identified during additional data collection. Principal concerns are collision risk, displacement from habitat/feeding areas or major flight routes, and especially the cumulative effects.



Species are listed, based on proximity to nearest major breeding colonies (including SPAs) and likely foraging range<sup>1,2,3,6</sup> for seabirds and, for non-breeding seabirds and waterbirds, based on the onshore SPA network<sup>6</sup>, offshore distribution (non-breeding) including marine IBAs<sup>4,5</sup>, and migration<sup>7</sup>.

Other migratory birds (e.g. waders) may enter the risk zone if they encounter strong headwinds or bad weather during sea crossing, or when flying at lower elevation close to land, and so need to be included in EIA risk assessment.

Key to main concern: **potential collision; possible displacement**

<sup>1</sup>Guilford et al. 2008. GPS tracking of the foraging movements of Manx Shearwaters Puffinus puffinus breeding on Skomer Island, Wales. Ibis OnLineEarly

<sup>2</sup>McSorley et al. 2003. Seabird use of waters adjacent to colonies. JNCC report 329, Aberdeen

<sup>3</sup>Mitchell et al. Seabird Populations of Britain and Ireland. 2004. A & C Black, London

<sup>4</sup>Skov et al 1995. Important bird areas for seabirds in the North Sea including the Channel and the Kattegat. BLI, Cambridge

<sup>5</sup>Stone et al. 1995. An atlas of seabird distribution in north-west European waters. JNCC, Peterborough

<sup>6</sup>Stroud et al. 2001. The UK SPA network: its scope and content. JNCC, Peterborough

<sup>7</sup>Wernham et al. 2002. The Migration Atlas: movements of the birds of Britain and Ireland. T & A D Poyser, London

**Appendix II: Proposed seabird breeding colony extensions in Scotland (see [www.snh.gov.uk/](http://www.snh.gov.uk/))**

Name of site	Approx. extension	Species for which extension proposed					
		Common Guillemot	Manx Shearwater	Razorbill	Atlantic Puffin	Northern Gannet	Northern Fulmar
Canna & Sanday	1km	*			*		
Marwick Head	1km	*					
North Colonsay & Western Cliffs	1km	*					
Rum	4km	*	*				
St Abbs to Fast Castle	1km	*		*			
Ailsa Craig	2km	*				*	
Buchan Ness to Collieston Coast	2km	*					*
Calf of Eday	2km	*					*
Cape Wrath	2km	*		*	*		*
Copinsay	2km	*					*
East Caithness Cliffs	2km	*		*	*		*
Fair Isle	2km	*		*	*	*	*
Fetlar	2km	*					*
Forth Islands	2km	*		*	*	*	*
Flannan Isles	2km	*		*	*		*
Foula	2km	*		*	*		*
Fowlsheugh	2km	*		*			*
Handa	2km	*		*			*
Hermaness, Saxa Vord & Valla Field	2km	*			*	*	*
Hoy	2km	*			*		*
Mingulay & Berneray	2km	*		*	*		*
North Caithness Cliffs	2km	*		*	*		*
North Rona & Sula Sgeir	2km	*		*	*	*	*
Noss	2km	*			*	*	*
Rousay	2km	*					*
Shiant Isles	2km	*		*	*		*
St Kilda	4km	*	*	*	*	*	*
Sule Skerry & Sule Stack	2km	*			*	*	
Sumburgh Head	2km	*					*
Troup, Pennan & Lion's Head	2km	*		*			*
West Westray	2km	*		*			*

These extensions are considered to represent concentrations of seabirds engaged in maintenance behaviours and do not necessarily reflect foraging ranges or main foraging locations, which will be the subject of separate SPA designations.

**Appendix III: Priority species likely to be of most concern in CE potential development zones**  
(September 2008 update).

<b>CE zone</b>	<b>Location</b>	<b>Bird species</b>
1	Moray Firth	<b>Northern Fulmar</b>
		<i>European shag</i>
		<b>Great black-backed gull</b>
		<b>Black-legged kittiwake</b>
		<i>Common guillemot</i>
		<i>Razorbill</i>
		<i>divers</i>
		<i>seaducks</i>
		<b>Whooper Swan?</b>
		<b>Pink-footed Goose?</b>
2	Firth of Forth	<b>Northern Gannet</b>
		<b>Black-legged Kittiwake</b>
		<b>gulls</b>
		<b>Little Gull</b>
		<b>Sandwich Tern</b>
		<b>Common Tern</b>
		<b>Arctic Tern</b>
		<i>auks</i>
		<i>divers</i>
		<i>seaducks</i>
		<b>Migrating waterbirds</b>
3	Dogger Bank	<b>Northern Gannet</b>
		<b>gulls</b>
		<b>Black-legged Kittiwake</b>
		<i>auks</i>
4	Hornsea	<b>Northern Gannet</b>
		<b>Little Gull</b>
		<b>Black-legged Kittiwake</b>
		<i>auks</i>
		<b>Migrating waterbirds</b>
5	East of Norfolk & Suffolk	<b>Little Gull</b>
		<b>Little Tern</b>
		<i>auks?</i>
		<i>divers</i>
		<b>Migrating waterbirds</b>
6	Hastings	<b>Mediterranean Gull</b>
		<b>Little Gull</b>
		<b>Migrating waterbirds</b>
7	West Isle of Wight	<i>Balearic Shearwater</i>
		<i>European Storm Petrel</i>
		<b>terns</b>
		<b>Mediterranean Gull</b>
		<b>Migrating waterbirds</b>

8	Bristol Channel	<i>Manx Shearwater</i>
		<i>Balearic Shearwater</i>
		<i>European Storm Petrel</i>
		<b>Northern Gannet</b>
		<b>Lesser Black-backed Gull</b>
		<i>auks</i>
9	Irish Sea	<i>Manx Shearwater</i>
		<b>terns</b>
		<i>auks</i>

Key to main concern: **potential collision**; *possible displacement*

### Focal bird species for survey and research

These lists aim to identify those species likely to be of greatest potential concern in the potential development zones indicated by the Crown Estate (September 2008 revision). Year-round baseline data collection will be needed for all species (not just those listed) and locations to cover breeding and non-breeding distributions. Migration of seabirds, waterbirds and passerines occurs around the UK, notably across the North Sea and the Channel, so spring and autumn surveys will be needed. Just as with Round 2, previously unknown bird concentrations may be identified during additional data collection. Principal concerns are collision risk, displacement from habitat/feeding areas or major flight routes, and especially the cumulative effects.

Species are listed, based on proximity to nearest major breeding colonies (including SPAs) and likely foraging range<sup>1,2,3,4,7</sup> for seabirds and, for non-breeding seabirds and waterbirds, based on the onshore SPA network<sup>7</sup>, offshore distribution (non-breeding) including marine IBAs<sup>5,6</sup>, and migration<sup>8</sup>. The supporting Excel spreadsheet lists all species which contribute to the qualifying interest of the nearest SPAs; all these species will require consideration at the scoping stage of the EIA. The proposed “key features” approach to scoping may be useful (A. Prior, unpublished 2008). Migratory birds (e.g. waders) may enter the risk zone if they encounter strong headwinds or bad weather during sea crossing, or when flying at lower elevation close to land, and so need to be included in EIA risk assessment.

This table will be revised in the light of the Offshore Energy SEA and associated revisions by the Crown Estate, further surveys, documentary evidence and research information, as an iterative process involving consultation.

<sup>1</sup>Guilford et al. 2008. GPS tracking of the foraging movements of Manx Shearwaters *Puffinus puffinus* breeding on Skomer Island, Wales. *Ibis* OnLineEarly

<sup>2</sup>McSorley et al. 2003. Seabird use of waters adjacent to colonies. JNCC report 329, Aberdeen

<sup>3</sup>Mitchell et al. Seabird Populations of Britain and Ireland. 2004. A & C Black, London

<sup>4</sup>RSPB 2000. The development of boundary selection criteria for the extension of breeding seabird special protection areas into the marine environment. BirdLife International/RSPB.

<sup>5</sup>Skov et al 1995. Important bird areas for seabirds in the North Sea including the Channel and the Kattegat. BLI, Cambridge

<sup>6</sup>Stone et al. 1995. An atlas of seabird distribution in north-west European waters. JNCC, Peterborough

<sup>7</sup>Stroud et al. 2001. The UK SPA network: its scope and content. JNCC, Peterborough

<sup>8</sup>Wernham et al. 2002. The Migration Atlas: movements of the birds of Britain and Ireland. T & A D Poyser, London



## Assessing Marine Cumulative Effects in SEAs:

### *An Overview of Basic Principles*

#### **Aim of this brief**

This brief aims to present a basic overview of cumulative effects assessment (CEA) as an integral part of Strategic Environmental Assessments (SEA) of marine plans and programmes (referred to jointly as 'plans' below). Most of the examples in this brief relate to cumulative effects on marine biodiversity. However, the basic principles presented here can be applied across all environmental topics.

#### **What can the evaluation of cumulative effects offer to decision makers?**

Cumulative effects cause some of the most serious issues that affect the marine environmental capital on which much of our economic and social activities are based. Many marine environmental problems, such as collapses in fish populations and loss of coastal habitats, result from the cumulative effects of human activities over time and space.

Cumulative effects assessment considers how key environmental receptors are affected by all plans and projects, rather than on the effects of a particular plan or project, within an area that may cross jurisdictional boundaries. Both strategic-level, and project-level, CEA of marine plans and programmes can help decision makers to avoid cumulative effects, and to minimise those that can not be avoided through better siting and phasing of development, and establishing development consent rules for projects.

#### **What are cumulative effects?**

Cumulative effects can be defined as:

*'All effects on the environment which result from the impacts of a plan or project in combination with those overlapping effects from other past, existing and (reasonably foreseeable) future projects and activities'* (Institute for Marine Resources and Ecosystem Studies, 2008)<sup>1</sup>.

The term '**impact**' refers to the exposure of an environmental receptor to an activity/stress, while the term '**effect**' refers to changes to the environmental receptor resulting from the impact. For a more detailed definition of cumulative effects, see *Guidelines for Cumulative Effects Assessment in SEA of Plans* (Section 1)<sup>2</sup>. Generally, cumulative effects can result from three types of activity patterns in the marine environment<sup>3</sup>:

1. Effects of **multiple instances of the same activity, resulting in the same impact** (e.g. multiple offshore wind farms in the same coastal area);
2. Effects of **more than one activity, resulting in the same type of impact** (e.g. accumulation of disturbance effects caused by offshore wind farms, shipping and exploration drilling); and

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<sup>1</sup> Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach, Institute for Marine Resources and Ecosystem Studies (2008)

<sup>2</sup> Guidelines for Cumulative Effects Assessment in SEA of Plans, EPMG Occasional Paper 04/LMC/CEA, Imperial College London. (2004)

<sup>3</sup> Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach, Institute for Marine Resources and Ecosystem Studies (2008)

3. Effects of **more than one activity, leading to multiple different impacts** (also known as effect interaction, e.g. accumulation of various effects caused by offshore wind farms, fishing, and coastal tourism, etc).

Cumulative effects can occur both **spatially** and **temporally**, be **positive** or **negative**, and result from **direct** or **indirect** impacts. These can follow different impact pathways and be:

- **Additive or in-combination**, see points 1 and 2 above (e.g. due to the additive or combined effect of individual effects:  $a + a + a + a \dots =$  significant impact); or
- **Synergistic**, see point 3 above (e.g. stemming from reactions between effects that produce a total effect greater than the sum of its parts:  $a + b + c + d \dots =$  significant impact).

The main explicit legal requirements for assessing cumulative effects in the EU are the SEA<sup>4</sup>, EIA<sup>5</sup> and Habitats Directives<sup>6</sup>.

### **Why assess cumulative effects at a strategic level within an SEA?**

Assessing potential cumulative effects at a strategic level within an SEA allows an overall understanding of the potential impacts of a plan, in combination with other plans, which could lead to cumulative effects. Early consideration of these effects, i.e. at the strategic level, enables decision makers to assess and select alternative solutions that will reduce and/or avoid cumulative effects, as well as implement effective mitigation or compensation measures, thereby avoiding delays that might otherwise arise at later stages in the development process. It is much more unlikely that alternative solutions will be effectively considered at the project level within an Environmental Impact Assessment (EIA) because of the limitations in scope at this stage.

However, strategic-level CEA will not remove the need to also consider cumulative effects at the project level. Assessment of the cumulative effects of plans and subsequent projects should be seen as a tiered approach, with each assessment stage ensuring that, on the information available to it, potentially significant cumulative effects are avoided or minimised. Where EIA is required for a project, the CEA/SEA of the relevant plan should help to speed and facilitate this subsequent assessment, by scoping and informing the main issues for consideration.

### **What are the main development issues affecting UK seas?**

The main development issues affecting UK seas include offshore wind farm construction, wet renewables (e.g. tidal barrages, tidal stream, wave), cable and pipe laying, oil and gas exploration and exploitation, marine mineral dredging, shipping, recreation, coastal development and fisheries. Types of cumulative effects resulting from these drivers include:

- Species decline (e.g. due to removal, collision, barrier effects, displacement and loss of habitat and/or food);
- Habitat change and/or loss (e.g. direct loss of coastal and marine habitats which are built on or removed; indirect effects due to habitat change such as changes or loss of prey species); and
- Pollution (e.g. caused by oil spills, agricultural and urban run-off).

### **Cumulative effects in the marine environment: when do these become significant?**

Cumulative effects tend to affect marine ecosystems' ability to function normally and/or their resilience to change by:

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<sup>4</sup> Directive 2001/42/EC on the 'assessment of the effects of certain plans and programmes on the environment' (the SEA Directive)

<sup>5</sup> Directive 85/337/EEC on the 'assessment of the effects of certain public and private projects on the environment' as amended by Directive 97/11/EC (the EIA Directive)

<sup>6</sup> Directive 92/43/EEC 'on the conservation of natural habitats and of wild flora and fauna' (the Habitats Directive)

- Reducing genetic diversity within species;
- Reducing the adaptability of species within an ecosystem; and
- Reducing the natural diversity and abundance of species/habitats/communities/ ecosystems, thereby upsetting the balance of the ecosystem.

If the ability to function or the resilience of marine ecosystems is eroded by cumulative effects to the point that damage occurs, a ‘critical threshold’ or ‘limit’ is reached, beyond which ecosystems begin to deteriorate. It is when these thresholds are likely to be breached, close to being breached, or breached, that cumulative effects become significant. Considering thresholds is central to assessing cumulative effects and their incremental effect on biodiversity. Currently, there is not much information available on critical thresholds in either the terrestrial or marine environments. However, it should still be possible to define qualitative environmental limits (e.g. in the form of SEA objectives) and precautionary limits against which the cumulative effects of the plan can be assessed (e.g. the EU fishing quota advice, which defines the precautionary levels that fishing mortality should not exceed).

### **Assessing cumulative effects in the marine environment**

Some of the challenges inherent to assessing cumulative effects in the marine environment can be minimised by adopting a receptor-based approach to the assessment. Receptors can be defined in two main ways:

1. Spatially, e.g. a discreet area of estuarine mudflats or the biogeographic range of a population; and
2. By other characteristics, e.g. Pink-footed geese foraging outside the plan area but affected by the plan.

CEA is about estimating, quantitatively where possible, the cumulative effects of human activities on individual environmental receptors and on the environment as a whole. It may not be possible to define all cumulative effects in quantitative terms, and some effects may need to be described in subjective terms based on expert judgement.

Cumulative effects assessment for marine plans follows the same steps as CEA for land use plans. However, the scale of cumulative effects is usually larger and more complex in the marine environment than on land. The CEA principles outlined below are based on English Nature’s *Practical Toolkit for Assessing Cumulative Effects of Spatial Plans and Development Projects on Biodiversity in England*<sup>7</sup>, and the Institute for Marine Resources and Ecosystem Studies report on *Assessment of Cumulative Effect of Activities in the Maritime Area*<sup>8</sup>. As previously mentioned, CEA should be an integral part of an SEA or EIA, not a separate assessment (except in the context of scientific research or management plans).

See Table 1 below for an overview of CEA steps and how these can be applied to marine plans

### **Assessing the likely significant cumulative effects of the UK Offshore Energy Plan**

Ideally, the cumulative effects assessment (CEA) for the UK Offshore Energy Plan should be based on population sensitivity analysis. However, we acknowledge the difficulties inherent in the assessment of cumulative effects and recognize that it will be difficult to carry out a full quantitative CEA due to data limitations. Despite this, it should still be possible to carry out a robust qualitative / semi-quantitative CEA. The CEA approach due to be developed under the auspices of the COWRIE birds sub-group may provide a suitable basis for developing the CEA methodology for this and/or future SEAs.

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<sup>7</sup> A practical toolkit for assessing cumulative effects of spatial plans and development projects on biodiversity in England, English Nature Research Reports, Number 673 (2006)

<sup>8</sup> Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach, Institute for Marine Resources and Ecosystem Studies, report number C018/08 (2008)

The two main cumulative effects on birds that are likely to be significant and of concern are tern and gannet collision with rotors, and displacement of black scoter and red-throated diver. It is possible that in the future wind farms will be found along a sizeable portion of the migration route of red-throated divers and black scoters and cause transboundary cumulative effects. Currently, it is unknown whether there may be adverse effects on shearwaters, but the UK's special responsibility for breeding colonies makes them of potential concern. Also of concern are the combined cumulative effects presented in the Offshore Energy SEA of wind leasing, oil and gas exploration and gas storage on the marine environment, though there will also be interactions with other marine activities.

The scale of the Round 3 programme implies potential for significant cumulative effects both within and between the development zones proposed by the Crown Estate.

### Guidance on Cumulative Effect Assessment

Guidance	Web link
Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach, Institute for Marine Resources and Ecosystem Studies, report number C018/08 (2008)	<a href="http://www.ospar.org/documents/07-08/icg-c/docs/0006_assessment%20of%20cumulative%20effects%2018-06-08.pdf">http://www.ospar.org/documents/07-08/icg-c/docs/0006_assessment%20of%20cumulative%20effects%2018-06-08.pdf</a>
A practical toolkit for assessing cumulative effects of spatial plans and development projects on biodiversity in England, English Nature Research Reports, Number 673 (2006)	<a href="http://naturalengland.communisis.com/naturalenglandshop/docs/R673.pdf">http://naturalengland.communisis.com/naturalenglandshop/docs/R673.pdf</a>
A Practical Guide to the SEA Directive, ODPM (2005)	<a href="http://www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguide%20sea.pdf">http://www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguide%20sea.pdf</a>
The practical implementation of marine spatial planning – understanding and addressing cumulative effects, English Nature Reports, Number 599. (2004)	<a href="http://naturalengland.communisis.com/naturalenglandshop/docs/R599.pdf">http://naturalengland.communisis.com/naturalenglandshop/docs/R599.pdf</a>
Guidelines for Cumulative Effects Assessment in SEA of Plans, EPMG Occasional Paper 04/LMC/CEA, Imperial College London. (2004)	<a href="http://www.environment-agency.gov.uk/aboutus/512398/1504325/1504417/831980/832006/">http://www.environment-agency.gov.uk/aboutus/512398/1504325/1504417/831980/832006/</a>

### Annexes

- I. Non-exhaustive list of impacts and effects as presented in the Marine Strategy Directive (Annex II) including additional impacts (marked with an \*<sup>9</sup>; and \*\* for those added by the RSPB)

<sup>9</sup> Source: Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach, Institute for Marine Resources and Ecosystem Studies, report number C018/08 (2008)

**Table 1: Cumulative effects assessment of marine plans and programmes: Basic principles**

Note: All of the steps below are already part of an SEA process. Because of the complexity involved in mapping out the cumulative effects likely to result from within a marine plan, and from the interaction of that plan with other plans, it may be useful to consult experts when identifying ecological receptors, mapping pathways and identifying mitigation and monitoring methods.

SEA stage	CEA stage	Tasks, tools and suggestions for marine plans
Scoping	<p><b>A. Identify the types of cumulative affects that may arise.</b></p>	<p><b>Task:</b> Identify the main types of cumulative effects likely to arise i) from the activities within the plan itself, and ii) in combination with past, current and future plans (for all activities).</p> <p><b>Tools:</b> An essential part of CEA is analysis of causes and effect pathways (causes → pathways → effects). Causal Chain Analysis (also called Network Analysis) is a good way to illustrate cause-effect relationships between activities and receptors. Spatial analysis and expert opinion are also useful (e.g. GIS). Other tools include consultation and matrices (see page 37 of ‘A practical toolkit for assessing cumulative effects of spatial plans and development projects on biodiversity in England’ for a description of the advantages and disadvantages of different assessment tools).</p> <p><b>Marine Plans:</b> A good way to identify cumulative effects and consider their likely i) spatial scale, ii) temporal scale, and iii) significance is to first identify the main marine environmental receptors that are likely to be under stress from a number of small and cumulatively significant changes. For example, a species foraging within the plan boundaries, or an important resource such as coastal habitats or water quality,</p>
	<p><b>B. Decide if an assessment of cumulative effects is required.</b></p>	<p><b>Task:</b> If the preliminary cumulative effects identified are likely to be significant, these will need to be assessed. Significance is determined by the likelihood and magnitude of the effect.</p>
	<p><b>C. Identify the environmental receptors that are likely to be affected, as well as spatial and temporal boundaries.</b></p>	<p><b>Task:</b> Describe the geographical extent of the area likely to be affected by the plan, and the receptors likely to be involved (main receptors will have been initially identified in Stage A).</p> <p><b>Marine Plans:</b> Note that the spatial boundaries for CEA depend on several factors including; i) the type of plan, ii) the receptors being considered, iii) the cause-effect pathways through which the plan affects the receptors, and (iv) any effects the plan has outside its geographic boundaries. For example, a migratory bird species may require a larger area for assessment than a <i>Sabellaria</i> reef.</p>

SEA stage	CEA stage	Tasks, tools and suggestions for marine plans
<p><b>Predicting and evaluating the effects of the plan</b></p>	<p><b>D. Predict and assess the likely cumulative effects.</b></p>	<p><b>Task:</b> Both the cumulative effects of the plan, <b>and its likely alternatives</b>, on receptors should be predicted and their significance assessed. This stage, in particular, should feed back into the refinement of the plan (i.e. influence decisions on siting, phasing of projects and/or setting development consent requirements/conditions and other mitigation measures).</p> <p>Commentaries describing the cumulative effects identified, and highlighting key issues and uncertainties, should accompany scored matrices. The conclusions of the CEA should be listed under a separate heading within the Environmental Report.</p> <p><b>Tools:</b> These include matrices, carrying capacity analysis and threshold assessment, and modelling. However, in many cases, lack of information can limit quantitative assessment.</p> <p><b>Marine Plans:</b> Predicting marine cumulative effects at a strategic level can be complex and uncertain. The precautionary principle should be applied when evaluating the risk of potential cumulative effects. For example, Ministers and the European Commission take into account scientific advice, which applies the precautionary principle, regarding the acceptable levels of fish mortality and use this advice to inform the setting of fishing quotas, which are usually precautionary levels.</p> <p>Note that the assessment will need to consider effects of activities that will start or last into the foreseeable future, and take a multisectoral view, i.e. consider effects of energy, fisheries, tourism plans etc.</p>
<p><b>Identifying mitigation measures</b></p>	<p><b>E. Identify ways of mitigating adverse cumulative effects and enhancing beneficial ones.</b></p>	<p><b>Task:</b> All necessary measures to mitigate negative effects, and potential enhancement measures to maximise beneficial effects, should be considered. Any residual effects should be identified (i.e. effects that cannot be mitigated). This stage and the assessment stage above should feed into one another.</p>
<p><b>Monitoring significant environmental effects</b></p>	<p><b>F. Develop proposals for monitoring cumulative effects.</b></p>	<p><b>Task:</b> Detail how the environmental performance of the plan or programme can be monitored.</p>

**Annex 1: Non exhaustive list of impacts and effects as presented in the Marine Strategy Directive (Annex II), including additional effects (marked with an \*; and \*\* for those added by the RSPB)**

<b>Impacts</b>	<b>Effects</b>
Physical loss	<ul style="list-style-type: none"> <li>• Smothering</li> <li>• Sealing</li> </ul>
Physical damage	<ul style="list-style-type: none"> <li>• Siltation</li> <li>• Abrasion</li> <li>• Selective extraction</li> <li>• * Non-selective extraction</li> <li>• ** Collision</li> </ul>
Other physical disturbance	<ul style="list-style-type: none"> <li>• Noise &amp; ** vibration</li> <li>• Visual</li> <li>• Migration &amp; ** movement barrier</li> <li>• Electromagnetic radiance</li> <li>• Water/tidal flow changes</li> <li>• Marine litter</li> </ul>
Interference with hydrological processes	<ul style="list-style-type: none"> <li>• Changes in thermal regime</li> <li>• Changes in salinity</li> </ul>
Contamination by hazardous substances	<ul style="list-style-type: none"> <li>• Introduction of synthetic compounds</li> <li>• Introduction of non-synthetic compounds</li> <li>• Introduction of radio nuclides</li> </ul>
Nutrient and organic matter enrichment	<ul style="list-style-type: none"> <li>• Nutrient enrichment</li> <li>• Organic enrichment</li> <li>• Changes in thermal regime</li> <li>• Changes in turbidity</li> <li>• Changes in salinity</li> <li>• * Changes in pH #</li> </ul>
Biological disturbance	<ul style="list-style-type: none"> <li>• Introduction of microbial pathogens</li> <li>• Introduction of non-indigenous species and translocations</li> <li>• Selective extraction of species, including bycatch</li> <li>• ** Collision</li> </ul>
Other disturbances	<ul style="list-style-type: none"> <li>• Visual</li> <li>• Changes in turbidity</li> <li>• Changes in pH #</li> </ul>

Source: adapted from *Assessment of the cumulative effect of activities in the maritime area: overview of relevant legislation and proposal for a harmonised approach*, Institute for Marine Resources and Ecosystem Studies, report number C018/08 (2008)



## Assessing Strategic Alternatives Using Causal Chain Analysis (CCA)

### Introduction

This brief provides an overview of how causal chain analysis (CCA) could be used to assess alternative scenarios for high level plans in the context of Strategic Environmental Assessment (SEA).

At a strategic level, details are often lacking, making it difficult to assess alternatives. Causal chain analysis, also known as Network Analysis, provides an easy to understand, visual method of tracing the key consequences of strategic alternatives and identifying their environmental effects. It is a transparent approach that links causes and effects from source to receptor, and can be combined with other assessment tools, including spatial analysis and matrices.

Causal chains can be particularly useful in identifying<sup>1</sup>:

- Cumulative effects
- The likely significance of effects
- Gaps in baseline information
- Areas where research is needed
- Mitigation measures needed to reduced negative effects and enhance positive ones
- Causal chains can also be used as a basis for generating discussion

The CLG *Practical Guide to the Strategic Environmental Assessment Directive*<sup>2</sup> suggests CCA as a possible methodology for SEA.

### Strategic alternatives & the UK Offshore Energy Plan

We warmly welcome the receptor-based approach to the assessment of the UK Offshore Energy Plan as detailed in the scoping report. The 'Hierarchy of Options' procedure is also welcome as it provides some theory on how alternatives should be determined and assessed. However, the SEA process is so far missing out the second step of the 'Hierarchy' mentioned above; the consideration of alternative modes or processes, as illustrated by the initial alternatives identified. The following initial alternatives are considered in the scoping report for future offshore wind leasing, oil and gas licensing and gas storage:

1. Not to offer any areas for leasing/licensing.
2. To proceed with a leasing and licensing programme.
3. To restrict the areas offered for leasing and licensing temporally or spatially.

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<sup>1</sup> Sheate W. & A. Kiely. Causal chain analysis: making the links. October 2007, Magazine of the IEMA

<sup>2</sup> <http://www.communities.gov.uk/publications/planningandbuilding/practicalguidesea>

The scoping report notes that these initial alternatives will be refined during the assessment process. In order to cover a range of reasonable alternatives (as required by the SEA Directive), this refinement process should involve developing a set of strategic alternatives for wind leasing, oil and gas licensing and gas storage, individually.

The scoping report notes that **activity scenarios**, detailing a credible range of activities, will be developed and used as the basis for the assessment (i.e. will be evaluated against the SEA objectives in receptor-based matrices). Assessment of strategic alternatives through causal chains analysis could complement and inform the assessment of the more detailed activity scenarios (see the Wales Rural Development Plan SEA which developed 26 causal chains to inform the assessment of the plan<sup>3</sup>).

### **Assessing strategic alternatives using causal chains**

Overleaf is an example of a causal chain outlining the likely primary and secondary effects of a potential UK Offshore Energy Plan wind leasing scenario on key ecological receptors. In this theoretical scenario which we developed for illustrative purposes, 40% of the 25GW target is concentrated on the UK's East coast, with 10-20% located in the Irish Sea, and the rest distributed in the South West, North Wales coast, South Wales and Greater Bristol Channel. The causal chain includes suggestions for possible mitigation measures, as well as comments on data gaps and the implications of some of the effects identified. This example is only moderately detailed to illustrate the process but could be further developed, e.g. the significance of the effects identified could be evaluated.

Other potential strategic alternatives for wind leasing include:

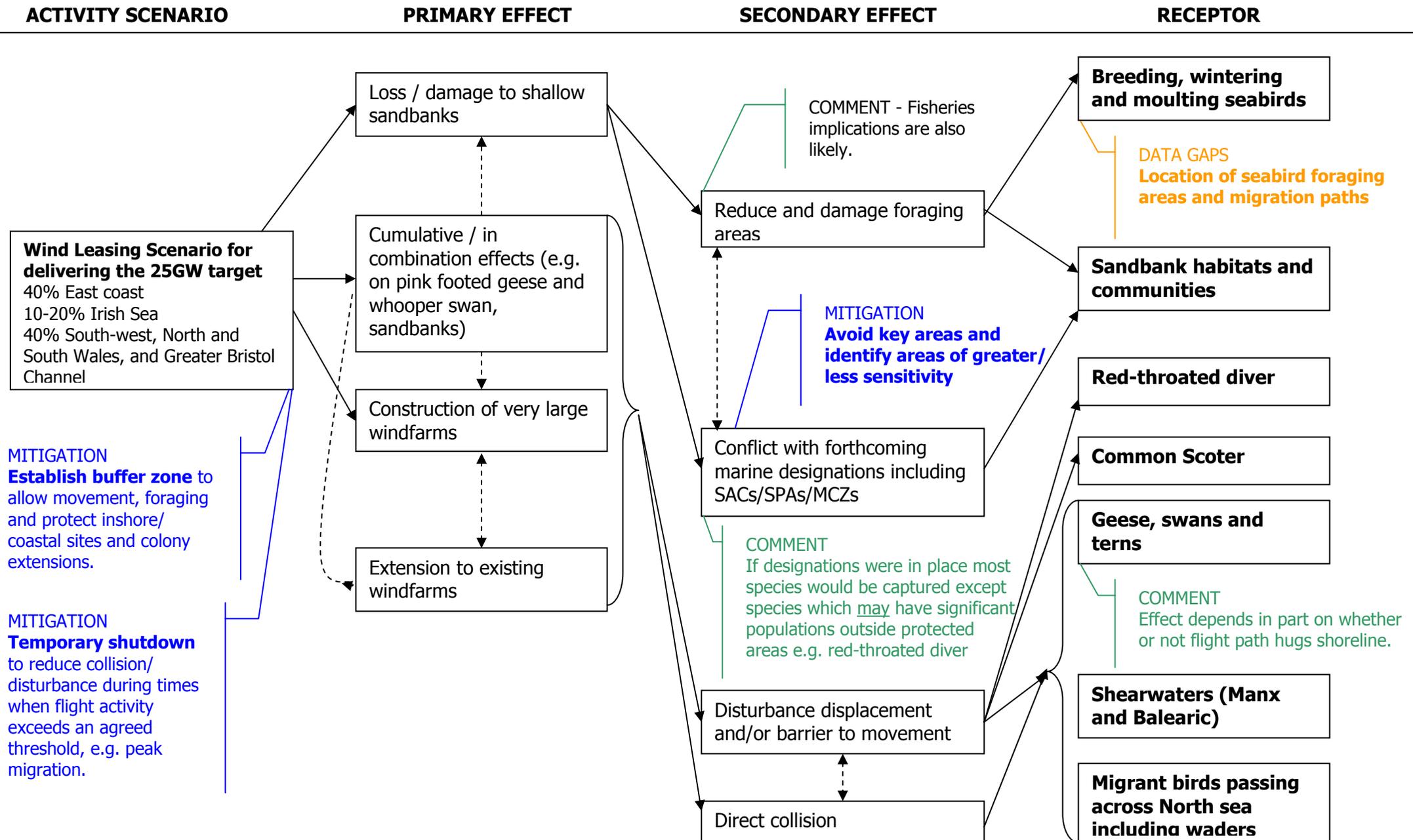
- Concentrating 80% of the UK Offshore Energy Plan 25GW target along the East coast (Greater Wash to Dogger banks), with 20% in the Irish Sea.
- Concentrating the 25GW target in the areas identified by the Crown Estate during the launch of round 3 of offshore windfarm leasing.
- More generic alternative scenarios including a) numerous smaller vs. fewer larger offshore wind farms, and b) a greater number of nearshore vs. offshore sites

We have not covered strategic alternatives for oil and gas licensing and gas storage in this brief. However, these scenarios could also be developed and assessed at a strategic level using causal chains.

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<sup>3</sup><http://wales.gov.uk/topics/environmentcountryside/farmingandcountryside/ruraldevelopment/20072013ruraldevelopmentplan/?lang=en>

**Causal chain of the likely primary and secondary effects of a wind leasing scenario on key ecological receptors.**





# **OFFSHORE ENERGY SEA ENVIRONMENTAL REPORT**

## **THE WILDLIFE TRUSTS' RESPONSE TO THE CONSULTATION**

**22nd April 09**



**The Wildlife Trusts  
The Kiln, Waterside, Mather Road, Newark, NG24 1WT  
Registered Charity No. 207238**



## **INTRODUCTION**

1. There are 47 local Wildlife Trusts across the whole of the UK, the Isle of Man and Alderney. We are working for an environment rich in wildlife for everyone.
2. With 765,000 members, we are the largest UK voluntary organisation dedicated to conserving the full range of the UK's habitats and species whether they be in the countryside, in cities or at sea. 135,000 of our members belong to our junior branch, Wildlife Watch and our expert staff are aided by a formidable workforce of more than 39,000 volunteers.
3. We manage 2,200 nature reserves covering more than 80,000 hectares, including over 200 coastal and marine reserves; we stand up for wildlife; we inspire people about the natural world and we foster sustainable living.
4. The Wildlife Trusts have been campaigning for many years for comprehensive legislation to achieve better protection for marine wildlife and effective management of our seas.
5. The UK's marine environment is extraordinarily rich in wildlife, harbouring many thousands of animal and plant species. But these species, and their habitats, are poorly protected compared to terrestrial wildlife, and under increasing pressure as marine activities proliferate and climate change disturbs the marine ecosystem. We welcome the opportunity to respond to the Offshore Energy Strategic Environmental Assessment (SEA) Environmental Report, and provide a number of points detailed below.

## **OVER-ARCHING COMMENTS ON THE CONSULTATION**

1. We wish to congratulate the Department of Energy and Climate Change (DECC) and their consultants on producing a very thorough and comprehensive review of the available environmental data and information. It is clear that a huge amount of work has been undertaken in producing this environmental report and we are sure that the data acquired will be of use beyond the scope of this strategic environmental assessment.
2. The Wildlife Trusts support the UK's targets to reduce greenhouse gas emissions and the Government's ambitions to tackle climate change and increase the proportion of overall energy generated from renewable sources. We share the sense of urgency in deploying and developing solutions to move the UK towards a low carbon society.
3. We believe securing widespread public support for the transition to a low carbon economy is critical. This will be helped considerably if large-scale renewable projects are seen to respect the natural and cultural environment.
4. Offshore wind energy is essential part of moving to a zero carbon power sector. We therefore support the exploration of suitable sites in order to harness the considerable power resource of the wind, to contribute to emissions reductions beyond 2020.
5. We also believe that there should be a willingness from government to put in place the radical policies needed on energy demand, greater decentralised supply and technology



innovation in order to meet government's targets to reduce greenhouse gas emissions by 80% by 2050.

6. Whilst we acknowledge that the SEA considers hydrocarbon gas storage in order to increase the UK's storage capacity and maintain resilience of gas supply in cold weather periods of high demand or interruptions to imported supplies, it is not clear what monitoring and controls will be essential to assessing the potential effects of storing hydrocarbon gases. We would welcome clarification of the safeguards in place.

### **What are the alternatives to the draft plan/programme?**

- (1) Not to offer any areas for leasing/licensing
- (2) To proceed with a leasing and licensing programme
- (3) To restrict the areas offered for leasing and licensing temporally or spatially

The Wildlife Trusts support the conclusion of the environmental report which recommends that alternative (3) to the draft plan/programme is the preferred option, with the area offered restricted spatially through the exclusion of certain areas. We welcome that a number of mitigation measures to prevent, reduce and offset significant adverse impacts on the environment and other users of the sea will be implemented.

## **ENVIRONMENTAL REPORT**

### **Biodiversity, habitats, flora and fauna**

1. We acknowledge that given the lack of definition of the actual survey and development programmes which the draft plan/programme may entail (in terms of duration, nature of acoustic sources and the potential for temporal or spatial mitigation during construction, operation and decommissioning), it is also not possible to make specific recommendations concerning mitigation. However, we welcome that as such, project-specific assessments will be required for all areas under the existing regulatory regime, including requirements for consideration of deliberate disturbance of cetaceans.
2. In key areas of marine mammal sensitivity, where operational criteria are to be established to limit the cumulative pulse noise "dose" (resulting from seismic survey and pile-driving), in addition to the development of mitigation methodology and communication between DECC, JNCC and the future MMO, guidance should also be frequently re-visited in order to take into consideration the latest scientific findings, as significant adverse effects are likely without mitigation.
3. The Wildlife Trusts welcome the fact that given the relative sensitivity of multiple receptors in coastal waters, that new generation capacity should be sited well away from the coast, generally outside 12 nautical miles (some 22km).
4. Although in certain cases new offshore wind farm projects may be acceptable closer to the coast, we welcome the precautionary approach that considers that buffer zones may be required in excess of 12 nautical miles.



5. Where wind farms are to be considered closer to shore, careful and detailed consultation should be undertaken to ensure that any impacts are minimised. Of course, in any development, whether nearshore or offshore, connection to the grid still plays a major part and could impact upon sensitive marine sites through cable laying. This element of development should be adequately considered in all applications for licensing, with suitable spatial restrictions as required.
6. We are pleased that data gaps in our knowledge and understanding have been recognised, and that there is recognition that developers will need to be aware that adequate data is a prerequisite to effective environmental management of activities.
7. As our scientific knowledge and understanding increases, the latest information should be considered in all development proposals to enable the best available information to be utilised at the time. Efforts should also be made to fill data gaps where necessary.

#### **Other users, material assets (infrastructure, other natural resources)**

8. *The range and importance of existing and some potential uses of the sea are described in Appendix 3 of the Environmental Report, with key aspects summarised. In advance of formal marine spatial planning, the approach taken in this SEA has been to obtain accurate and recent information on other current and likely uses of the sea in the foreseeable future, to facilitate identification of sensitive areas and measures to reduce the scope and scale of significant adverse effects.*
9. It will be important however, to apply the principles of marine spatial planning, as outlined in the Marine and Coastal Access Bill to any future plans or projects to ensure that all potential uses and cumulative impacts are considered.

#### **Interrelationships - Cumulative effects**

10. Although the effects of multiple noise sources is an area acknowledged as requiring better understanding, there is no information provided as to how this major data gap, or others (as discussed above) will be filled. It is of crucial importance in marine planning and licensing that cumulative impacts are considered as licensing applications come to the table. Only by taking a holistic approach can we safeguard against damage to the marine environment.

#### **Interrelationships - Wider policy objectives**

11. *Efforts are (or will be) underway to identify offshore Marine Conservation Zones/Marine Protected Areas e.g. under the Marine Strategy Framework Directive, OSPAR and the Marine and Coastal Access Bill. Where the objectives of the conservation sites and renewable energy development are coincident, preference should be given to locating wind farms in such areas to reduce the potential spatial conflict with other users.*
12. We seek clarification on the above statement as it can be read a number of ways, i.e. that development should not occur in Marine Conservation Zones (MCZs)/Marine Protected Areas (MPAs); that where objectives are coincidental that developments should be given precedent; that developments should be put inside MCZs where their objectives are compatible.



13. We wholly support the “Government commitment to build an ecologically coherent network of MPAs” as published in the *Consultation on Delivering Marine Conservation Zones and European Marine Sites: A draft strategy for marine protected areas*, published on the 21<sup>st</sup> April 2009.
14. We recognise that sites such as offshore wind farms, once installed and working could provide benefits for marine conservation. For example, through the exclusion of mobile fishing gear.
15. As such offshore wind farms may have a place in an ecologically coherent network, but attempts to find mutual benefit must not undermine the achievement of an ecologically coherent network. The network is paramount and should be the foremost consideration.

## **Conclusion**

1. Given the huge spatial scale of the Environmental Report and the level of data required to conduct a full and proper assessment of offshore wind, oil & gas exploration and hydrocarbon exploration we congratulate DECC on the production of this report.
2. We urge data gaps to be filled where necessary and cumulative impacts to be assessed through detailed assessment and marine spatial planning analysis.
3. We seek clarification concerning the siting of offshore wind farms in respect to the ecologically coherent network of MPAs, to which the Government is committed to achieving. Whilst there may be a role for sites within the network, development of network is paramount and designation of MPAs should be first and foremost.
4. In order to achieve the UK’s ambitious targets to tackle climate change, reduce emissions and develop renewable technology without negatively impacting upon the marine environment we have to ensure that the right technology is in the right place.
5. We are moving into a new era for energy production. If we are going to proceed with development on this scale and, in the marine environment, we must ensure we get it right, both for people and wildlife.



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20<sup>th</sup> April 2009

**WDCS' response to the UK Offshore Energy Strategic Environmental Assessment.**

The Whale and Dolphin Conservation Society (WDCS) welcome the production of the SEA, and regard robust spatial planning as important for marine protection.

We welcome the conclusion that areas of importance to cetaceans should be avoided for offshore wind developments. This statement should also be clearly applied to oil and gas developments.

We are concerned however that no such areas are specifically identified. It is acknowledged that the information on distribution of cetaceans is lacking. This is particularly true for offshore areas where wind farms, and many oil and gas developments are proposed. The Appropriate Assessment for oil licensing in Cardigan Bay, Wales, concluded there was insufficient information to allow licensing. This is still the case and is likely to remain this way, as all government/statutory agency funding for dolphin survey in the Bay has been cut – this area therefore should continue to be identified as an area where licensing is not appropriate.

Likewise, as the Moray Firth in Scotland is currently under special consideration by DECC before future seismic occurs, we consider that further licensing would be inappropriate here. Further, given that this SEA considers oil and gas as well as renewables, DECC should consider possible wind developments in the outer Moray Firth in its current discussions and research plans within the Moray Firth.

The SEA should clearly have shown areas that are considered important to cetaceans which are not to have developments; areas where there is currently insufficient information to make a decision at this stage, and so should be avoided on a precautionary basis; and areas where there is sufficient information to propose development pending the outcome of a full Environmental Impact Assessment.

To date, the only areas that have been out of bounds are those designated as Special Areas of Conservation (SACs). As has been stated many times in previous SEA comments, this is clearly inappropriate in that SAC designation is only applicable for two of the UK's 24+ species of whales, dolphins and porpoises. Those species that are endangered, such as the fin and blue whales, are currently afforded no protection despite residing in offshore UK waters that coincide with oil and gas

exploration and development year round. We also note that all cetaceans are meant to be protected under EU law (see below).

There is an over reliance on the SCANS surveys to provide information on cetacean distribution. These were broad transect surveys and not designed to give site specific information. Many areas of importance for cetaceans, such as Cardigan Bay, were not covered in these surveys. We would like to have seen a specific commitment to a programme of cetacean surveys, similar to the programme of bird surveys currently underway. Compiling information about species distribution and abundance does not go far enough. Tangible efforts to investigate impacts, and where impacts are known, protect populations are required.

Therefore, WDCS favour alternative 3 to the draft plan/programme 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.

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 species need to be considered very carefully. The Appropriate Assessment is therefore not applicable to most species and most locations, and we do not believe the project based Environmental Assessment has been applied robustly enough to assess important issues such as effects on noise where there is considerable uncertainty. Two studies have shown that a significant proportion of Environmental Statements are inadequate.

WDCS consider that there should be a lot more work on the zone of influence of noise, particularly given recent work demonstrating the limited effectiveness of broad mitigation methods for the protection of cetaceans from intense noise pollution (for example, Dolman et al., 2009; Parsons et al., 2008, 2009). There should be a suitable buffer around areas identified as important for cetaceans which should be treated the same way as protected areas. There should also be consideration of noise effects on animals from protected areas that spend part of their time in different areas. For example, dolphins from within the Cardigan Bay SAC have been identified around the North Wales Coast – close to a wind farm development area. The potential for impact on cetaceans in all waters need to be considered and not continue with an over reliance on the woefully inadequate protected areas. Similarly the animals protected within the Moray Firth SAC are found roaming down the northeast coast of Scotland and into English waters around Newcastle. Yet, the cumulative impacts of developments and activities relating to oil and gas development, marine wind developments, coastal harbour developments and expansions are not considered.

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 praise the research conducted under the SEA process on vocalisations of large baleen whales in the Atlantic Frontier. We know that fin whales are vulnerable to noise impacts (Borsani et al., 2007; Clark & Gagnon, 2006) so it is imperative that the full analysis is conducted and informs decisions without delay. Fin whales are an endangered species and yet they, along with all our other large baleen

whale and offshore species, are currently given no tangible consideration in decisions surrounding licensing of oil and gas, or any other decisions made.

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## **WWF-UK Response to 'Future Leasing for Offshore Wind Farms and Licensing for Offshore Oil & Gas and Gas Storage: Environmental Report'**

WWF-UK welcomes the opportunity to respond to the consultation on the Environmental Report released by the Department of Energy and Climate Change (DECC) outlining the outcomes of the Strategic Environmental Assessment (SEA) of the draft plan/programme for future leasing for offshore wind farms and licensing for offshore oil and gas and gas storage. WWF-UK has been involved in commenting on previous rounds of offshore leasing and licensing and we currently have a seat on the SEA Steering Group as a stakeholder, which we have not utilised over the past year. WWF-UK has concerns about the failure of previous SEAs, specifically related to offshore oil and gas licensing, to properly deal with climatic factors and bottlenose dolphins in SACs. WWF appreciates the opportunity to provide input into this process and encourage DECC to continue improving their approach in seeking the highest level of protection of the marine environment required when undertaking offshore energy development.

### **SUMMARY**

WWF-UK welcomes the acceptance of the likely impact of this plan/program on climatic factors, notably climate change and the identification of many potential impacts from climate change on people and nature. However, WWF-UK finds that the SEA fails to properly assess the impacts on the environment and people, as well as the scale, importance, significance and reversibility of potential impacts. The SEA also fails to offer methods to reduce such impacts or mitigate/offset them, as required by the SEA Directive<sup>1</sup>. For these reasons, we believe that the SEA is inadequate and fails to fulfil the requirements of the SEA Directive.

WWF-UK strongly urges DECC to withhold from licensing for oil and gas in and adjacent to the bottlenose dolphin SACs in Wales and Scotland. It has already been concluded in an Appropriate Assessment that the Cardigan Bay SAC should not have oil and gas licensing and this should be adopted in this SEA also. We also expect that other areas withheld from licensing in previous SEAs should also be removed from consideration in this plan.

WWF-UK is greatly concerned that this SEA displays several biases toward favouring the development of oil and gas over and above offshore wind energy developments and gives examples of this. We recommend that DECC revise the draft SEA to redress this imbalance.

Consequently, WWF-UK finds that parts of the SEA need to be redrafted and offers suggestions of how SEAs should address climate change impacts to achieve compliance with the SEA Directive.

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<sup>1</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment



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## Scope of SEA

WWF-UK is pleased to see that the SEA Environmental Report has succeeded in collating and analysing a vast amount of environmental and socio-economic information. We welcome the receptor based assessment, the precautionary approach adopted on many fronts and the incorporation of SEA Steering Group and COWRIE contributions. We are encouraged to see that the approach adopted has improved progressively over completion of SEAs 1 – 8.

In commenting on previous SEAs, WWF-UK submitted that the scope of the SEAs were too narrowly focused on oil and gas licensing and we advocated a shift to expand consideration of environmental assessment in a truly strategic way. We recommended that the UK's 2007 Energy White Paper and subsequent energy policy should be subject to SEA, as this was a more appropriate level at which to conduct an SEA that is truly strategic. We still consider that it is appropriate to fully utilise the SEA tool at a level where strategic considerations would be most beneficial to environmental protection – at the wider energy level. However, this has not been done as there was no SEA undertaken for the Energy White Paper and the government continue to insist that SEA is not required to be undertaken for high level policy. We consider that it is critical that the current and any future SEA processes are undertaken in full compliance with the SEA Directive and take on board the full range of secondary and cumulative climate change impacts.

In previous work on SEAs, WWF-UK felt that there was not sufficient strategic coordination between the various government departments in respect of harmonising the SEA process to include strategic assessment of both oil and gas and renewables. We are pleased to see that the latest SEA does now include assessment of oil and gas licensing *and* offshore wind leasing. WWF-UK submits that opportunities should be sought to substitute hydrocarbon development for renewables, both geographically and in energy composition replacement due to the lesser environmental impacts from renewables.

WWF-UK reiterates its concerns that there is a sense that marine renewables are considered as if they are in direct competition for seabed space with oil and gas. If the UK is truly moving towards a low carbon economy and seeking to meet its UK carbon emission reduction targets and EU renewable energy targets, then there must be *no* competition and the government must seek to maximise the potential for marine based renewables. We strongly suggest that if an area of seabed is considered suitable for both renewables and hydrocarbons, renewables must be given priority access. In support of this, effective marine spatial planning should be carried out taking account of climate change impacts from developments and with an ecosystem based approach which includes the climate as part of the marine ecosystem.

WWF-UK notes that there are currently a number of other SEAs being conducted for plans/programmes being considered by the Government, including within the appraisal of sustainability for energy National Policy Statements and the SEA for the Severn Tidal Power project. We seek confirmation from DECC that all these SEA processes will be consistent and linked in a coordinated way to ensure that the objectives of each plan/programme can be achieved in a complementary manner without increased potential for environmental impact.

WWF-UK also notes that the current SEA and draft plan/programme do not include the territorial waters of Scotland and Northern Ireland. Whilst we recognise that the reason is because these are devolved powers, we express concerns with any necessary alignment of strategic considerations across all regions.

WWF-UK is unclear as to why Carbon Capture and Storage is not covered better in this SEA and would like to see the SEA consider this. We note that the SEA is stated to cover gas storage. However, it is not made clear whether this is to include storage of both natural gas and CO<sub>2</sub>. As a result, it is also not clear whether the impacts identified and assessed are relevant in respect of storage of natural gas and/or CO<sub>2</sub>. WWF-UK requests clarification of this point in order to determine if the SEA has sufficiently addressed impacts related to gas storage.

## Objectives and Reasonable Alternatives

The SEA Environmental Report defines the main objectives of the current plan/programme as:

*“to enhance the UK economy, contribute to the achievement of carbon emission reductions and security of energy supply, but without compromising biodiversity and ecosystem function, the interests of nature and heritage conservation, human health, or material assets and other users”<sup>2</sup>.*

WWF-UK notes that this objective differs from the objectives of previous SEAs in that a broader context is applied and the objectives are not limited to the exploration and appraisal of oil and gas resources. However, the overall context and objectives are clearly focused on what DECC considers to be the main challenges - tackling climate change by reducing carbon emissions and ensuring secure, clean and affordable energy. An important omission from the context and objectives of the SEA is to ensure the protection of the marine environment. This is not quite the same as saying *“without compromising biodiversity and ecosystem function...”*. WWF-UK suggests that a more balanced context should be applied to include mention of the wealth, value and diversity of the marine environment in addition to justifications on economic contribution from activities.

Given the broad nature of the stated objectives of the draft plan/programme, WWF-UK queries how the reasonable alternatives have been limited to three:

1. not to proceed with any areas for leasing/licensing - the “do nothing” option;
2. to proceed with a leasing and licensing programme – the “business as usual” option;
3. to restrict the areas offered for leasing and licensing temporally or spatially.

We question whether the third alternative is in fact an alternative in its own right or merely a variation of the second alternative. Ultimately, the alternatives are to proceed with the plan/programme or not to proceed. The third alternative appears to be an option intended to cover the whole range of possible variations within the extremes of alternatives 1 and 2.

As we have stated in the past, WWF-UK considers that this range of alternatives does not allow for adequate assessment of viable options to the draft plan/programme. Other possible measures that could enhance the UK’s economy, assist in achieving carbon emission reductions and provide security of energy supply have not been considered. For example, there is no mention of measures such as increasing energy efficiency and reducing energy demand.

Rather, the context described in relation to offshore oil and gas licensing is that:

*“fossil fuels will continue to be the predominant source of energy for decades to come.... Making efficient use of the UK’s own energy reserves brings obvious benefits both in the contribution it can make to a diverse UK energy mix and to the economy in terms of jobs, investment and national income generated by the sector”<sup>3</sup>.*

The Report goes on to quote the 2007 HM Treasury discussion on the Energy White Paper, which states that the *“UK Government remains committed to promoting a healthy and prosperous UK oil and gas industry and maximising the economic recovery of the UK’s oil and gas reserves”*. WWF-UK is concerned that comments such as these evidence a favouritism towards exploitation of oil and gas resources over and above other sources of energy or a package of measures which could be used to meet the challenges of climate change and energy security.

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<sup>2</sup> page i of the Non-technical Summary

<sup>3</sup> Page ii of the Non-technical Summary

WWF's Climate Solutions research<sup>4</sup> describes WWF's Vision for 2050 and shows that the world has more than enough sustainable energy and technology to curb climate change, but key decisions need to be made now. A clear role for renewable energy is envisaged in the context of a broader range of necessary solutions:

- Reducing energy demand through energy efficiency and conservation – the top priority;
- stopping forest loss;
- accelerating the development of low-emissions technologies such as wind, hydro, solar PV and thermal, and sustainably produced bio-energy;
- developing flexible fuels, energy storage and new infrastructure;
- replacing high-carbon coal with low-carbon gas; and
- equipping fossil-fuel plants with carbon capture and storage technology.

WWF-UK would like to remind government of the important **findings from analysis by Pöyry in 2008** which we commissioned earlier this year jointly with Greenpeace in order to look at the implications for the UK electricity sector of meeting the UK's share of the EU renewable energy target<sup>5</sup>.

The report was based on the assumption (supported by government analysis) that there was around 76GW of connected capacity in 2007. Of this, 22.5GW is expected to close by 2020. Pöyry consultants constructed various scenarios of energy demand and renewable energy growth to ascertain whether these technologies would be able to meet the so-called 'energy gap'. Key findings of the Pöyry analysis are:

- if the government meets its own energy efficiency and renewable targets, new baseload electricity generation capacity will not be needed until the period beyond 2020. By this point other low carbon technologies will be close to commercialisation;
- the combination of renewable energy generation and energy efficiency results in up to 42% reduction in gas use, thereby reducing UK dependency on gas imports and strengthening energy security;
- in the scenarios developed, the UK's carbon dioxide (CO<sub>2</sub>) emissions are reduced by up to 37% (from 1990 levels) by 2020.

This analysis shows that in contrast to the views of government and industry, there is no need to build new fossil-fuelled power generation to keep the lights on in the UK. Instead, the focus should be on delivering existing targets and commitments for energy efficiency and renewable energy. Further, we must push for development and commercial deployment of innovative, low carbon technologies which have less environmental impact as a priority.

The government's top priorities must, therefore, be to lead a strong drive for energy efficiency and create the best conditions for a transformative expansion in sustainable, low-impact renewable energy production capacity. WWF-UK believes that government policy must deliver on the new UK energy efficiency and renewable energy targets from the EU, because in doing so, it will help ensure that the key objectives on energy security, energy independence and climate change mitigation are achieved. While there may be some significant costs involved initially, an efficient energy system powered by renewables will be less exposed to shocks in fossil fuel prices – and the shift to such a low carbon economy can be expected to yield huge benefits in terms of job creation and new opportunities for British businesses. As repeated and advocated by Lord Stern this week (21<sup>st</sup> April, 2009)<sup>6</sup> in his article, *'Enough green talk. Now*

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<sup>4</sup> WWF-UK (2007), Climate Solutions report: <http://assets.panda.org/downloads/climatesolutionweb.pdf>

<sup>5</sup> 'Implications of the UK meeting its 2020 renewable energy target: A Report to WWF-UK and Greenpeace UK' (August 2008) [http://assets.wwf.org.uk/downloads/poyry\\_2020renewabletarget.pdf](http://assets.wwf.org.uk/downloads/poyry_2020renewabletarget.pdf)

<sup>6</sup> [http://www.timesonline.co.uk/tol/comment/columnists/guest\\_contributors/article6135687.ece](http://www.timesonline.co.uk/tol/comment/columnists/guest_contributors/article6135687.ece)

*make it happen'* released a day ahead of the UK's budget announcements and in which he states the following;

*"The third runway go-ahead throws doubt on the Government's eco-credentials. This Budget could put it back on track. Tomorrow's Budget is a critical test of the consistency and credibility of the Government's policies on climate change. The Government has accepted the overwhelming arguments for reducing our emissions of greenhouse gases by at least 80 per cent, compared with 1990, in the next 40 years".*

In light of the above, and if the stated challenges to be met and the objectives of the draft plan/programme are considered, the range of alternative solutions offered within the SEA are not sufficient. SEA is intended to be a strategic level assessment that should inform the development of the plan/programme and the identification, description and evaluation of reasonable alternatives (see Article 1, Article 5(1) and Annex 1(h)). The SEA Directive requires consideration of 'reasonable alternatives', taking into account the plan's objectives and geographical scope. The EU Guidance<sup>7</sup> considers the requirements in relation to alternatives at paragraphs 5.11 – 5.14. Paragraph 5.11 states:

*"The obligation to identify, describe and evaluate reasonable alternatives must be read in the context of the objective of the Directive which is to ensure that the effects of implementing plans and programmes are taken into account during their preparation and before their adoption."*

In paragraph 5.12 it goes on:

*"...The essential thing is that the likely significant effects of the plan or programme and the alternatives are identified, described and evaluated in a comparable way. The requirements in Article 5(2) concerning the scope and level of detail for the information in the report apply to the assessment of alternatives as well. It is essential that the authority or Parliament responsible for the adoption of the plan or programme as well as the authorities and the public consulted, are presented with an accurate picture of what reasonable alternatives there are and why they are not considered to be the best option."*

Paragraph 5.13 states:

*"...The first consideration in deciding on possible reasonable alternatives should be to take into account the objectives and the geographical scope of the plan or programme.... An alternative can thus be a different way of fulfilling the objectives of the plan or programme..."*

Taking into account this guidance, WWF-UK considers it important to ensure that the options are not artificially limited at the outset and that potential reasonable alternatives should not be discounted prior to the SEA process being completed. There is now clear policy acceptance (through the adoption of the SEA requirements at UK level) of an iterative approach to selecting major project options. The whole structure of decision making now presupposes that a decision maker does not start with a particular option and try to justify it, but rather starts with plan/programme objectives and then through an iterative process assesses how best to deliver those plan/programme objectives in the light of environmental considerations.

WWF-UK again calls for a fundamental change in the approach used in identifying reasonable alternatives for the purpose of SEA to ensure that the assessment of alternatives is not skewed due to the restricted nature of the alternatives chosen.

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<sup>7</sup> Commission's Guidance on the Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment

## Other Context to the Draft Plan/Programme

WWF-UK was pleased to see the Marine Bill White Paper (2007) and the Marine and Coastal Access Bill mentioned within the Environmental Report as initiatives which have been analysed in terms of their implications for the draft plan/programme and vice versa. However, we query whether the objectives of the White Paper and Bill have been properly considered in the context of the SEA, given that oil and gas licensing has been specifically excluded from the remit of the Marine Management Organisation (MMO) and any form of regulation under the Bill.

Over the last year or so, we have seen the introduction of the Planning Act 2008, the Climate Change Act 2008 and now the Marine and Coastal Access Bill. In combination, this new package of statutory regulation is intended to ensure that both marine and terrestrial spatial planning systems are integrated and consistent for the purpose of streamlining processes to enable rapid deployment of renewables and supporting the Government's commitments to decarbonising the energy sector and shifting towards a low carbon economy, at the same time protecting marine biodiversity and the environment.

Offshore wind farms are included in this new regime, with the generating capacity of the wind farm determining whether it is within the remit of the MMO or the Infrastructure Planning Commission. To ensure proper planning of renewables in the marine environment, WWF-UK is calling for the MMO to be made a statutory adviser to the IPC and for the IPC to be required to seek and take into account recommendations made by the MMO. However, oil and gas licensing continue to be separate from this new regime. When WWF-UK has queried this, the response has been that oil and gas licensing has an established system in place for SEA and implementation of the plan/programme and this system works.

WWF-UK is disappointed that such a specific exclusion has been applied to ensure that oil and gas licensing continues to be treated differently, and perhaps more favourably, than other major infrastructure projects within the marine environment or with the potential to impact on the marine environment. We consider this is a serious omission and mistake by the Government because it is the burning of the petroleum (and coal) industries' extracted products (fossil fuels) by humans that are responsible for the climate change threats we now face, not to mention other devastating pollution such as oil spills and gas flaring. We request serious consideration to be given to why oil and gas licensing should have its own regulatory regime in light of the recent legislative changes that were intended to simplify, improve and properly manage decision making processes and establish decision making bodies with the necessary expertise to properly balance all interests.

Given that the position in respect of licensing of oil and gas exploration is unlikely to change, WWF-UK welcomes the Government's commitment to marine spatial planning and a network of marine protected areas through the Marine and Coastal Access Bill and we encourage DECC to take a positive role in its implementation. However, it is important that marine spatial planning is properly utilised to map **all** of the UK's seas, taking into account **all** energy sources, uses, activities, whole life-cycle impacts and areas designated for protection and conservation.

## Climatic Factors

WWF-UK underlines the fact that the SEA Directive includes secondary, cumulative impacts, and this should apply to emissions from fossil fuel products made available via ongoing licensing for oil and gas. The equivalent of 70% of the UK's CO<sub>2</sub> emissions has arisen from the oil and gas from the UK Continental Shelf Seas. This is through indirect and cumulative impacts.

As the Intergovernmental Panel on Climate Change (IPCC) concluded earlier this year, "*the primary source of the increased atmospheric concentration of carbon dioxide since the pre-industrial period results from fossil fuel use*"<sup>8</sup>. The situation is now graver than scientists have

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<sup>8</sup> IPCC Fourth Assessment Report Working Group I: Summary for Policymakers. Feb 2007.

ever understood before, and the recent IPCC reports have indicated this with an increased urgency of our need to change from our business as usual approach to achieve things differently.

The UK's Energy White paper urges alternative thinking – we should be developing alternative renewable installations with an urgency to meet the seriousness of the situation acknowledged by the IPCC, EU and other parts of the Government.

As we have highlighted in our comments on previous SEAs, WWF-UK were very concerned to read that DECC and their contractors, Hartley Anderson Ltd, consider that domestic hydrocarbon production is carbon *neutral* (or even potentially *positive* regarding imported oil) in the attainment of the UK's climate change response policy objectives. WWF believes this is a gross misrepresentation of the factors influencing energy sourcing, and we would suggest that DECC amends this position. The phrase 'carbon positive' is not clear and should be avoided. WWF-UK considers that carbon positive suggests an increase in net carbon, in which case, we agree that licensing for oil and gas is 'carbon positive'. However, references in the SEA to other plans/programmes and activities in other countries or elsewhere is not relevant and misleading. This SEA is right to conclude that this plan/programme has the potential to impact the climate through climate change. This is a significant and important impact and should be mitigated. Other plans/programmes which also lead to climate change compound this impact and make it more serious and significant, rather than less, as is suggested in the SEA.

The amounts of greenhouse gases expected to be released by carrying out this plan should be quantified and then fully assessed in accordance with the SEA Directive, for their nature relating to: significance, scale, importance, reversibility and others.

The climate change response policy objectives referred to actually advocate an increase in renewables and lower carbon sources of energy. If less hydrocarbons were produced (whether foreign or domestic), because these could be provided by alternative lower-carbon forms of energy, this would result in less greenhouse gas emissions. Also energy efficiency and energy demand control can help reduce the need for energy consumption. We submit this is more closely aligned to the concept of 'carbon positive', as might be more widely recognised by other Government departments and the majority of society.

In presenting this as a carbon neutral/positive situation, it seems the only real alternative DECC has considered to domestic hydrocarbon production is foreign imported hydrocarbons. It does not seem that indigenous renewables are considered as adequate alternatives. The timescale from award of licence to landfall of produced hydrocarbons can take more than a decade – huge energy efficiency measures and renewable forms of energy could be developed and implemented within that same timeframe, in a truly carbon positive approach for less money. In addition to securing sufficient supplies of energy, the Government also has the responsibility to ensure the energy used within the UK comes from the cleanest source possible.

### **Limitations for Siting of Wind Farms**

WWF-UK notes that the Environmental Report provides a number of recommendations for the siting of offshore wind farms, potentially limiting areas where they can be located. Such limitations include:

- a 12nm buffer zone from the coast, to reduce conflicts with landscape/seascape receptors and avoid potential public opposition and extending consenting timescales;
- siting outside of areas important for navigation;
- avoidance of waters near the coast and especially important fishing areas offshore;
- areas where wind farms may interfere with reception and discrimination of military radars and civilian aerodromes and radar systems.

WWF-UK is concerned to note that these same limitations are not considered in respect of the siting of oil and gas infrastructure, even given the potential for significant adverse impacts

arising from the activities associated with oil and gas exploration and extraction from pollution in the sensitive littoral and coastal zone. If government is serious about protecting the marine (estuarine, fluvial and terrestrial) environment then it should be placing restrictions and limitations on the most polluting sectors/industries/activities not the other way around like at present. WWF-UK has previously commented that oil and gas infrastructure should also be considered as visually intrusive in its locations near coastlines. We, therefore, requested that for visual intrusion and protection of coastal sensitivities a coastal strip be devoid of oil and gas drilling and production installations comprising a minimum width of 8 kilometres, but extending to 13 kilometres in areas of particular sensitivity.

WWF-UK requests clarification on why specific siting limitations have been recommended for offshore wind farms but not for oil and gas infrastructure. We recognise that the differences in type of infrastructure will play a part in determining where offshore wind farms can be sited, yet given the nature of the limitations and other interests stated above, it could be argued that the same considerations would apply in respect of oil and gas infrastructure. For this reason, we are confused by the stricter conditions that appear to be applied to offshore wind farms and the apparent bias towards unrestricted development of oil and gas infrastructure.

### **Interrelationships – Cumulative Effects**

WWF-UK previously commented that for the purpose of SEA Environmental Reports, climate change should be described as an incremental effect - i.e. *“effects from licensing E&P activities, which have the potential to act additively with those from other oil and gas activity”*. In which case, we recommended the need to include (as incrementals of a cumulative effect) emissions from end use of all hydrocarbons produced as a result of all licensing rounds since 1964.

The Environmental Report does consider the atmospheric emissions from oil industry activities that may result from implementation of the draft plan/programme and that the end use of any hydrocarbons produced will contribute to overall global gas emissions of greenhouse gases. However, it is concluded that the scale of such emissions is relatively small. It is also concluded that there were *no* secondary or synergistic effects identified that were considered to be potentially significant, besides a minor contribution to climate change and ocean acidification.

WWF-UK strongly disagrees with these conclusions and encourages DECC to further consider its responsibilities when assessing impacts from licensing oil and gas activities on climate change and ocean acidification. For example, by separating out climate change/ocean acidification effects as secondary, then cumulative, then look at the trans-boundary effect – it is important to look at these effects accumulating. A synergistic cumulative assessment of all impacts over time is required, accounting for all the varying stressors on receptors - i.e. climate change plus fishing plus noise plus....etc.

### **Recommendations:**

In reviewing the Offshore Energy SEA, WWF-UK makes the following recommendations or requests for consideration by DECC:

- that a pre-cautionary approach is taken to opening up these diverse but poorly understood areas to development and not open up all areas to licensing in the presumption that all impacts can be managed;
- we see the scope of the SEA as too narrowly focussed and advocate a shift to expand consideration of environmental assessment in a truly strategic way;
- that DECC support the MMO in giving statutory advice to the IPC and planning for all UK waters to help ensure sustainable use of marine resources;

- that there is a fundamental change in the approach used in identifying alternatives, including obviating development;
- that it is inappropriate for DECC to rely so heavily on security of supply as the reason to continue the UK's oil and gas dependency, it should be removed from the SEA as it is not within the remit of the SEA Directive, but comes into consideration at a subsequent stage of the decision making process;
- we recommend the need to include (as incrementals of a cumulative effect) emissions from end use of all hydrocarbons produced as a result of all licensing rounds since 1964;
- we request the coastal strip be devoid of oil and gas drilling and production installations, comprising a minimum width of 8 kilometres, but extending to 13 kilometres in areas of particular sensitivity, due to the potential of damage and pollution to the sensitive coastal strip, which applies only to oil and possibly gas production but not at all to wind farms;
- we see no justification to have a presumption against wind farm development in the coastal zone as a blanket conclusion and request that the suggested flexibility in the buffer zone be applied;
- we encourage DECC to assess their sanctioning of potentially damaging practices associated with oil and gas licensing, especially to acknowledge the need for adherence to strict wildlife licensing criteria (re OMCR), aimed at increasing the protection of habitats and species;
- we request that in licensing areas from this or previous SEA rounds, any blocks containing or bounding SACs, pSACs, SPAs, pSPAs, extension and potential offshore sites be subject to Appropriate Assessment (AA) with a presumption they are excluded from licensing;
- that our comments on previous SEAs are considered as still valid, as they continue to reflect our concerns for licensing in those areas. This especially applies to our requests to withhold licensing blocks in:
  - SEA2: the shallow gas pockmarks in Blocks 15/20c and 15/25d, previously withheld during SEA, now available for licensing;
  - SEA5: the bottlenose dolphin SAC in Cardigan Bay (Blocks 106/30, 107/21 and 107/22) should be excluded from the SEA in line with the previous Appropriate Assessment (AA) which concluded that licensing should not be undertaken in this region;
  - SEA6: the bottlenose dolphin SAC in Moray Firth (Block 17/3) should be excluded based on the potential impact on bottlenose dolphins;
- we request the inclusion of harbour porpoise (*Phocoena phocoena*) in the assessment in Section A3a.7.17 and throughout the SEA as appropriate as harbour porpoise are an Annex II Habitats Directive species along with *Tursiops truncatus* (bottlenose dolphins);
- that all areas excluded from licensing in previous SEAs be excluded from this SEA also, especially protected areas;
- that CCS be included in this SEA in the gas storage section and as a mitigation measure for oil and gas licensing. It should be conditioned, for example, that all new pipelines should be sufficient specification to withstand the corrosiveness of CO<sub>2</sub>, in case it is possible to use the site for CCS in the future;

- there needs to be a better prediction of impacts from emissions of greenhouse gases from plans to license for oil and gas exploitation. Specifically, it is recommended that the SEA should identify and predict likely quantities of emissions based on the barrel of oil equivalents. The SEA states that 35 billion barrels of oil equivalent (boe) have been extracted to date and that an estimated 5-25 boe remain to be extracted. The tonnes of CO<sub>2</sub> equivalents should be given for these figures;
- that the presumption that domestic hydrocarbon is carbon neutral (or even carbon positive when importing is considered) is a gross misrepresentation of the factors influencing energy sourcing, and we would suggest that DECC amends this position;
- we recommend that the phrase 'carbon neutral' is a fairly well understood phrase, but is subject to a consultation currently and as yet has no clear meaning, as such it should be explained what is meant by this phrase;
- we note that the phrase 'carbon positive' is not well understood and can be interpreted to mean either a net reduction or conversely a net increase in carbon emissions. Without clear understanding in both technical fora and in the public arena and a clear explanation of the meaning of this term, it should be removed from the SEA as it can be misleading;
- we consider that the only statistically valid conclusion from an SEA for oil and gas licensing is that this plan will lead to a net increase in CO<sub>2</sub> emissions and that of other potent greenhouse gases, with a direct and indirect impact on the climate which is cumulative, synergistic and transboundary. This conclusion should be made explicit in the SEA;
- that the conclusion that this plan will be carbon neutral or that it will emit less greenhouse gases than another project in other countries be removed from the SEA, as this is not relevant and directs decision makers towards decisions which may not be based on a true reflection of the importance and significance of this plan's impacts on the environment and on human health and wellbeing;
- that the conclusion that this plan will result in a small fraction of UK emissions be amended to acknowledge that cumulatively, the series of rounds of plans to license for oil and gas has a significant CO<sub>2</sub> emission level and impact on the climate. Production of UK oil and gas has been equivalent to 70% of UK CO<sub>2</sub> emissions overall. This is significant and should be accounted for in the SEA;
- the Climatic Factors section is dominated by information on energy supply and production and WWF submits that it should be in an earlier section as it is of generic interest, not exclusively to climatic factors;
- climate change is the single most significant impact from oil and gas development on a global scale yet it receives a very small portion of attention in the SEA. The section fails to calculate or properly predict the potential impacts, their significance, importance, reversibility etc, as required by the SEA Directive. It simply lists them. The section seems incomplete and has no conclusions, recommendations or mitigation measures considered. Given the nature, gravity and serious nature of the potential impacts which are listed, this oversight must be addressed to complete the SEA and to be compliant with the SEA Directive;
- the failure to have conclusions and mitigation measures in the Climatic Factors section is inconsistent with the assessments of impacts in other sections, such as on cetaceans and is not compliant with fulfilment of the directive;
- that negative impacts of climate change on the economy and people be considered and the SEA must be revised to do so;

- of the climate impacts predicted, none are quantified or assessed in terms of scale, importance, significance, reversibility or other criteria required in the SEA Directive. This must be done to complete the SEA and fulfil the requirements of the Directive;
- in the information given on the impacts on the marine environment, it would be worth utilising and referring to [www.MCCIP.org/arc](http://www.MCCIP.org/arc);
- the language about positive radiative forcing rather than using familiar phrases such as climate change or global warming, is not consistent with the requirements for public participation in the SEA Directive and makes the Environmental Report less accessible. More readily understood phrases should be used;
- on page 179, the Environmental Report states that “*CO<sub>2</sub> emissions which may be linked to climate change*”. WWF-UK is deeply concerned to see DECC express the view that CO<sub>2</sub> may be linked to climate change. This phrase should be removed from the SEA. The link between CO<sub>2</sub> and climate change is virtually certain, as defined by IPCC, and it is damaging for DECC to be undermining this science basis;
- in the context of the SEA, better reference should be made to the Kyoto Protocol, EU Energy Package, Renewables Obligation, UNFCCC and UK targets;
- WWF-UK has previously submitted reports which indicate methods for reducing and offsetting climate change impacts from licensing of oil and gas. We request that DECC includes ways of mitigating climate change impacts from the plan to develop energy resources in the marine environment and submit our previous advice on this matter to offer constructive ideas of how this might be approached (See Annex 1).
- **the Environmental Report does not fully comply with the requirements of the SEA Directive, therefore, WWF-UK rejects this report as a complete SEA and requests that it be amended and re-issued. It must identify, predict and estimate impacts on the climate from this plan/programme, and in-combination with other plans/programmes. The SEA is duty bound then to propose ways to reduce the impacts on the climate and mitigate (off-set in this context) any residual impacts on the climate.**

# ANNEX 1

## Climate Change in SEA

Suggested text for SEA7

Johnson and Lewis-Brown, March 2007

### **Incorporating Climate Change into the SEA7 process and Environment Report**

WWF has been working with the DTI through the SEA Steering Group and numerous SEA consultation rounds to ensure the impacts on and from climate change are better incorporated into the environmental assessment of the SEA process, and by association, better incorporated into the resulting Environmental Report (ER).

The Energy Resources and Development Unit (ERDU) has the responsibility for licensing exploration and regulation of development of the UK's oil and gas resources<sup>1</sup>. The DTI has confined their SEA processes to licensing of oil and gas resources, managed by ERDU, or more specifically by the Environmental Policy Unit of the Offshore Environment and Decommissioning Dept of the DTI. We understand that it is very difficult for this Department of the DTI to fully incorporate impacts on and from climate change in relation to energy provision. This is because their focus is solely on oil and gas licensing, whereas decisions on renewables licensing are taken in another department and therefore cannot be aligned strategically with decisions being made for oil and gas licensing. WWF's preference is that SEA be utilised as part of the broad-scale Energy Review, to be able to more effectively assess the right solutions for our energy provision.

Nevertheless, it is still important to incorporate climate change impacts into the oil and gas licensing process, and this document suggests specific areas where this might best be achieved. We realise that the environmental assessment for SEA7 has more or less been completed, and hope that WWF's collaborative efforts to ensure inclusion of climate change have been taken into account thus far.

We suggest several paragraphs in this document which may be considered for inclusion in the SEA7 Environmental Report. Our caveat is that they not be bolted on to existing text where full consideration has not yet been given to climate change implications, but instead used effectively to better represent where climate change has been incorporated into the assessment following our ongoing discussions.

To re-iterate the messages from our previous communications, four areas where WWF believe improvement could be achieved include:

- Obviating development and alternatives considered and documented in the SEA
- Links between the alternatives and the objectives of SEA7
- Consideration of indirect and cumulative impacts of SEA7, particularly climate change impacts
- Mitigation and offsetting of adverse impacts predicted or detected in monitoring.

The following sections include suggestions for text inclusion by chapter, following on these themes. We understand that the structure will remain similar to that for the SEA6 Environmental Report, so have numbered these sections accordingly.

#### Non-technical summary

As appropriate, based on inclusions in other chapters

#### Section 2: SEA Process

Inclusion of text (perhaps in Section 2.3) to highlight how consideration of climate change impacts has been incorporated:

*“With the increasing recognition of our need to move to a lower carbon economy, the DTI has been working with stakeholders to better incorporate the impacts from hydrocarbon exploration and development on climate change. We recognise that climate change and ocean acidification are placing increasing burdens on our marine environments and our intention is to include assessment of those impacts within our SEA process”*

### Section 3: Regulatory Context.

In Section 3.4 Relationship with other relevant plans and programmes, under UN Framework Convention on Climate Change, change text under “Implications for draft plan” to:

*“Consider contributions to greenhouse gas emissions as a result of licensing. Include assessment of greenhouse gases associated with combustion of hydrocarbons produced as a result of proposed activities within this assessment. On an ongoing basis, continue to assess the greenhouse contributions from all licensing rounds in a cumulative fashion.”*

### Section 4: The Draft Plan and Alternatives (wondered why this is a draft?)

In Section 4.1 Background, need to explicitly state what the draft plan is, and what its objectives are. In addition need to state the objectives of the SEA, as these are different.

If the draft plan is “*to offer up for license all unlicensed blocks in both the current and previous SEA areas*”, then a suggested objective of that draft plan could be “*to enhance the UK’s security of energy supply, and as a result enhance the UK economy*”.

The suggested objective of the SEA could be:

*“to protect the environment from adverse impacts associated with decisions made in achieving the draft plan”.*

In Section 4.2 Draft Plan and Alternatives, suggest inclusion of new text at start of section:

*“One way to enhance the UK’s security of supply is through further oil and gas licensing. The oil and gas licensing programme is required to allocate remaining blocks not already utilised by the oil and gas industry. In the UK Government, we understand that a move to a lower carbon economy is an important and urgent requirement, but wish to continue to access new hydrocarbon resources to secure supply during this transition.”*

We suggest that whilst the SEA focus remains just licensing, the list of alternatives be changed to a hierarchy of alternatives, along the lines of:

- not to offer any block for production licence award as energy efficiency measures have been/will be implemented and the demand for energy can diminish;
- not to offer any blocks for production licence award as lower carbon alternatives will provide the energy that oil & gas licensing would have otherwise provided;
- to restrict the number of blocks licensed (spatially) so that a more balanced proportion of energy provision can be split between oil & gas and lower carbon energy alternatives;
- to restrict the number of blocks licensed (spatially and temporally) due to environmental sensitivities highlighted in the environmental assessment;
- to offer all blocks within the licensing area.

WWF recommend that the SEA process be expanded to provision of energy (instead of just oil and gas licensing).

Alternatives should include a hierarchy of different types of lower carbon alternatives e.g. biofuels, tidal & wave renewables, wind farm (wet & dry) renewables, etc. This would help foster

technological innovation in their continued development, and in the search for additional lower-carbon sources and technologies.

Those alternatives already being considered should include more detail about how the spatial and temporal limitations might reduce the potential for adverse impact i.e. what conditions would be put in place, which species in particular is the condition meant to better protect, etc.

Comparative analysis should be provided to show the alternatives have been quantitatively or qualitatively assessed and compared.

## Section 5: Physical and Chemical Environment

### 5.3: Climate and Meteorology

Include sentence along the lines of:

*“Because of the vast body of scientific evidence proving human-induced climate change, we need to acknowledge that not only is the climate changing (so any future development needs to be able to exist in a more harsh climatic environment), but also that potential development impacts on receptors need to be more carefully assessed with this in mind.”*

5.4.4 Potential impacts of climate change on oceanography are included which is good, but these could be linked to climatic impacts seen in the next section on Ecology.

## Section 6: Ecology

Some acknowledgement of climate change impacts (e.g. plankton), but need to include more details on how climate change might already be having adverse impacts on each element of the ecosystem, especially including those receptors most at risk from potential impacts of oil and gas development. It should utilise the IPCC Third Assessment Report, and forthcoming report, also the MCCIP ARC ([mccip.org.uk/arc](http://mccip.org.uk/arc)). It should also include the impacts of ocean acidification from the release of CO<sub>2</sub> dissolving into the oceans and forming carbonic acid.

## Section 7: Conservation

Indicate which parts of the wider environment (marine and terrestrial) and the conservation sites that are already showing signs of depletion/degradation due to climate change – these may continue to degrade unless active steps are taken to reverse the situation (i.e. primarily involving a move to a lower carbon economy). It should also refer to predictions for future climate change impacts.

Section X: There should be a section on human health which refers to the impacts of climate change, using the IPCC Third Assessment report, or the forthcoming 4<sup>th</sup> Assessment, World Health Organisation and other relevant texts.

## Section 9: Consideration of the effects of licensing

Impacts of oil and gas licensing on climate change and ocean acidification should be assessed in the SEA. The likely releases of greenhouse gases should be quantified. These are clear indications of indirect effects from a draft plan that focuses on licensing of oil and gas activities i.e. if there had been no licensing of oil and gas resources, and instead cleaner energy sources had been developed earlier, then we would not be seeing the changes in climate and oceans which we are now experiencing. Therefore impacts from use of oil and gas should be incorporated into the assessment.

Suggested text:

*“Climate change and ocean acidification are indirect, yet significant, impacts from our use of oil and gas products.”*

*“The assessment of cumulative impacts should incorporate impacts from climate change as an additional lens through which to assess the scope of effects. Species and communities already suffering perhaps from impacts from fishing, disturbance (and the potential of additional hydrocarbon development) are now also having to cope with warmer/colder waters, changing food distributions, changing season lengths/intensity and increased acidification of waters. So this additional burden from climate change might make those species more vulnerable to hydrocarbon development related impacts, which we do not yet fully understand.”*

The climate change impacts themselves should be considered, but also in combination with other impacts, and also with the cumulative impacts of previous cc impacts from oil and gas activities.

Section 9.8.1.4 discusses the increase in gaseous emissions from the combustion of hydrocarbons, although this focuses on emissions directly from exploration or production activities on the associated installations. We acknowledge that it is difficult to assess the volume of hydrocarbon that might be derived from a well that is yet to be drilled or from a reservoir yet to be surveyed, but to estimate an average well output from across the whole of the UKCS would at least be some initial indication of the potential hydrocarbon which may be generated. This is done in other for a, such as renewables SEAs and in carbon disclosure reports by BP and Shell. Section 4.3 indicates the potential activity that could be expected following licensing, and thus provides the basis on which all further impacts within the report are assessed. Similarly, this provides an initial scenario on which potential hydrocarbon output could be based, and therefore associated greenhouse gases from combustion of this hydrocarbon estimated.

Then suggested text could build on this approach and say:

*“In a similar way to how the positive greenhouse gas avoidance from offshore wind developments (see Section XXX in Wind SEA environmental report) is used, we are able to better quantify the impacts from oil and gas licensing.”*

How environmental mitigation measures have already been incorporated into offshore oil and gas development should be highlighted e.g. reduction of venting and flaring, use of wind turbines. These should be assessed for their climate change mitigation potential, and whether performance is achieving the objectives of SEA.

## Section 11: Conclusions

Better describe those alternatives that are already being considered i.e. how certain spatial and temporal limitations should reduce potential impacts.

Provide more detail on the conditions placed on licensing in sensitive blocks. Plus provide more detail on any mitigation measures required of the licensee.

Quantify remaining greenhouse gas likely releases from exploration, exploitation, transport, processing and use of the oil and gas etc.

Requirement on those operators:

- exploring or operating in those blocks with specific conditions to provide evidence of steps being taken to improve conditions for biodiversity and /or counteract relevant climate change impacts, and make this information publicly available.
- to commit to construction of installation infrastructure so as to be CO2 storage compliant if required in the future.
- off setting residual impacts.

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<sup>i</sup> From DTI Oil & Gas website [http://www.og.dti.gov.uk/about\\_us/structure.htm](http://www.og.dti.gov.uk/about_us/structure.htm) - March 2007

**Appendix B - Managing Natura 2000 sites (EC, 2018)**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**







Brussels, 21.11.2018  
C(2018) 7621 final

**Commission notice**

**"Managing Natura 2000 sites  
The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC"**

***Managing Natura 2000 sites***

***The provisions of Article 6  
of the Habitats Directive 92/43/EEC***

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# Foreword

## PURPOSE AND NATURE OF THIS DOCUMENT

Article 6 of the Habitats Directive (92/43/EEC) plays a crucial role in the management of the sites that make up the Natura 2000 network. With the spirit of integration in mind, it indicates the various tasks involved so that the nature conservation interests of the sites can be safeguarded.

This document aims at providing guidelines to the Member States on the interpretation of certain key concepts used in Article 6 of the Habitats Directive.

In the framework of the Action Plan for nature, people and the economy<sup>1</sup>, the Commission has committed to *'update the interpretative guidance document on provisions of Article 6 of the Habitats Directive on the conservation and management of Natura 2000'*. This document replaces therefore the original version of this document that was issued in April 2000<sup>2</sup>.

The present update incorporates the large body of rulings that have been issued by the Court of Justice of the EU over the years on Article 6<sup>3</sup>. It also builds on a series of Commission notes addressing Natura 2000 management, as well as other relevant Commission guidance documents on Article 6 that should be read in conjunction with this one<sup>4</sup>.

The primary targets of the document are Member State authorities. It is however expected to also facilitate the understanding of the mechanics of the Habitats Directive amongst anyone involved in the management of Natura 2000 sites and in the Article 6 permit procedure.

The document has been drafted following consultations with the nature protection authorities of the Member States and stakeholders. It is intended to assist Member State authorities, as well as anyone involved in the management of Natura 2000 sites and in the Article 6 permit procedure, in the application of the Habitat Directive. Only the Court of Justice of the European Union is competent to authoritatively interpret Union law.

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<sup>1</sup> [http://ec.europa.eu/environment/nature/legislation/fitness\\_check/action\\_plan/communication\\_en.pdf](http://ec.europa.eu/environment/nature/legislation/fitness_check/action_plan/communication_en.pdf)

<sup>2</sup> 'Managing Natura 2000 sites' - The provisions of Article 6 of the Habitats Directive 92/43/EEC, European Communities, 2000 – ISBN 92-828-9048

<sup>3</sup> A compilation of the most relevant cases on Article 6 is available at: [http://ec.europa.eu/environment/nature/legislation/caselaw/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/caselaw/index_en.htm)

<sup>4</sup> Commission notes on designation of SACs, setting of conservation objectives for Natura 2000 sites, establishing conservation measures for Natura 2000 sites  
Commission guidance documents on application of Article 6 in different sectors

The interpretations provided by the Commission cannot go beyond the Directive. This is particularly true for this directive as it enshrines the subsidiarity principle and as such lets a large margin of manoeuvre to the Member States for the practical implementation of specific measures related to the various sites of the Natura 2000 network. In any case, the Member States are free to choose the appropriate way they wish to implement the practical measures provided the latter achieve the results of the Directive.

However interpretative, this document is not intended to give absolute answers to site specific questions. Such matters should be dealt with on a case-by-case basis, while bearing in mind the orientations provided in this document.

## **STRUCTURE OF THE DOCUMENT**

After an introductory note on the overall content and logic of Article 6, there follows a detailed presentation of each paragraph (6(1), 6(2), 6(3), 6(4)) according to the same general structure. This involves an introduction to the paragraph and its scope, and then discussion of the main concepts and issues raised, on the basis of the Commission's knowledge, existing jurisprudence of the Court of Justice of the EU, and other EU legislation, where relevant.

To allow for a speedy reading of the relevant conclusions, the key points arising from the Commission's analyses are summarised (in bold characters) at the end of each section,.

# 1. Introduction

## Article 6 in Context

### 1.1. PLACE WITHIN THE OVERALL SCHEME OF THE HABITATS DIRECTIVE AND THE BIRDS DIRECTIVE AS WELL AS WITHIN A WIDER CONTEXT

Before addressing Article 6 in detail, it is worth recalling its place within the overall scheme of Directive 92/43/EEC<sup>5</sup> (hereinafter referred to as the Habitats Directive) as well as that of Directive 2009/147/EC<sup>6</sup> (hereinafter referred to as the Birds Directive) and its relationship with a wider legal context.

The first chapter of the Habitats Directive, comprising Articles 1 and 2, is entitled ‘Definitions’. It sets out the aim of the Directive which is to ‘*contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies*’<sup>7</sup>. It also provides a general orientation for the implementation of the Directive, referring to the need for all measures taken pursuant to it to be designed to maintain or restore certain habitats and species ‘*at favourable conservation status*’<sup>8</sup>, while, at the same time, referring to the need for measures taken pursuant to the Directive to ‘*take account of economic, social and cultural requirements and regional and local characteristics*’<sup>9</sup>.

The main specific requirements of the Habitats Directive are grouped under the two subsequent chapters. The first is entitled ‘Conservation of natural habitats and habitats of species’ and comprises Articles 3 to 11. The second is entitled ‘Protection of Species’ and comprises Articles 12 to 16.

The ‘Conservation of natural habitats and habitats of species’ chapter addresses the establishment and conservation of sites designated for habitat types and species of Community interest listed in Annexes I and II to the Directive. These sites, along with sites classified under the Birds Directive, form the Natura 2000 network (Article 3(1)). Within this chapter, Article 6 contains provisions which govern the conservation and management of Natura 2000 sites. Seen in this context, Article 6 is one of the most important of the 24 articles of the Directive, being the one which most determines the relationship between conservation and other socioeconomic activities.

The article has three main sets of provisions. Article 6(1) deals with the establishment of the necessary conservation measures, and focuses on positive and proactive measures to

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<sup>5</sup> OJ L 206, 22.7. 92, p. 7

<sup>6</sup> OJ L 27, 26.1.2010, p 7, directive repealing Directive 79/409/EEC

<sup>7</sup> Article 2(1).

<sup>8</sup> Article 2(2). The term ‘Favourable Conservation Status’ is defined in Article 1(e) and 1(i) and refers to the conservation status of the species or habitat types of Community interest across their natural range within the EU.

<sup>9</sup> Article 2(3).

maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status. Article 6(2) makes provision for avoidance of habitat deterioration and significant species disturbance. Its emphasis is therefore preventive. Article 6(3) and (4) set out a series of procedural and substantive safeguards governing plans and projects likely to have a significant effect on a Natura 2000 site.

Within this structure, it can be seen that there is a distinction between Article 6(1) and (2) which define a general regime and Article 6(3) and (4) which define a procedure applying to specific circumstances.

Considered globally, the provisions of Article 6 reflect the general approach set out in Article 2 and the recitals of the Directive. This involves the need to promote biodiversity by maintaining or restoring certain habitats and species at 'favourable conservation status' across their natural range within the EU, while taking into account economic, social, cultural and regional requirements, as a means of achieving sustainable development.

Apart from the place of Article 6 within the overall scheme of the Habitats Directive, it is also relevant to mention its relationship with the scheme of the Birds Directive:

- Firstly, the scheme of the Birds Directive is broadly comparable with that of the Habitats Directive. In particular, the 'Conservation of natural habitats and habitats of species' chapter of the Habitats Directive is analogous to Articles 3 and 4 of the Birds Directive.
- Secondly, there has been an important degree of merger or fusion between the schemes of both Directives. First, Special Protection Areas (SPAs) classified under the Birds Directive are now an integral part of the Natura 2000 network<sup>10</sup>. Second, the provisions of Article 6(2), (3) and (4) of the Habitats Directive have been made applicable to SPAs<sup>11</sup>.

Article 6 is also to be considered within the broader framework of the EU Biodiversity policy<sup>12</sup> and is crucial for the achievements of its targets. The implementation of Article 6 can also benefit from other actions undertaken in that context. In particular, work undertaken to measure ecosystem condition under the Mapping and Assessment of Ecosystems and their Services (MAES)<sup>13</sup> provides useful and relevant guidance, including sector-specific, on addressing issues such as measuring and assessing the condition of ecosystem types corresponding to the broad habitat types under the Habitats Directive; measuring pressures on ecosystems; quantifying ecological requirements as well as deterioration and ecological integrity of sites.

Seen in a wider context - that of the Treaty on the European Union - Article 6 can be regarded as a key framework to give effect to the principle of integration since it encourages Member States to manage the Natura 2000 sites in a sustainable way and it sets the limits of activities which can impact negatively on protected areas while allowing some derogations

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<sup>10</sup> Article 3(1) of the Habitats Directive provides that 'the Natura 2000 network shall include the special protection areas classified by the Member States pursuant to Directive 79/409/EEC'.

<sup>11</sup> Article 7 of the Habitats Directive.

<sup>12</sup> Communication from the Commission: Our life insurance, our natural capital: an EU Biodiversity Strategy to 2020 (COM(2011) 244)

<sup>13</sup> [http://ec.europa.eu/environment/nature/knowledge/ecosystem\\_assessment/index\\_en.htm](http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm)

in specific circumstances. Measures under Article 6 may also benefit from synergies with other relevant EU environmental policies such as on water, marine or fisheries.

Measures under Article 6 of the Habitats Directive may require the adoption of measures falling under the Common Fisheries Policy (Regulation (EU) No 1380/2013). In particular, the provisions under article 11 of the CFP on the conservation measures necessary for compliance with obligations under Union environmental legislation could apply; these provisions are clarified in the Commission Staff Working Document ‘on the establishment of conservation measures under the Common Fisheries Policy for Natura 2000 sites and for the Marine Strategy Framework Directive purposes’ (SWD(2018)288 final). The Commission has already adopted several delegated acts pursuant to Article 11 of the CFP (available at [https://ec.europa.eu/fisheries/cfp/fishing\\_rules\\_en](https://ec.europa.eu/fisheries/cfp/fishing_rules_en)).

Seen in an international context, Article 6 helps achieve the aims of relevant international nature conservation conventions such as the Bern Convention<sup>14</sup> and the Convention on Biological Diversity<sup>15</sup>, while at the same time creating a more detailed framework for site conservation and protection than these conventions themselves do.

**Article 6 is a key part of the chapter of the Habitats Directive entitled ‘Conservation of natural habitats and habitats of species’. It provides the framework for site conservation and protection, and includes proactive, preventive and procedural requirements. It concerns Special Protection Areas classified under the Birds Directive as well as sites designated under the Habitats Directive. The framework is a key means of supporting the overall objectives of the two directives and achieving the objectives of the EU biodiversity policy and the principle of environmental integration into other EU policies and ultimately sustainable development.**

## 1.2. RELATION WITH PROTECTION OF SPECIES CHAPTER

As mentioned above, the chapter of the Habitats Directive entitled ‘Protection of Species’ covers Articles 12 to 16 and deals with strictly protected animal and plant species listed in Annex IV of the Directive<sup>16</sup>, as well those in need of special management measures, as listed in Annex V.

Articles 12, 13 and 14 cover certain plant and animal species which may also feature in Annex II of the Directive, and which therefore also benefit from the provisions of Article 6

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<sup>14</sup> Council Decision 82/72/EEC of 3 December 1981 concerning the conclusion of the Convention on the conservation of European wildlife and natural habitats (OJ L 38, 10.2.1982, p.1).

<sup>15</sup> Council Decision 93/626/EEC of 25 October 1993 concerning the conclusion of the Convention on Biological Diversity (OJ L 309, 13.12.1993, p.1).

<sup>16</sup> Further details on the relationship between the species provisions and the site protection provisions of the Habitats Directive can be found in the Commission guidance on the strict protection of species of Community interest. [http://ec.europa.eu/environment/nature/conservation/species/guidance/index\\_en.htm](http://ec.europa.eu/environment/nature/conservation/species/guidance/index_en.htm)

within the Natura 2000 sites hosting them<sup>17</sup>. As a result, an activity may at the same time fall within the scope of both chapters.

*For example, the destruction of a resting place of the brown bear, *Ursus arctos*, may contravene the prohibition in Article 12(1)(d), while also running counter to Article 6 if the resting place is within a Natura 2000 site designated for the species.*

While this may appear to result in duplication, the following points should be noted:

- Firstly, certain species of plants or animals covered by Articles 12, 13 and 14 do not appear in Annex II. Thus, they do not benefit directly from site conservation and protection within Natura 2000.
- Secondly, for vulnerable species, such as large carnivores which benefit from both the chapter on conservation of natural habitats and habitats of species and the chapter on protection of species, the protection afforded to them by Article 6 is limited to sites within the Natura 2000 network, whereas the protection afforded by the chapter on protection of species is not limited to sites. Thus, Article 6 is concerned with the conservation and protection of **sites designated** for the species within the Natura 2000 network, whereas the chapter on protection of species targets the species throughout their natural range within the EU (including specific areas outside Natura 2000 where the species occur, in particular breeding sites and resting places for these animals).

**While certain plant and animal species benefit from both the chapter on conservation of natural habitats and habitats of species and the chapter on protection of species, the scope and the nature of the relevant provisions are different.**

### 1.3. PUTTING ARTICLE 6 INTO NATIONAL LAW: THE DUTY OF TRANSPOSITION

It is important to note that the provisions of Article 6 require transposition into national law (i.e. they need to be the subject of provisions of national law giving effect to their requirements). In this respect, they are covered by Article 23 of the Directive which states that ‘*Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive within two years of its notification*’. Depending on the Member State the deadline for transposition was 10 June 1994 or the date of EU accession.

This reflects the type of legal instrument that has been used, namely a directive. A directive is binding as to the result to be achieved, but leaves a Member State the choice as to the form and methods of achieving that result.

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<sup>17</sup> The species protection provisions of the Habitats Directive apply to certain species of Community interest but not to habitat types of Community interest. The latter only benefit from provisions under the ‘Conservation of natural habitats and habitats of species’ chapter (Articles 3 - 11) which also means that their occurrences outside the Natura 2000 network do not enjoy any protection under the Habitats Directive.

Settled case law clarifies that transposition must be clear and precise, faithful and with unquestionable binding force (see Court of Justice of the EU (hereinafter: Court) Cases C-363/85, C-361/88, C-159/99 paragraph 32, C-415/01 paragraph 21, C-58/02, C-6/04 paragraphs 21, 25, 26, C-508/04 paragraph 80).<sup>18</sup>

**Depending on the Member State concerned, Article 6 needed to be transposed into national law by 10 June 1994 for the first 12 Member States or the date of EU accession for the others.**

#### **1.4. TIME OF APPLICATION OF ARTICLE 6: FROM WHICH DATE DO THE OBLIGATIONS OF ARTICLE 6 APPLY?**

In general, a distinction needs to be made between the deadline for transposition of the provisions of Article 6 into national law and the date from which these provisions apply to individual sites.

As regards individual sites, a distinction needs to be drawn between Special Protection Areas classified under Birds Directive and other sites – Sites of Community Importance (SCIs) and Special Areas of Conservation (SACs) - under the Habitats Directive.

##### **1.4.1. *Special Protection Areas under the Birds Directive***

The protection requirements regarding Special Protection Areas (SPAs) are given in Article 4(4), first sentence of the Birds Directive which provides that, for those areas, ‘... *Member States shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article...*’

After the entry into force of the Habitats Directive the above obligations are replaced pursuant to Article 7 of that Directive which provides as follows:

*‘Obligations arising under Article 6(2), (3) and (4) of this Directive shall replace any obligations arising under the first sentence of Article 4(4) of Directive 79/409/EEC in respect of areas classified pursuant to Article 4(1) or similarly recognised under Article 4(2) thereof, as from the date of implementation of this Directive or the date of classification or recognition by a Member State under Directive 79/409/EEC, where the latter date is later.’*

Thus, the provisions of Article 6(1) do not apply to Special Protection Areas (SPAs). However, analogous provisions apply to SPAs by virtue of Article 3 and 4(1) and (2) of the Birds Directive. The date from which these similar provisions should in principle apply to SPAs is the date from which the Birds Directive became applicable in the Member States (cases C-355/90 Commission v Spain ‘Santoña Marshes’, C-166/97 Commission v France ‘Seine Estuary’).

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<sup>18</sup> [https://curia.europa.eu/jcms/jcms/Jo2\\_7045/en/](https://curia.europa.eu/jcms/jcms/Jo2_7045/en/)

As regards the provisions of Article 6(2), (3) and (4), it is clear from the terms of Article 7 that these apply to SPAs already classified at the time of entry into force of the Habitats Directive. However, given the wording of Article 7, a question arises as to whether the provisions of Article 4(4), first sentence of the Birds Directive remain applicable after the ‘date of implementation of this Directive’ (10 June 1994 for the then Member States and the date of accession for later Member States) for sites that should have been classified as SPAs but have not been so classified.

In the *Santoña Marshes* case (C-355/90 paragraph 22) the Court established that Article 4(4) first sentence of the Birds Directive was applicable to an unclassified site which should have been classified as an SPA from the date of implementation of the Birds Directive (i.e. 7 April 1981 for the then Member States and the date of accession for later Member States).

According to the *Basses Corbières* case (C-374/98 paragraphs 43 – 57; see also C-141/14), areas which have not been classified as SPAs but should have been so classified continue to fall under the regime governed by the first sentence of Article 4(4) of the Birds Directive, which is stricter than that of Article 6(2) to (4) of the Habitats Directive because it does not provide for derogation. The duality of the regimes gives Member States an incentive to carry out classifications, in so far as this enables them to use a procedure which allows them, for imperative reasons of overriding public interest, including those of a social or economic nature, and subject to certain conditions, to adopt plans or projects adversely affecting an SPA.

**Article 6(1) of the Habitats Directive does not apply to SPAs. However, there are analogous provisions in Articles 3, 4(1) and 4(2) of the Birds Directive and these apply from the date of implementation of that Directive.**

**As regards the date of application of Article 6(2), (3) and (4) of the Habitats Directive to SPAs, these apply to all sites classified as SPAs following Article 4(1) and 4(2) of the Birds Directive from the date of implementation of the Habitats Directive.**

**Sites that have not been classified as SPAs but should have been so classified continue to fall under the protection regime of the first sentence of Article 4(4) of the Birds Directive which is stricter than the provisions of Article 6(2) to (4) of the Habitats Directive.**

#### 1.4.2. *Sites under the Habitats Directive*

**Article 6(1)** applies to SACs. According to Article 4(4) of the Directive, SACs come into being when Member States designate them as such. This can happen only after a site has been adopted as an SCI in accordance with Article 4(2) of the Directive. An SCI must be designated as an SAC ‘*as soon as possible and within six years at the most*’.

The designation of an SCI as an SAC effectively triggers the implementation of Article 6(1) since all the other measures under Article 6 – including the duty to prevent further deterioration (Articles 6(2), (3) and (4)) - already apply to SCIs before they are designated as SACs.

Article 4(5) of the Habitats Directive provides as follows:

*'As soon as a site is placed on the list referred to in the third subparagraph of paragraph 2 it shall be subject to Article 6(2), (3) and (4).'*

Thus, in contrast to the provisions of Article 6(1) which apply only when an SCI has been designated as an SAC, the provisions of Article 6(2), (3) and (4) become applicable as soon as a site becomes an SCI (i.e., before it is designated as an SAC). Article 6(1) also applies to SCIs for which the six-year period has expired and which have not yet been designated as SAC in breach of Article 4(4). In other terms, the obligation to establish the necessary conservation measures applies at the latest by the time the six-year period has expired.

The Commission Decisions that approve the SCIs clearly state that: *...it should be stressed that the obligations resulting from Articles 4(4) and 6(1) of Directive 92/43/EEC are applicable as soon as possible and within six years at most from the adoption of the initial or updated lists of sites of Community importance for the biogeographical region, depending on which list a site of Community importance was included as such for the first time.*

This means the six-year period starts running from the date on which the site was first included in the Commission Decision. If later on, subsequent decisions adjust some of the details of the site, this should not be used as an excuse to postpone the SAC designation. These new adjustments will however need to be incorporated into the SAC designation process and taken into account when establishing the necessary conservation measures.

In the *Draggagi* case (C-117/03 paragraph 29) the Court ruled that *'in the case of sites eligible for identification as sites of Community importance that are mentioned on the national lists transmitted to the Commission and may include in particular sites hosting priority natural habitat types or priority species, the Member States are, by virtue of the Directive, required to take protective measures appropriate for the purpose of safeguarding that ecological interest'*.

In the *Bund Naturschutz* case (C-244/05 paragraph 47) the Court further ruled that *'the appropriate protection scheme applicable to the sites which appear on a national list transmitted to the Commission under Article 4(1) of the Directive requires Member States not to authorise interventions which incur the risk of seriously compromising the ecological characteristics of those sites'*.

In the light of the foregoing, Member State authorities must ensure that sites on their national list of proposed SCIs are not allowed to deteriorate and are protected for the purpose of safeguarding their ecological interest even before the Union list of SCIs is adopted. Where the national list remains incomplete, Member States are also advised to safeguard the ecological interest of sites that, according to scientific evidence based on the criteria in Annex III to the Habitats Directive, should be on the national list. To that effect one practical suggestion is to use properly the environmental impact assessment (EIA) process under Directive 2011/92/EU<sup>19</sup> for projects with likely significant effects on the environment (in so far as they are covered by that Directive). The Court has already confirmed the importance

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<sup>19</sup> OJ L 26, 28.1.2011, p.1. , as amended by Directive 2014/52/EU, OJ L 124, 25.4.2014, p. 1.

that should be attached to sensitive natural sites when deciding whether projects should undergo an EIA under that directive (C-392/96 paragraph 66).

The above considerations can be summarised in the following table:

Site status	Proposed SCI	SCI	SAC	SPA	Sites that should have been classified as SPA
Article 6(1)	Optional	Optional (obligatory if the six-year period has expired)	Obligatory	Not applicable but analogous provisions in Articles 3, 4(1) and 4(2) of the Birds Directive apply.	Not applicable.
Article 6(2), (3) and (4)	Optional, but Member States must take protective measures that are appropriate for the purpose of safeguarding the ecological interest of the sites <sup>20</sup> .	Obligatory	Obligatory	Obligatory	Not applicable but these sites continue to fall under the protection regime of the first sentence of Article 4(4) of the Birds Directive.

**Articles 6(2), (3) and (4) apply to SCIs and SACs under the Habitats Directive. Article 6(1) applies to SACs under the Habitats Directive.**

**They do not apply to sites which are on a national list transmitted to the Commission under Article 4(1) of the Directive. Member States must nevertheless take protective measures that are appropriate to safeguard the ecological interest of those sites. This includes not authorising interventions which incur the risk of seriously compromising the ecological characteristics of those sites.**

**Where a complete national list has not been submitted, Member States are advised to take a similar approach for sites which, on the basis of the scientific criteria in the Directive, clearly ought to be on the national list.**

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<sup>20</sup> A similar requirement would apply to sites that, according to scientific evidence based on the criteria of Annex III of the Habitats Directive, should be on the national list of proposed SCIs.

## 2. Article 6(1)

**Clarification of the concepts of *necessary conservation measures*; *conservation objectives*; *ecological requirements*; *management plans*; and *statutory, administrative or contractual measures*.**

### 2.1. TEXT

*‘For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites.’*

### 2.2. SCOPE

Article 6(1) lays down a general conservation regime which has to be established by the Member States for all Special Areas of Conservation (SAC).

Article 6(1):

- provides for **positive** conservation measures, involving, if need be, management plans, and statutory, administrative or contractual measures, which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the site. In that regard, Article 6(1) is distinguished from the three other paragraphs of Article 6 which provide for preventive measures to avoid deterioration, disturbance and significant effects in the Natura 2000 sites;
- has a value of **reference** for the logic and the overall understanding of Article 6 and its three other paragraphs;
- establishes a general conservation regime which applies to **all** SACs in the Natura 2000 network without exception and to **all** the natural habitat types in Annex I and the species in Annex II present on the sites, except for those identified as non-significant in the Natura 2000 Standard Data Form (SDF)<sup>21</sup>;
- concerns the **SACs specifically**: Article 6(1) does not apply to the Special Protection Areas (SPAs), unlike Article 6, paragraphs 2, 3 and 4. In this way, the legislator established:

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<sup>21</sup> Commission Decision 2011/484/EU concerning a site information format for Natura 2000 sites <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:198:0039:0070:EN:PDF>

- a regime laying down ‘special conservation measures’ for the **SPAs** classified under the Birds Directive, according to its Articles 3 and 4, paragraphs 1 and 2;
- a regime laying down ‘necessary conservation measures’ for the **SACs** designated under the Habitats Directive, according to its Article 6(1);
- also applies to SCI for which the six years period has expired and which have not yet been designated as SAC in breach of Article 4(4). In other terms, the obligation to establish the necessary conservation measures applies at the latest by the time the six years period has expired;
- relates to Article 1(a), which defines conservation measures as a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status;
- relates to Article 2(2), which establishes that measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest;
- relates to Article 2(3), which specifies that the measures must take account of economic, social and cultural requirements and regional and local characteristics.

**For all the SACs, Member States are required to draw up conservation measures and adopt appropriate statutory, administrative or contractual measures. These measures must be established within six years from the adoption of Union lists of Sites of Community Importance (SCIs) at the latest.**

**These measures are positive and site-specific; they apply to all the natural habitat types in Annex I and the species in Annex II present on the sites, except those whose presence is non-significant according to the Natura 2000 Standard Data Form. They aim to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest; and they take into account economic, social and cultural requirements and regional and local characteristics.**

### 2.3. WHAT SHOULD BE THE CONTENT OF THE ‘NECESSARY CONSERVATION MEASURES’?

#### 2.3.1. *Setting site-level conservation objectives*<sup>22</sup>

There are several references to the term 'conservation objectives' in the preamble of the Directive as well as an explicit mention of it in Article 6(3). The need for such a concept is also underlined by Articles 4(4) and 6(1) of the Directive. It is useful therefore to examine what is meant by ‘conservation objectives’ and how it relates to establishing the necessary conservation measures for SACs under Article 6(1).

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<sup>22</sup> For further details see Commission note on Setting Conservation Objectives (2013) - [http://ec.europa.eu/environment/nature/natura2000/management/docs/commission\\_note/commission\\_note2\\_EN.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/commission_note2_EN.pdf)

Article 1 states that for the purpose of the Directive ‘*Conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status...’.*

As stated in Article 2 the overall aim of the Habitats Directive is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora. The measures taken under the Directive seek to be with a view to ensuring that the species and habitat types covered achieve ‘favourable conservation status’, i.e. that their long-term survival is secured across their entire natural range within the EU.

Whereas each site shall contribute to the attainment of **favourable conservation status** (FCS) this overall objective **can only be defined and achieved at the level of the natural range of a species or a habitat type** (see Article 1(e) and (i) of the Directive). A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level.

However, the **general objective of achieving FCS** for all habitat types and species listed in Annexes I and II to the Habitats Directive **needs to be translated into site-level conservation objectives**. It is important to distinguish between conservation objectives of individual sites and the overall objective of achieving FCS.

Site-level conservation objectives are a set of specified objectives to be met in a site in order to make sure that the site contributes in the best possible way to achieving FCS at the appropriate level (taking into account the natural range of the respective species or habitat types).

Site-level conservation objectives should be established not only for special areas of conservation (SACs) under the Habitats Directive but also for Special Protection Areas (SPAs) under the Birds Directive with a view to achieving the requirements as set out in Articles 2, 3, 4(1), 4(2) and 4(4) of that Directive.

In principle, site-level conservation objectives should be set for all species and habitat types of Community interest under the Habitats Directive and for bird species in Annex I of the Birds Directive or regularly occurring migratory bird species, which are significantly present on the site. However, it is not necessary to establish specific conservation objectives or conservation measures for species or habitat types whose presence on the site is non-significant according to the Natura 2000 SDF<sup>23</sup>.

Site-level conservation objectives should be based on the ecological requirements of these natural habitat types and species present on the site (see below at section 2.3.3) and should define their desired conservation condition on the site. They should reflect the importance of the site for the maintenance or restoration of the habitat types and species present on the site and for the coherence of Natura 2000. Moreover, they should reflect the threats of

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<sup>23</sup> i.e. all species indicated as having an insignificant population size and density in relation to the populations present within the national territory (population size category D), habitat types indicated as having an insignificant representativity (category D).

degradation or destruction to which the habitats and species on the site are exposed, including those brought about by climate change.

Site-level conservation objectives should define the desired conservation condition of the species and habitat types on the site for maximising its contribution to achieving FCS at the appropriate level. They are sometimes defined as a set of targets to be achieved over a certain period of time. These targets should be established in function of the conservation assessment of each species and habitat type on the site as recorded in the SDF.

Conservation objectives may reflect priorities within a site. In case C-241/08, the Court concluded that ‘...determining the conservation and restoration objectives in the context of Natura 2000 may require, as the Advocate General pointed out in point 71 of her Opinion, the reconciliation of various conflicting objectives.’

It is important to distinguish clearly between objectives and measures. For example, conservation objectives can be expected to be reasonably stable over time – indeed, in most cases they need to be long-term aims. Meanwhile, the conservation measures required to achieve those objectives are likely to change, including in response to changing patterns of threats to sites and, of course, the hopefully positive effects of conservation measures already taken.

Once the conservation objectives have been defined for a Natura 2000 site, there is some flexibility in defining and establishing the conservation measures. Several options can be considered, (using a choice of administrative, contractual or statutory measures), which take into account other socio-economic activities in the sites.

#### Examples of site-level conservation objectives

1. *Site x has been designated in view of its importance for the habitat type: semi-natural grasslands (6210). According to the SDF, the habitat type has a poor conservation condition (marked as class C in the SDF). The conservation objective for this site may therefore have been set to improve the conservation of the habitat type to class A - excellent - within 10 years, considering that the habitat type has a very unfavourable conservation status within the region. The necessary conservation measures established under Article 6(1) have been designed to achieve that objective.*
2. *Site y has been designated because it harbours a large area of active raised bog (7110). According to the SDF, the habitat type is in excellent condition (marked as class A in the SDF). The conservation objective for that site has therefore been set simply to maintain this condition, even though the habitat types has an unfavourable conservation status within the region. No conservation measures have been established under Article 6(1) since the site does not require any active management measures to maintain this condition.*

**In principle conservation objectives should be set for each site and for all species and habitat types significantly present on each site. They should be based on the ecological requirements of the species and habitats present and should define the desired conservation condition of these species and habitat types on the site. They should be**

**established in function of the conservation assessment of each species and habitat type as recorded in the Standard Data Form.**

**The conservation objectives should also reflect the importance of the site for the coherence of Natura 2000 so that each site contributes in the best possible way to achieving FCS at the appropriate geographical level within the natural range of the respective species or habitat types.**

### 2.3.2. *Establishing the necessary conservation measures*<sup>24</sup>

Conservation measures are the actual mechanisms and actions to be put in place for a Natura 2000 site with the aim of achieving the site's conservation objectives and addressing the pressures and threats that the species and habitats within the site face.

According to Article 6(1) '*Member States shall establish the necessary conservation measures*' which correspond to the ecological requirements of the habitats and species of Community interest present. This should be understood as meaning that all necessary conservation measures ***must be taken***.

This is confirmed by the Court which has ruled that '*the Directive requires the adoption of necessary conservation measures, a fact which excludes any discretion in this regard on the part of the Member States and restricts any latitude of the national authorities when laying down the rules or taking decisions to the means to be applied and the technical choices to be made in connection with those measures. By means of the words used in Article 6(1) of the Directive, the Community legislature sought to impose on the Member States **the obligation to take the necessary conservation measures** that correspond to the ecological requirements of the natural habitat types and species covered by Annex I and Annex II to the Directive respectively*' (case C-508/04 paragraphs 76, 87).

Furthermore the Court has ruled that '*Article 6(1) of the Habitats Directive and Article 4(1) and (2) of the Birds Directive require, if those provisions are not to be rendered redundant, that the conservation measures necessary for maintaining a favourable conservation status of the protected habitats and species within the site concerned not only be adopted, but also, and above all, be **actually implemented***' (case C-441/17 paragraph 213).

The obligation is to establish the necessary conservation measures, irrespective of whether those measures are applied within individual sites, or even in some cases outside the boundaries of sites or across multiple sites. In some cases it may be that a significant component of a Member State's compliance with Article 6(1) is through measures of a broader scope which nevertheless contribute to site-specific conservation objectives and are adapted to the ecological requirements of protected habitats and species in the SAC. This

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<sup>24</sup> See Commission note on Establishing Conservation Measures (2013) - [http://ec.europa.eu/environment/nature/natura2000/management/docs/commission\\_note/comNote%20conservation%20measures\\_EN.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/comNote%20conservation%20measures_EN.pdf).

may be particularly relevant to marine sites where, for example, wider regulation of fisheries activities<sup>25</sup> may be a significant element of Article 6(1) compliance.

### **Key elements to consider in establishing the necessary conservation measures<sup>26</sup>**

**Sound knowledge base** on the existing conditions in the site, on the species and habitats status and the main pressures and threats that can affect them, the existing land uses and stakeholders interests, etc. This information should include the precise location of key natural features (habitat types and species); the main land uses and activities that can influence the conservation status of relevant habitats and species; the identification of all relevant stakeholders that need to be involved or consulted in the management planning process; potential conflicts and possible ways and means to solve them.

**Participation, consultation and communication** in planning and preparing the conservation management of a Natura 2000 site allows to take into account the views of the people that live and work or use the site and to ensure engagement of the different stakeholders in the management of the site, so that the likelihood of success is enhanced. Participation can be carried out throughout the process of management planning, starting with early consultation and involvement of stakeholders to inform about the conservation objectives of the site and its importance and to clarify the steps for proper management. This can be done for example through steering groups or committees involving local authorities and representatives of land owners, users and main operators in the Natura 2000 site. It requires efficient organization of the process, collaboration of different policy levels, sufficient staff and budget and effective communication tools; targeted training and effective conflict resolution methods, as well as facilitation of the whole process by a specifically appointed 'site champion', can also be of great added value.

**Defining the necessary conservation measures with sufficient level of detail** (who does what, when and how) facilitates their implementation and can prevent possible conflicts. The measures must be realistic, quantified, manageable and clearly formulated, drawing on an appropriate level of technical expertise which identifies essential measures and those for which there are various alternative options for implementation, adapted to local interests. The precise location and a description of the means and tools required for their implementation should be provided, e.g. through a work plan flexible enough to allow its review and adaptation as required. It is important also to set a timeline to review the implementation of conservation measures taken, their suitability and the progress towards achieving conservation objectives.

**The necessary resources** for implementation of the conservation measures need to be considered in any management instrument for Natura 2000 sites, including information about estimated costs for implementation and monitoring, administration, compensation payments, etc, as well as about required human resources and skills, and **possible financial instruments**. Accordingly, full regard is needed to the multiple benefits that flow from

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<sup>25</sup> In accordance with rules under the Common Fishery Policy, including measures taken under Article 11 of Regulation (EU) No 1380/2013.

<sup>26</sup> Extract from Commission Note on Establishing Conservation Measures for Natura 2000 sites, available at [http://ec.europa.eu/environment/nature/natura2000/management/docs/commission\\_note/comNote%20conservation%20measures\\_EN.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/comNote%20conservation%20measures_EN.pdf).

investing in Natura 2000 through their ecosystem services. The various socio-economic activities and their interactions with the natural environment should also be analysed to determine possible costs and benefits arising out of the site management and the actual need for financial support.

**Effective implementation and communication** needs to be ensured through a mechanism demonstrating that the necessary measures are not just established but also actually implemented, and by making them publicly available (e.g. on websites or official registers) as a source of information for all those concerned.

**Article 6(1) of the Habitats Directive imposes an obligation to establish and implement the necessary conservation measures that correspond to the ecological requirements of the natural habitat types and species covered by Annex I and Annex II, a fact that excludes any discretion in this regard on the part of the Member States.**

### 2.3.3. *The ecological requirements*

Article 6(1) specifies that the necessary conservation measures have to correspond ‘*to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites*’. It is therefore in relation to the ecological requirements of the natural habitat types and the species that Member States have to determine the conservation measures.

Although the Directive does not contain any definition of the ‘*ecological requirements*’, the purpose and context of Article 6(1) indicate that these involve all the ecological needs, including both abiotic and biotic factors, which are deemed necessary to ensure the conservation of the habitat types and species, including their relations with the physical environment (air, water, soil, vegetation, etc.)<sup>27</sup>.

These requirements are based on scientific knowledge and can only be defined on a case-by-case basis, according to the natural habitat types in Annex I, the species in Annex II, and the sites which host them. Such knowledge is essential to make it possible to draw up the conservation measures, on a case-by-case basis.

*The ecological requirements may vary from one species to another but also, for the same species, from one site to another.*

*Thus, for the bats included in Annex II to the Directive, the ecological requirements differ between the period of hibernation (when they rest in underground environments, in hollow shafts or in dwellings) and the active period, from spring onwards (during which they leave their winter quarters and resume their activities of insect hunting).*

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<sup>27</sup> Work under Mapping and Assessment of Ecosystems and their Services can support the identification of the ecological requirements of the natural habitat types in Annex I - see especially 5<sup>th</sup> technical report ([http://ec.europa.eu/environment/nature/knowledge/ecosystem\\_assessment/index\\_en.htm](http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm)).

*For the Annex II amphibian Triturus cristatus, the ecological requirements vary during its life cycle. The species hibernates in the ground (cavities, fissures), then lays its eggs in spring and at the beginning of the summer in ponds. It then leaves the aquatic environment and lives on land during the summer and autumn. For the same species, the ecological requirements may therefore vary according to the sites concerned (aquatic or land). This species also inhabits an extensive range throughout Europe, which means that its ecological requirements may differ from one part of its range to another as well.*

The identification of the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites is the responsibility of the Member States. The latter may wish to exchange their knowledge in this field, with the support of the European Commission and the European Environment Agency - European Topic Centre on Biological Diversity.

**The conservation measures have to correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge.**

#### **2.4. WHAT FORM CAN THE NECESSARY CONSERVATION MEASURES TAKE?**

The conservation measures can take the form of *'appropriate statutory, administrative or contractual measures...'* and *'if need be'*, the form of *'appropriate management plans'*.

The choice is left to the Member States, in line with the principle of subsidiarity. The Directive sets out the results to be achieved and leaves it up to the Member States to decide how to do so in practice. Often, the different options referred to in Article 6(1) are used in combination for the management of Natura 2000 sites.

In all cases, the responsibilities for implementing conservation measures need to be clearly defined, along with the relevant financial resources.

##### **2.4.1. Management plans**

The necessary conservation measures may involve *'if need be, appropriate management plans specifically designed for the sites or integrated into other development plans'*. Such management plans should address all existing activities, including regular ongoing activities such as day-to-day agricultural activities, whereas new plans and projects are dealt with under Article 6(3) and 6(4).

In general, management plans at site level are used to formulate the site's conservation objectives, on the basis of an analysis of the conservation status of species and habitats on the site and the pressures and threats they face, together with the measures necessary to attain these objectives. Management plans are often used as a tool to guide managers and other interested parties in dealing with the conservation of Natura 2000 sites, and to involve the different socioeconomic stakeholders and authorities, including local communities,

landowners, farmers, fishermen and other interest groups, in implementing the necessary conservation measures that have been identified.

Management plans are a useful tool for ensuring that the implementation of Article 6(1) provisions is done in a clear and transparent way, enabling all stakeholders to be informed about what Natura 2000 sets out to achieve and to engage actively in this discussion. Management plans may also help identifying the funding needs for the measures and achieving better integration into other plans.

The words ‘if need be’ indicate that management plans may not always be necessary. If management plans are chosen by a Member State, it will often make sense to establish them before concluding the other measures mentioned in Article 6(1), particularly the contractual measures. Contractual measures will often involve a relationship between the competent authorities and individual landowners and will be limited to individual land-holdings which are normally smaller than the site. In such circumstances, a management plan focused on the site will provide a wider framework, and its contents will provide a useful starting point for the specific details of contractual measures.

The management plans must be ‘*appropriate*’ and ‘*specifically designed for the sites*’, i.e. targeted at the sites of the Natura 2000 network. Existing management plans for other protected area categories (e.g. national or natural parks, etc.) are not always sufficient to address the management of Natura 2000 sites and should therefore be adapted or supported by further measures to meet the specific conservation objectives of the species and habitat types of Community interest present on the site. Furthermore, the boundaries of other types of protected areas and those of the Natura 2000 sites may not coincide.

Management plans can be stand-alone documents or can also be ‘integrated into other development plans’, in line with the principle of integration of the environment into other EU policies. In the case of an integrated plan, it is important to ensure that clear conservation objectives and measures are set for the relevant habitats and species present on the site.

**Management plans for the Natura 2000 sites are a useful tool for ensuring that the implementation of Article 6 (1) provisions is done in a clear and transparent way, and with the involvement of stakeholders. These plans are not always necessary but, if they are used, they should be specifically designed for the sites or incorporated into other development plans when those exist. They should address all known activities, whereas new plans and projects are dealt with under Article 6(3) and 6(4).**

#### 2.4.2. *Statutory, administrative or contractual measures*

The phrase ‘*if need be*’ refers only to the management plans and not to the statutory, administrative or contractual measures which are needed in all cases (case C-508/04 paragraph 71). Thus, even if a Member State considers a management plan unnecessary, it will still have to take such measures.

The division into these three categories of measures has to be considered in a broad sense. A variety of measures may be considered as appropriate to achieve the conservation objectives established for each site. Often this involves active management but, in some cases, it may also involve more passive preventative measures (e.g. non-intervention management). On

the other hand, they may not necessarily be new measures, since existing measures may be considered sufficient if they are appropriate.

- *Statutory measures* usually follow a pattern laid down in law and can set specific requirements in relation to activities that can be allowed, restricted or forbidden in the site.
- *Administrative measures* can set relevant provisions in relation to the implementation of conservation measures or the authorisation of other activities in the site.
- *Contractual measures* involve establishing contracts or agreements usually among managing authorities and land-owners or users on the site.

*Agri-environmental or forestry-environmental measures* serve as a good example of a contractual measure that takes socioeconomic requirements into account when establishing agreements which benefit Natura 2000 sites. They should be designed in line with the conservation measures established for the site and in view of reaching its conservation objectives.

- *Agri-environmental agreements* with farmers within the Rural Development Programmes can be used as a contractual measure aiming to maintain or improve the conservation condition of certain habitat types (e.g. meadows, pastures) and species across a range of sites.
- *Forestry-environmental measures* can also be used to establish contracts and agreements with forest owners on the management of the forest to favour the conservation of habitats and species.

In this perspective, all suitable EU funds (e.g. rural development and regional funds as well as the LIFE programme<sup>28</sup>) should be considered as a means for implementing these measures<sup>29</sup>.

The choice between statutory, administrative or contractual measures is left to the Member States. This is in line with the principle of subsidiarity. However, Member States must choose at least one of the three categories, i.e. statutory, administrative, contractual.

There is no hierarchy between these three categories. Thus Member States have the choice to use, on a Natura 2000 site, just one category of measures (e.g. only contractual measures) or combined measures (e.g. combination of statutory and contractual measures according to the conservation issues of the natural habitat types in Annex I and the species in Annex II present on the site). Moreover, on top of the selected compulsory measures, Member States may establish and implement management plans.

The three categories of measures are qualified as ‘appropriate’. This qualifier is not defined in the Directive. However, in the case of Article 6(1), the statutory, administrative or contractual measures are embraced within the concept of conservation measures. The

<sup>28</sup> Regulation (EU) No. 1293/2013

<sup>29</sup> Financing Natura 2000 – [http://ec.europa.eu/environment/nature/natura2000/financing/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/financing/index_en.htm)

qualifier ‘appropriate’ has no other objective than to recall that whatever the type of measure chosen by the Member States, there is an obligation to ensure that they correspond to the ecological requirements of the target features of particular Natura 2000 sites and respect the general aim of the Directive defined in Article 2(1) and (2).

**For SACs, Member States are required to establish and implement the appropriate statutory, administrative or contractual measures. They must a) correspond to the ecological requirements of habitats in Annex I and species in Annex II present on the sites and b) fulfil the Directive’s overall aim of maintaining or restoring at a favourable conservation status the natural habitats and the species of fauna and flora of Community interest.**

### 3. Article 6(2)

#### Clarification of the concepts of *taking appropriate avoidance steps; deterioration; and disturbance*

##### 2.5. TEXT

*'Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive.'*

##### 2.6. SCOPE

The article takes as its starting point the **prevention principle**: *'Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration... as well as disturbances...'*

These measures go beyond the management measures needed for conservation purposes, since these are already covered by Article 6(1). The words *'avoid'* and *'could be significant'* stress the anticipatory nature of the measures to be taken. It is not acceptable to wait until deterioration or disturbances occur before taking measures (case C-418/04 – see also under section 4.4.1 the interpretation of *'likely to'* in Article 6(3)).

This article should be interpreted as requiring Member States to take all the appropriate actions to ensure that no deterioration or significant disturbance occurs. It requires both human-caused and any predictable natural deterioration of natural habitats and the habitats of species to be avoided.

The scope of this article is broader than that of Articles 6(3) and 6(4) which apply only to plans and projects. It also applies to the performance of all ongoing activities, like agriculture, fishing or water management, that may not fall within the scope of Article 6(3)<sup>30</sup>, along with plans and projects which have already been authorised in the past and subsequently prove likely to give rise to deterioration or disturbances<sup>31</sup>. It can also apply to the implementation of plans or projects which were authorized before Article 6(3) became applicable (C-399/14 para. 33).

Article 6(2):

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<sup>30</sup> See also section 4.4.1 of this document on term 'project'.

<sup>31</sup> Case C-127/02, paragraph 37. See also section 4.3 of this document on relationship between Article 6(2) and 6(3).

- Applies **permanently** in SACs, SCIs and SPAs. It may concern past, present or future activities or events. If an already existing activity in a SAC or SPA is likely to cause deterioration of natural habitats or disturbance of species for which the area has been designated, it must be covered by the appropriate measures foreseen in Article 6(2) of the Habitats Directive or Article 4(4) of the Birds Directive respectively, when applicable. This may require, if appropriate, bringing the negative impact to an end by stopping the activity and/or by taking mitigation or restoration measures. This may be done by means of an ex-post assessment.

This is supported by the *Owenduff* case (C-117/00 paragraphs 28-30)<sup>32</sup> in which the Court ruled that Article 6(2) was infringed because measures had not been adopted to prevent deterioration, in an SPA, of the habitats of the species for which the SPA was designated.

The Court has also ruled that, by providing generally that certain activities practised under the conditions and in the areas authorised by the laws and regulations in force do not constitute activities causing disturbance or having such an effect, a Member State fails to fulfil its obligations under Article 6(2) of the Habitats Directive (case C-241/08 paragraph 76).

- **Is not limited to intentional acts**, but could also cover any chance events that might occur (fire, flood, etc.), as long as they are predictable - for example, if they tend to occur every few years<sup>33</sup>. In case of catastrophes this concerns only the obligation to take (relative) precautionary measures to decrease the risk of such catastrophes as long as they could jeopardise the aim of the Directive.
- **Is not limited to human activities**. In the case C-6/04 paragraph 34, the Court considered that ‘*in implementing Article 6(2) of the Habitats Directive, it may be necessary to adopt both measures intended to avoid external man-caused impairment and disturbance and measures to prevent natural developments that may cause the conservation status of species and habitats in SACs to deteriorate*’. For instance, in the case of natural succession or of climate change effects, measures would need to be taken to halt or counter this process if it is deemed to be negatively impacting on the species and habitat types for which the site has been designated. Accordingly, naturally dynamic situations, as well as modifications linked to climate change (e.g. sea level rise, disappearing or newly arriving species) should be assessed case-by-case<sup>34</sup>.

The legislator envisaged certain *limits* to the responsibility of the Member States:

- *Spatial limit* – the measures target only species and habitats located ‘*in the SACs*’. On the other hand, measures may need to be implemented *outside* the SAC if external events may have an impact on the species and the habitats inside the SAC. For instance, in the case of a toxic spill affecting a wetland, the application of Article 6(2) would require that

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<sup>32</sup> see also C-75/01, C-418/04, C-508/04, 301/12

<sup>33</sup> In particular, climate projections point to the increased frequency and intensity of extreme weather events which need to be factored in.

<sup>34</sup> See guidance on Climate change and Natura 2000 at <http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf>.

all preventive measures should have been taken to avoid the spillage, even if its location is distant from the wetland. Indeed, the article does not specify that measures have to be **taken in** the SAC but that they should **avoid deterioration in** the SAC. The same logic applies to SPAs.

- *Limit of habitats and species concerned* - the appropriate measures concern only habitats and species *'for which the areas have been designated'*. In particular, the habitats and species concerned by the measures to be taken are those identified in the Natura 2000 Standard Data Forms (see sections 2.2 and 4.6.3). The aim is not therefore to take general protection measures, but rather to take measures focused on the species and habitats which justified the selection of the site (i.e. those recorded as significantly present in the SDF and identified in the designation act). The disturbances and/or deterioration will thus be determined with reference to the information communicated by the Member States and used to ensure the coherence of the Natura 2000 network for the species and habitats concerned.

**Member States are required to take preventive measures to avoid deterioration and disturbances connected with a predictable event, activity or process. These measures apply to all species and habitats for which the sites have been designated, and should also be implemented, if necessary, outside the sites.**

## 2.7. WHAT DOES 'TAKE APPROPRIATE STEPS TO AVOID...' MEAN?

Article 6(2) requires Member States to *'take appropriate steps to avoid...'*. Several Court cases have clarified the type of legal protection regime that needs to be put in place for the purposes of Article 6(2) of the Habitats Directive. They stress in particular the need for the legal regime to **be specific, coherent and complete**, capable of ensuring the sustainable management and the effective protection of the sites concerned (C-293/07 paragraphs 26 - 29)<sup>35</sup>.

The Court has also identified infringements in cases where the regime in place was *'too general and did not concern specifically the SPA or the species that live in it'* (C-166/04 paragraph 15), where provisions can come into play *'only after the activities in question have already commenced and thus only after any deterioration has already occurred'* (C-418/04 paragraph 208), or where SPAs were submitted to *'heterogeneous legal regimes which did not confer on the SPAs a sufficient protection'* (C-293/07 paragraph 26).

In certain cases, merely bringing criminal proceedings against or imposing fines on the party responsible for deterioration/disturbance might not be enough for a Member State to ensure compliance with Article 6(2) (C-504/14, paragraphs 55 and 56).

According to the Court, *'the term "appropriate steps" contained in Article 6(2) of the Habitats Directive implies that Member States enjoy discretion when applying that provision. It should nevertheless be recalled that an activity complies with Article 6(2) of the*

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<sup>35</sup> See also Cases C-491/08, C-90/10

*Habitats Directive only if it is guaranteed that it will not cause any disturbance likely significantly to affect the objectives of that directive, particularly its conservation objectives'* (judgment in Commission v Spain, C-404/09 paragraph 126 and the case-law cited in it). The Court further states that *'should a subsequent review, on the basis of Article 6(2) of the Habitats Directive, prove to be an 'appropriate step' within the meaning of that provision, that review must define what risks of deterioration or disturbance likely to be significant within the meaning of that provision are entailed by the implementation of the plan or project, and that review must be carried out in accordance with the requirements of Article 6(3) of that directive'* (C-399/14, paragraphs 40, 41, 54).

**The legal regime under Article 6(2) has to be specific, coherent and complete, capable of ensuring the effective protection of the sites concerned. Member States enjoy discretion when taking appropriate steps to implement Article 6(2), provided it is guaranteed that no deterioration and disturbance will occur. If a review of a plan or project is necessary to comply with the provisions of Article 6(2), it must be carried out in accordance with the requirements of Article 6(3).**

## 2.8. DOES IMPLEMENTATION DIFFER FOR DETERIORATION AND DISTURBANCE?

In terms of **disturbance of species**, Article 6(2) specifies that appropriate steps have to be taken to avoid it *'in so far as such disturbance could be significant in relation to the objectives of this Directive'*.

The disturbance in question has to be relevant to (have an impact on) the conservation status of the species in relation to the objectives of the Directive. It is therefore in relation to these **objectives** that the Member State has to determine whether or not disturbance is significant.

In terms of **deterioration of habitats** (which relates both to natural habitats and habitats of species) however, the effect in relation to the objectives of the Directive is not explicitly mentioned in the text of Article 6(2). It is simply stated that the deterioration of habitats must be avoided.

It may seem difficult to assess deterioration in absolute terms without reference to measurable limits. However, connecting deterioration to the site-level conservation objectives, which contribute to achieving the Directive's objectives, may make it possible to interpret the limits of what constitutes deterioration (see section 3.5.1).

Article 6(2) and (3) of the Habitats Directive must be construed as a coherent whole and are designed to ensure the same level of protection of habitat types and habitats of species (C-258/11, paragraph 32; C-521/12, paragraph 19; C-387&388). Therefore, the assessment of the deterioration, if necessary, should follow similar criteria and methods as those used in applying Article 6(3) (see also C-399/14 paragraph 54).

The conservation condition of a habitat type or habitat of a species present in a site may be assessed against its conservation condition as provided in the Natura 2000 Standard Data Form, subject to this being up to date.

On a particular site the conservation condition should reflect the dynamic nature of the habitats and species concerned.

**Disturbance of a species must be avoided in so far as it could be significant in relation to the Directive's objectives. On the other hand, deterioration of a natural habitat or a habitat of a species is not qualified by the need to be significant in relation to the Directive's objectives, it must simply be avoided altogether.**

**Deterioration and disturbance should be assessed against the conservation objectives of the site and the conservation condition of the species and habitat types present in the site using the same criteria as for the Article 6(3) procedure. This notion should be interpreted in a dynamic way, according to the evolution of the conservation condition of the habitat or of the species in that site.**

## 2.9. INDICATORS OF DETERIORATION AND DISTURBANCE

Member States must take appropriate protective measures in order to maintain *the ecological characteristics* of Natura 2000 sites from the time they are proposed as sites of Community interest.

The Court has confirmed this in the *Bund* case (C-244/05 paragraph 45): ‘...it must be remembered that, in accordance with the first part of Annex III to the Directive, the ecological characteristics of a site identified by the competent national authorities must reflect the assessment criteria which are listed there, namely, the degree of representativity of the habitat type, its area, structure and functions, the size and density of the population of the species present on the site, the features of the habitat which are important for the species concerned, the degree of isolation of the population present on the site and the value of the site for the conservation of the habitat type and species concerned’.

It follows that the ecological characteristics of the site must not be allowed to deteriorate below their level at the time of designation. In case a better condition has been achieved, this improved condition should be the reference. As a general rule, on a particular site, disturbance or deterioration is assessed on a case-by-case basis, using indicators (see below) with respect to the significance of their change in value<sup>36</sup>.

### 2.9.1. *Deterioration of habitat types and habitats of species*

Deterioration is any form of degradation affecting a habitat. The Member State has to take into consideration all the influences on the environment hosting the habitats (space, water, air, soils). If these influences result in making the conservation parameters for the habitat worse than they were before, the deterioration can be considered to have occurred.

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<sup>36</sup> Work under Mapping and Assessment of Ecosystems and their Services provides indicators on pressures on ecosystems that can also be used to assess deterioration and disturbance - see especially 5<sup>th</sup> technical report ([http://ec.europa.eu/environment/nature/knowledge/ecosystem\\_assessment/index\\_en.htm](http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm)).

It is important to recall that the requirement to avoid deterioration applies not just to the *habitat types* listed in Annex I to the Habitats Directive for which the site has been designated, but also to the *habitats of the species* listed in Annex II to the Habitats Directive and Annex I to the Birds Directive, and of the migratory species covered by Article 4(2) of the Birds Directive, for which the site has been designated.

To assess this deterioration, one can refer to the conservation objectives of the site and the ecological characteristics of the site that lead to it being selected as an SCI (in accordance with the selection criteria in Annex III to the Directive) or as an SPA.

These ecological characteristics for **habitat types** are recorded in the SDF using the following parameters<sup>37</sup>:

- *The degree of **representativity** of the habitat type – this gives a measure of “how typical” a habitat type is.*  
This should be linked to the interpretation manual of Annex I habitat types<sup>38</sup> since this manual provides a definition of each habitat type, together with an indication of characteristic species and other relevant elements. Any event, activity or process that causes the habitat type to lose its representativity should be assessed as deterioration.
- ***The surface** of the habitat in the site and its relative surface as compared to the total area covered by the habitat type within the national territory.*  
Any event, activity or process which contributes to the reduction in the size, within the site, of the habitat type or the habitat of the species for which this site has been designated, should be regarded as deterioration.
- *The **degree of conservation** of the structure and functions of the natural habitat type concerned and its restoration possibilities.*

Similar considerations may apply in the case of habitats of species, e.g. wetlands for birds. Any impairment of any of these factors which are necessary for the long-term maintenance of the habitats and habitats of species may be regarded as deterioration, e.g. deterioration may be caused not just by the habitat's physical reduction in size but also by the loss of quality as a breeding, feeding, resting or staging site for the species.

The functions necessary for the long-term maintenance depend of course on the habitat concerned. Member States must know these requirements (by means of studies, data collection, etc.) since Article 6(1) provides that they have to take measures ‘*which correspond to the ecological requirements of the habitats in Annex I and species in Annex II*’.

**Habitat deterioration occurs on a site when the area covered by the habitat type or habitat of the species in this site is reduced, or the specific structure and functions**

<sup>37</sup> Commission implementing Decision of 11 July 2011 concerning a site information format for Natura 2000 sites (notified under document C(2011) 4892) (2011/484/EU) OJ L198 30.7.2011, p 39)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:198:0039:0070:EN:PDF>

<sup>38</sup> [http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int\\_Manual\\_EU28.pdf](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf)

necessary for the long-term maintenance of that habitat or the status of the species which are associated with this habitat are reduced in comparison to their initial or restored condition. This assessment is done according to the site's conservation objectives and its contribution to the coherence of the network.

### 2.9.2. *Disturbance of species*

Contrary to deterioration, disturbance does not directly affect the physical conditions of a site; it concerns the species and it may be limited in time (noise, source of light etc.). The intensity, duration and frequency of repetition of disturbance are therefore important parameters.

To assess whether a disturbance is significant in relation to the objectives of the Directive, reference can be made to the definition of the *favourable conservation status of a species* given in Article 1(i), on the basis of the following factors:

- ***'Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable element of its natural habitats'***  
Any event, activity or process contributing to the long-term decline of the population of the species on the site can be regarded as a significant disturbance.
- ***'The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future'***  
Any event, activity or process contributing to the reduction or to the risk of reduction of the range of the species within the site can be regarded as a significant disturbance.
- ***'There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis'***  
Any event, activity or process contributing to the reduction of the size of the available habitat of the species can be regarded as a significant disturbance.

In that regard effects such as noise, vibrations and isolation of sub-populations of a species are capable of causing significant disturbances for that species. Therefore, failure by a Member State to take appropriate measures to prevent them constitutes a failure to fulfil obligations under Article 6(2) of the Habitats Directive (case C-404/09).

Factors such as intensity, frequency and duration of the disturbance may be taken into account to determine its significance, which may vary from one species to another and according to different times and different conditions (e.g. food resources, or through the presence of sufficient undisturbed areas nearby).

**Disturbance of a species occurs on a site from events, activities or processes contributing, within the site, to a long-term decline in the population of the species, to a reduction or risk of reduction in its range, and to a reduction in its available habitat. This assessment is done according to the site's conservation objectives and its contribution to the coherence of the network.**

### 3. Article 6(3)

#### **Clarification of the concepts of *plan or project, likelihood of significant effects, appropriate assessment, site's conservation objectives; cumulative effects, competent authorities, opinion of the public, integrity of the site***

##### 3.1. TEXT

*'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'*

##### 3.2. SCOPE

As regards **purpose and context**, the role of the third and fourth paragraphs of Article 6 needs to be considered in relation to that of the first (or, in the case of SPAs, with that of the first and second paragraphs of Articles 3 and 4 of the Birds Directive) and second paragraphs of Article 6. In particular, it is important to remember that, even if it is determined that an initiative or activity does not fall within the scope of Article 6(3), it will still be necessary to make it compatible with the other aforementioned provisions.

It may be noted that activities which contribute to or are compatible with the site conservation objectives may already be accommodated within Article 6(1) and (2) - for example, traditional farming practices which sustain particular habitat types and species. The provisions of Article 6(3) and (4) constitute a form of permitting regime, setting out the circumstances within which plans and projects with likely significant negative effects on Natura 2000 sites may or may not be allowed. They thus ensure that economic and other non-ecological requirements can be fully considered in light of the site's conservation objectives.

Article 6(3) defines a *step-wise procedure* for considering plans and projects<sup>39</sup>.

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<sup>39</sup> A simplified flow chart of this procedure is presented in Annex II at the end of this document.

- a) The first part of this procedure consists of a pre-assessment stage ('screening') to determine whether, firstly, the plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by Article 6(3), first sentence.
- b) The second part of the procedure, governed by Article 6(3), second sentence, relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4)) comes into play if, despite a negative assessment, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The applicability of the procedure, and the extent to which it applies, depend on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

As regards *geographical scope*, the provisions of Article 6(3) are not restricted to plans and projects that exclusively occur in or cover a protected site; they also target plans and projects situated outside the site but likely to have a significant effect on it regardless of their distance from the site in question (cases C-98/03 paragraph 51 and C-418/04 paragraphs 232, 233).

Furthermore, the Court has stated that Article 6(3) of the Habitats Directive does not preclude a more stringent national protective measure which might for instance impose an absolute prohibition of a certain type of activity, without any requirement for an assessment of the environmental impact of the individual project or plan on the Natura 2000 site concerned (C-2/10 paragraphs 39-75).

**Article 6(3) defines a step-wise procedure for considering plans and projects that may have a significant effect on a Natura 2000 site. Activities not falling within the scope of Article 6(3) will still have to be compatible with the provisions of Article 6(1) - or, in the case of SPAs, Articles 3, 4(1) and (2) of the Birds Directive - and 6(2) of the Habitats Directive.**

### 3.3. THE RELATIONSHIP BETWEEN ARTICLE 6(2) AND ARTICLE 6(3)

Articles 6(2) and 6(3) are both intended to prevent any negative effects on a site. In the case of Article 6(2) the intention is to avoid '*deterioration ...or significant disturbance*'. In the case of Article 6(3) the aim is to avoid the authorisation of any plans or projects that could '*adversely affect the integrity of the site*'. The objectives are therefore broadly similar. However, it should be recalled that the provisions of Article 6(2) apply to the site *at all times* whereas those under Article 6(3) only come into play *if a plan or project is being proposed* that may have significant effects on the site. Because both paragraphs serve the same overall objective, it is logical to conclude that any plan or project approved in compliance with Article 6(3) will also be in conformity with the provisions of Article 6(2), unless it subsequently proves likely to deteriorate the habitat and/or disturb the species for which the site has been designated.

This was confirmed by the Court (case C-127/02 paragraphs 35-37): *‘the fact that a plan or project has been authorised according to the procedure laid down in Article 6(3) renders superfluous, as regards the action to be taken on the protected site under the plan or project, a concomitant application of the rule of general protection laid down in Article 6(2). Authorisation of a plan or project granted in accordance with Article 6(3) necessarily assumes that it is considered not likely adversely to affect the integrity of the site concerned and, consequently, not likely to give rise to deterioration or significant disturbances within the meaning of Article 6(2).*

*Nevertheless, it cannot be precluded that such a plan or project subsequently proves likely to give rise to such deterioration or disturbance, even where the competent authorities cannot be held responsible for any error. Under those conditions, application of Article 6(2) of the Habitats Directive makes it possible to satisfy the essential objective of the preservation and protection of the quality of the environment, including the conservation of natural habitats and of wild fauna and flora, as stated in the first recital in the preamble to that directive.’*

On the other hand, where authorisation for a plan or project has been granted without complying with Article 6(3), a breach of Article 6(2) may be found where deterioration of a habitat or disturbance of the species for which the area in question was designated has been established (C-304/05, C-388/05, C-404/09, C-141/14).

The same applies to all projects and activities which were authorised prior to the inclusion of sites into the SCI list, or their classification as SPAs, and which do not fall under the obligation of the assessment of their implication for habitat types and species under Article 6(3) but the effects of which might adversely affect the integrity of those sites. Article 6(2) and (3) of the Habitats Directive must be construed as a coherent whole, and are designed to ensure the same level of protection of natural habitats and habitats of species (C-258/11, C-521/12, C-399/14, C-387&388/15).

Therefore, where Article 6(2) leads to an obligation to carry out a subsequent review of the implications for the site concerned of a plan or project, that review must be carried out in accordance with the requirements of Article 6(3) (Case C-399/14, paragraph 54).

Article 6(3) does not apply in respect of any action whose implementation was subject to authorisation but which was carried out without authorisation and thus unlawfully. However, such actions may have consequences breaching Article 6(2), and the Member State is obliged to act in line with the latter provision (case C-504/14).

### **3.4. WHAT IS MEANT BY ‘PLAN OR PROJECT NOT DIRECTLY CONNECTED WITH OR NECESSARY TO THE MANAGEMENT OF THE SITE’?**

In as much as the Habitats Directive does not define ‘plan’ or ‘project’, due consideration must be given to general principles of interpretation, in particular the principle that an individual provision of EU law must be interpreted on the basis of its wording and of its purpose and the context in which it occurs.

There are two arguments for giving a broad interpretation to ‘plan’ or ‘project’:

- Firstly, the Directive does not circumscribe the scope of either ‘plan’ or a ‘project’ by reference to particular categories of either. Instead, the key limiting factor is whether or not they are likely to have a significant effect on a site.
- Secondly, a corollary of the continued applicability of Article 6(2) to activities excluded from the scope of Article 6(3) and (4) is that, the more narrowly ‘plan’ and ‘project’ are defined, the more potentially restricted are the means to consider a conservation interest against a damaging non-conservation interest, and hence to ensure the correct application of Article 6(2), i.e. avoiding deterioration and disturbance.

### 3.4.1. *Project*

Support for a broad definition of ‘project’ is reinforced, by analogy, if we refer to Directive 2011/92/EU *on the assessment of the effects of certain public and private projects on the environment*<sup>40</sup> - hereinafter referred to as the EIA Directive. That directive operates in a similar context, setting rules for the assessment of projects with likely significant effects on the environment. Article 1(2) of the EIA Directive provides that ‘project’ means:

*‘ - the execution of construction works or of other installations or schemes, - other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources.’*

This is a very broad definition (C-72/95 *Kraaijeveld* paragraphs 30 and 31) which is not limited to physical construction but also covers other interventions in the natural environment including regular activities aimed at utilising natural resources<sup>41</sup>. For example, a significant intensification of agriculture which threatens to damage or destroy the semi-natural character of a site may be covered<sup>42</sup>.

The Court has issued a number of rulings regarding the type of interventions which require the application of Article 6(3).

The *Waddenzee* case (C-127/02 paragraphs 25 – 29) clarified that **activities which have been carried out periodically** for several years on the site concerned but for which a licence is granted annually for a limited period, with each licence entailing a new assessment both of the possibility of carrying on that activity and of the site where it may be carried on, should be considered, at the time of each application, as a distinct plan or project within the meaning of the Habitats Directive.

In the *Papenburg* case (C-226/08 paragraphs 50 - 51) the Court further ruled that: ‘... ongoing maintenance works in respect of the navigable channels of estuaries, which are not

<sup>40</sup> OJ L 26, 28.1.2012, p.1, as amended by Directive 2014/52/EU.

<sup>41</sup> The relevance of this definition to the Habitats Directive is also stated by the Court (case C-127/02, paragraph 26).

<sup>42</sup> To fall under the scope of the EIA Directive, such interventions/activities have to involve alterations to the physical aspects of a given site (C-121/11, *Pro-Braine* paragraph 31, C-275/09 *Brussels Airport* paragraph 30).

*connected with or necessary to the management of the site ... must, to the extent that they constitute a project and are likely to have a significant effect on the site concerned, undergo an assessment of their implications for that site pursuant to those provisions [Article 6(3)]*’.

However, ‘...if, having regard in particular to the regularity or nature of the maintenance works at issue ... or the conditions under which they are carried out, they can be regarded as constituting a single operation, in particular where they are designed to maintain the navigable channel at a certain depth by means of regular dredging necessary for that purpose, those maintenance works can be considered to be one and the same project for the purposes of Article 6(3) of the Habitats Directive.’

The Court has also ruled that **the option of exempting generally certain activities does not comply with the provisions of Article 6(3)** (C-256/98, C-6/04, C-241/08, C-418/04, C-538/09). In addition, the Court ruled that projects may not be excluded from the assessment obligation on account only of the fact that they are not subject to authorisation (C-98/03, paragraphs 43–52).

The Court has also ruled that **the size of the project is not relevant** as it does not in itself preclude the possibility that it is likely to have a significant effect on a protected site (Case C-98/03, Case C-418/04 paragraph 244).

#### 3.4.2. *Plan*

The term “plan” has also, for the purpose of Article 6(3), a potentially very broad meaning. If we refer, by analogy, to the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment<sup>43</sup> (hereinafter referred to as the SEA Directive), Article 2(a) of that Directive defines plans and programmes as:

*‘Plans and programmes, including those co-financed by the European Community, as well as any modifications to them:*

- *which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and*
- *which are required by legislative, regulatory or administrative provisions;’*

In this respect, the Court has ruled that ‘Given the objective of Directive 2001/42, which consists in providing for a high level of protection of the environment, **the provisions which delimit the directive’s scope**, in particular those setting out the definitions of the measures envisaged by the directive, **must be interpreted broadly** (C-567/10 paragraphs 24-43).

Of obvious relevance under the Habitats Directive are **land-use or spatial plans**. Some plans have direct legal effects for the use of land, others only indirect effects. For instance, regional or geographically extensive spatial plans are often not applied directly but form the basis for more detailed plans or serve as a framework for development consents, which then

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<sup>43</sup> OJ L 197, 21.7.2001, p. 30–37.

have direct legal effects. Both types of land-use plan should be considered as covered by Article 6(3) to the extent that they are likely to have significant effects on a Natura 2000 site.

The Court upheld this view (C-6/04 paragraph 52) stating that although land-use plans do not always authorise developments and planning permission must be obtained for development projects in the normal manner, **they have great influence on development decisions**. Therefore land-use plans must be subject to appropriate assessment of their implications for the site concerned (see also C-418/04).

**Sectoral plans** should also be considered as covered by the scope of Article 6(3), again in so far as they are likely to have a significant effect on a Natura 2000 site. Examples might include transport network plans, energy plans, waste management plans, water management plans or forest management plans (see C-441/17, 122-124).

However, a distinction needs to be made with ‘plans’ which are in the nature of policy statements, i.e. policy documents which show the general political will or intention of a ministry or lower authority. An example might be a general plan for sustainable development across a Member State's territory or region. It does not seem appropriate to treat these as ‘plans’ for the purpose of Article 6(3), particularly if any initiatives deriving from such policy statements must pass through the intermediary of a land-use or sectoral plan (C 179/06, paragraph 41)<sup>44</sup>. However, where the link between the content of such an initiative and likely significant effects on a Natura 2000 site is clear and direct, Article 6(3) should be applied.

Where one or more specific projects are included in a plan in a general way but not in terms of project details, the assessment made at plan level does not exempt the specific projects from the assessment requirements of Article 6(3) at a later stage, when much more details about them are known<sup>45</sup>.

### 3.4.3. *Not directly connected with or necessary to the management ...*

From the context and purpose of Article 6, it is apparent that the term ‘management’ is to be treated as referring to the ‘conservation’ management of a site, i.e. it is to be seen in the sense in which it is used in Article 6(1). Thus, if an activity is directly connected with and necessary for fulfilling the conservation objectives, it is exempted from the requirement for an assessment.

By introducing the possibility of establishing management plans, Article 6(1) envisages flexibility for Member States as regards the form such plans can take. The plans can either be specifically designed for the sites or ‘integrated into other development plans’. Thus it is possible to have a ‘pure’ conservation management plan or a ‘mixed’ plan with conservation as well as other objectives.

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<sup>44</sup> This is without prejudice to the application of the SEA Directive (2001/42/EC).

<sup>45</sup> For details on the integration of different stages of assessment see also the guidance document on streamlining environmental assessment procedures for Projects of Common Interest, Chapter 3.2: [http://ec.europa.eu/environment/eia/pdf/PCI\\_guidance.pdf](http://ec.europa.eu/environment/eia/pdf/PCI_guidance.pdf).

The words ‘*not directly connected with or necessary to...*’ ensure that a non-conservation component of a plan or project which includes conservation management amongst its objectives may still require an appropriate assessment.

*For example, commercial timber harvesting may form part of a conservation management plan for a woodland designated as Special Area of Conservation. In as much as the commercial dimension is not necessary to the site's conservation management, it may need to be considered for an appropriate assessment.*

The Court has supported this view (C-241/08 paragraph 55), pointing out that ‘*the mere fact that the Natura 2000 contracts comply with the conservation objectives of sites cannot be regarded as sufficient, in the light of Article 6(3) of the Habitats Directive, to allow the works and developments provided for in those contracts to be systematically exempt from the assessment of their implications for the sites.*’

There may also be circumstances where a plan or project directly connected with or necessary to the management of one site may affect another site.

*For example, in order to improve the flooding regime of one site, it may be proposed to build a barrier in another site, with a possible significant adverse effect on the latter. In such a case, the plan or project should be the subject of an assessment as regards the affected site.*

In addition, case C-441/17 (paragraph 123) identifies an example of a plan (concerned solely with increasing the volume of harvestable timber by the carrying out of active forest management operations within a Natura 2000 site) not directly related to conservation as it does not lay down any conservation objectives or measures, and hence would fall for consideration under Article 6(3).

**The term ‘project’ should be given a broad interpretation to include both construction works and other interventions in the natural environment. The term ‘plan’ has also a broad meaning, including land-use plans and sectoral plans or programmes.**

**Plans and projects directly related to the conservation management of the site, either individually or as components of other plans and projects, should generally be excluded from the provisions of Article 6(3), but their non-conservation components may still require an assessment.**

### **3.5. HOW TO DETERMINE WHETHER A PLAN OR PROJECT IS ‘LIKELY TO HAVE A SIGNIFICANT EFFECT’ ON A SITE, ‘EITHER INDIVIDUALLY OR IN COMBINATION WITH OTHER PLANS OR PROJECTS’?**

This phrase encapsulates both a cause-and-effect relationship and the cumulative aspect. On the one hand, it is necessary to explore what sorts of effects are covered (‘*significant effect*’), and then to explore what sorts of causes are likely to create such effects (‘*likely to have ... either individually or in combination*’).

Determining whether a plan or project is likely to have a significant effect will have practical and legal consequences. Therefore, when a plan or project is proposed, it is important firstly that this key issue is considered, and secondly that the consideration is capable of standing up to scientific and expert scrutiny.

Plans and projects that are considered as not likely to have significant effects can be processed without reference to the subsequent steps of Article 6(3). However, Member States will need to justify and record the reasons for reaching such a screening conclusion.

### 3.5.1. *Likely to have...*

The safeguards set out in Article 6(3) are triggered not by a **certainty** but by a **likelihood** of significant effects. Thus, in line with the precautionary principle, it is unacceptable to fail to undertake an assessment on the basis that significant effects are not certain.

This was confirmed by the Court's *Waddenzee* ruling (C-127/02 paragraphs 39 - 44): '*...The environmental protection mechanism provided for in Article 6(3) ... does not presume that the plan or project considered definitely has significant effects on the site concerned but follows from the mere probability that such an effect attaches to that plan or project. ... In case of doubt as to the absence of significant effects such an assessment must be carried out. ... The first sentence of Article 6(3) must therefore be interpreted as meaning that any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects*'.

It is again useful to refer to the EIA Directive 2011/92/EU as amended, since the formula 'likely to have a significant effect' is almost identical to the basic formula used to create the assessment duty of Member States under the EIA Directive<sup>46</sup>. The EIA Directive is also of assistance in setting out a range of factors which may contribute to a likelihood of a significant effect<sup>47</sup>. Any proposal deemed to require an assessment under the EIA Directive on the grounds, *inter alia*, that it is likely to significantly affect a Natura 2000 site can be judged to also come under the assessment requirement of Article 6(3)<sup>48</sup>.

In determining the likelihood of significant impacts, and hence the need for an appropriate assessment, mitigation measures (i.e. measures to avoid or reduce negative effects) cannot be taken into account. This is confirmed by the Court in its ruling in case C-323/17: '*Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the*

<sup>46</sup> See Article 2(1) of Directive 2011/92/EU as amended by Directive 2014/52/EU.

<sup>47</sup> See Annex III of Directive 2011/92/EU as amended by Directive 2014/52/EU.

<sup>48</sup> On the other hand, an appropriate assessment under Article 6(3) might be required for projects not falling under the scope of the EIA Directive.

screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site'.<sup>49</sup>

A likelihood of significant effects may arise not only from plans or projects located **within** a protected site but also from plans or projects located **outside** a protected site (C-142/16, paragraph 29). For example, a wetland may be damaged by a drainage project located some distance outside the wetland's boundaries, or a site may be impacted by an emission of pollutants from an external source. For this reason, it is important that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures - including those which are external to Natura 2000 sites but which are likely to have significant effects on any of them.

This includes the consideration of any **potential transboundary effects**. If a plan or project in one country is likely to have a significant effect on a Natura 2000 site in a second country, either individually or in combination with other plans or projects, then an appropriate assessment must be undertaken which addresses *inter alia* the potential effects on the integrity of respective Natura 2000 sites in that second country as well.

Cross-border plans and projects (i.e. plans or projects located in more than one Member State, involving for example pipelines, cables, bridges, or tunnels) should be treated accordingly, ensuring that all potential effects on Natura 2000 sites are considered. To this end, and to avoid duplications, the respective competent authorities should coordinate their assessments.

This is in line with the Espoo Convention and its SEA Protocol<sup>50</sup> which are implemented within the EU through the EIA and SEA Directives<sup>51</sup>. As those Directives cover plans or projects that are likely to require an assessment pursuant to Article 6 of the Habitats Directive as well, it follows that transboundary effects are also to be covered in appropriate assessments undertaken under the Habitats Directive, in accordance with relevant provisions under those Directives.

**The procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. Mitigation measures cannot be taken into account at this stage. Transboundary effects are also to be considered.**

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<sup>49</sup> However under the EIA Directive it is possible to take into account features of the project and/or measures envisaged to avoid or prevent significant adverse effects when deciding on the need to conduct a full EIA (Article 4(5)(b) of the EIA Directive, as amended).

<sup>50</sup> <http://www.unece.org/env/eia/welcome.html>

<sup>51</sup> Art. 7 of Directive 2011/92/EU (as amended by Directive 2014/52/EU) and Art. 7 of Directive 2001/42/EC.

### 3.5.2. *Significant effect*

The notion of what is a ‘significant’ effect cannot be treated in an arbitrary way. In the first place, the Directive uses the term in an objective context (i.e. it does not qualify it with discretionary formulae). In the second place, a consistency of approach to what is ‘significant’ is needed to ensure that Natura 2000 functions as a coherent network.

While there is a need for objectivity in interpreting the scope of the term ‘significant’, clearly such objectivity cannot be divorced from the specific features and environmental conditions of the protected site concerned by the plan or project. In this regard, the conservation objectives of a site as well as prior or baseline information about it can be very important in more precisely identifying conservation sensitivities (C-127/02, paragraphs 46-48).

Some of this information is presented in the Standard Data Form that accompanies the site selection process under the Habitats and Birds Directives (see section 3.5.1). Member States may also have available detailed site conservation management plans which describe variations in the sensitivity of habitats and species within a site with regard to different threats.

Significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

Against this background, it is clear that what may be significant in relation to one site may not be in relation to another.

*For example, a loss of a hundred square metres of habitat may be significant in relation to a small rare orchid site, while a similar loss in a large steppic site may be insignificant if it does not have implications for the site conservation objectives.*

**The notion of what is ‘significant’ needs to be interpreted objectively. The significance of effects should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site’s conservation objectives and ecological characteristics.**

### 3.5.3. *... either individually or in combination with other plans or projects*

A series of individually modest impacts may, in combination, produce a significant impact. As the Court has pointed out ‘*the failure to take account of the cumulative effect of projects in practice leads to a situation where all projects of a certain type may escape the obligation to carry out an assessment, whereas, taken together, they are likely to have significant effects on the environment*’ (C-418/04, C-392/96 paragraphs 76, 82).

Article 6(3) tries to address this by taking into account the combination of effects from other plans or projects. In this regard, Article 6(3) does not explicitly define which other plans and projects are within the scope of the in-combination provision.

It is important to note that the underlying intention of this in-combination provision is to take account of cumulative impacts, and these will often only occur over time. In that context, one can consider plans or projects which are *completed, approved but uncompleted, or proposed*:

- In addition to the effects of those plans or projects which are the main subject of the assessment, it may be appropriate to consider the effects of already completed plans and projects in this ‘second level’ of assessment, including those preceding the date of transposition of the Directive or the date of designation of the site (see, for example, C-142/16, paragraphs 61 and 63). Although already completed plans and projects are themselves excluded from the assessment requirements of Article 6(3), it is still important to take them into consideration when assessing the impacts of the current plan or project in order to determine whether there are any potential cumulative effects arising from the current project in combination with other already completed plans and projects. The effects of such completed plans and projects would normally form part of the site's baseline conditions which are considered at this stage<sup>52</sup>.
- Plans and projects which have been approved in the past but have not yet been implemented or completed should be included in the in-combination provision.
- As regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been *actually proposed*, i.e. for which an application for approval or consent has been introduced. At the same time, it must be evident that, in considering a proposed plan or project, Member States do not create a presumption in favour of other not yet proposed plans or projects in the future.

*For example, if a residential development is considered not to give rise to a significant effect and is therefore approved, the approval should not create a presumption in favour of further residential developments in the future.*

In addition, it is important to note that the assessment of cumulative effects is not restricted to the assessment of similar types of plans or projects covering the same sector of activity (e.g. a series of housing projects). All types of plans or projects that could, in combination with the plan or project under consideration, have a significant effect, should be taken into account during the assessment.

Similarly, the assessment should consider the cumulative effects not just between projects or between plans but also **between projects and plans** (and vice versa). For example, a new project to build a major motorway through an area may on its own not adversely affect the site, but when considered in combination with an already approved housing development plan for the same area, these impacts may become significant enough to adversely affect the site. On the other hand, a plan may have no significant impact on Natura 2000 sites on its

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<sup>52</sup> Already completed plans and projects may also raise issues under Article 6(1) and Article 6(2) of the Habitats Directive if their continued effects give rise to a need for the Member States to take remedial or countervailing conservation measures or measures to avoid habitat deterioration or species disturbance.

own but may be assessed differently if considered in combination with an already proposed or authorised major development project not included in that plan.

Potential cumulative impacts should be assessed using sound baseline data and not rely only on qualitative criteria. They should also be assessed as an integral part of the overall assessment and not be treated merely as an ‘afterthought’ at the end of the assessment process.

**When determining likely significant effects, the combination with other plans and/or projects should also be considered to take account of cumulative impacts during the assessment of the plan or project in question. The in-combination provision concerns other plans or projects which have been already completed, approved but uncompleted or actually proposed.**

### 3.6. WHAT IS MEANT BY ‘APPROPRIATE ASSESSMENT OF ITS IMPLICATIONS FOR THE SITE IN VIEW OF THE SITE'S CONSERVATION OBJECTIVES’?

#### 3.6.1. *What is meant by an ‘appropriate’ assessment?*

The purpose of the appropriate assessment is to assess the implications of the plan or project in respect of the *site's conservation objectives*, either individually or in combination with other plans or projects. The conclusions should enable the competent authorities to ascertain *whether the plan or project will adversely affect the integrity of the site concerned*. The focus of the appropriate assessment is therefore specifically on the species and/or the habitats for which the Natura 2000 site is designated.

In its *Waddenzee* ruling (C-127/02 paragraphs 52-54, 59) the Court emphasized the importance of using the best scientific knowledge when carrying out the appropriate assessment in order to enable the competent authorities to conclude with certainty that there will be no adverse effects on the site's integrity:

*‘As regards the concept of ‘appropriate assessment’ within the meaning of Article 6(3) of the Habitats Directive, it must be pointed out that the provision does not define any particular method for carrying out such an assessment. None the less, according to the wording of that provision, an appropriate assessment of the implications for the site concerned of the plan or project **must precede its approval** and take into account the cumulative effects which result from the combination of that plan or project with other plans or projects in view of the site's conservation objectives.’*

*‘Such an assessment therefore implies that **all the aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those (conservation) objectives must be identified in the light of the best scientific knowledge in the field.***’

*‘The competent national authorities, taking account of the appropriate assessment of the implications of the plan or project for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that*

*it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects. ’*

Assessments that confine themselves to general descriptions and a superficial review of existing data on ‘nature’ within the area cannot therefore be considered as ‘appropriate’ for the purposes of Article 6(3). According to the Court **the appropriate assessment should contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt** as to the effects of the works proposed on the site concerned (C-304/05 paragraph 69)<sup>53</sup>. It cannot be held that an assessment is appropriate where information and reliable updated data concerning the habitats and species in the site are lacking (C-43/10 paragraph 115).

It is at the time of adoption of the decision authorising implementation of the project that there must be no reasonable scientific doubt remaining as to the absence of adverse effects on the integrity of the site in question (C-239/04, paragraph 24).

Furthermore, as regards multi-phase monitoring, such monitoring cannot be considered as sufficient to ensure performance of the obligation laid down in Article 6(3) of the Habitats Directive (C-142/16, paragraph 43).

It follows from the above that the appropriate assessment should **be reasoned and recorded**. If the record of the assessment does not disclose the reasoned basis for the subsequent decision (i.e. if the record is a simple unreasoned positive or negative view of a plan or project), the assessment does not fulfil its purpose and cannot be considered ‘appropriate’.

Finally, **timing** is also important. The assessment is a step preceding and providing a basis for the other steps - in particular, an approval or refusal of a plan or project. The assessment must therefore be undertaken *before* the competent authority decides whether or not to undertake or authorise the plan or project (C-127/02 paragraph 42). Of course, where a plan or project undergoes re-design before a decision is taken on it, it is quite in order to revise the assessment as part of an iterative process. However, it should not be open to authorities to add retrospectively to an assessment once the subsequent step in the sequence of steps set out in Article 6(3) and 6(4) has been taken.

#### ***Relationship with the EIA and SEA Directives***

The Appropriate Assessment is often undertaken as part of or alongside the EIA or SEA process, and its results are included in the relevant EIA or SEA report. This approach can help to streamline the administrative steps involved in obtaining development authorisations under EU environmental legislation<sup>54</sup>. The revised EIA Directive<sup>55</sup> (Art. 2(3)) stipulates that, in the case of projects for which the obligation to carry out assessments of the effects on the environment arises simultaneously from the EIA and the Habitats Directives, Member States

<sup>53</sup> See also cases C-239/04 and C-404/09.

<sup>54</sup> Such streamlining can also cover assessments required under Art. 4(7) of the Water Framework Directive – see also [http://ec.europa.eu/environment/eia/pdf/PCI\\_guidance.pdf](http://ec.europa.eu/environment/eia/pdf/PCI_guidance.pdf).

<sup>55</sup> Directive 2011/92/EU as amended by Directive 2014/52/EU.

shall, where appropriate, ensure the use of coordinated and/or joint procedures. Relevant guidance on this has been issued<sup>56</sup>.

Nevertheless it is essential that the information relevant to the Appropriate Assessment and its conclusions remain clearly distinguishable and identifiable in the environmental impact assessment report, so that they can be differentiated from those of the general EIA or SEA. This is necessary as there are a number of important distinctions between the EIA/SEA and the Appropriate Assessment procedures, which means that **an SEA or an EIA cannot replace, or be a substitute for, an Appropriate Assessment as neither procedure overrides the other.**

This was further confirmed by the Court (C-418/04): *‘Those two (EIA and SEA) Directives contain provisions relating to the deliberation procedure, without binding the Member States as to the decision, and relate to only certain projects and plans. By contrast, under the second sentence of Article 6(3) of the Habitats Directive, a plan or project can be authorised only after the national authorities have ascertained that it will not adversely affect the integrity of the site. Accordingly, assessments carried out pursuant to the EIA Directive or SEA Directive cannot replace the procedure provided for in Article 6(3) and (4) of the Habitats Directive’.*

Key similarities and differences between the Appropriate Assessment and the EIA and SEA are set out in Annex I.

### 3.6.2. *Content of the appropriate assessment*

The appropriate assessment of plans or projects likely to affect Natura 2000 sites should guarantee full consideration of all elements contributing to the site integrity (see section 3.7.4), both in defining the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts.

In this respect it must be ensured that the appropriate assessment addresses all elements contributing to the site’s integrity as specified in the site’s conservation objectives and Standard Data Form, and is based on the **best available scientific knowledge in the field.**

The **information required should be up-to-date** (C-43/10, paragraph 115) and may include the following issues, as appropriate:

- structure and function, and the respective role of the site’s ecological assets;
- the area, representativity and degree of conservation of the habitat types on the site;
- population size, degree of isolation, ecotype, genetic pool, age class structure, and degree of conservation of species under Annex II to the Habitats Directive present on the site or of the bird species for which a given SPA was classified;
- any other ecological assets and functions identified on the site; and

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<sup>56</sup> Commission guidance on streamlining environmental assessments conducted under Article 2(3) of the revised EIA Directive (Commission notice 2016/C 273/01, available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C:2016:273:TOC>)

- any threats affecting or representing a potential risk to habitats and species present on the site.

The appropriate assessment should also include a **comprehensive identification of all the potential effects** of the plan or project likely to be significant on the site, taking into account cumulative and other effects likely to arise as a result of the combined action of the plan or project under assessment with other plans or projects.

**It should apply the best available techniques and methods to assess the extent of the effects** of the plan or project on the integrity of the site(s). The description of the site's integrity and the impact assessment should be based on the best possible indicators specific to the Natura 2000 features, which can also be useful in monitoring the impact of the plan or project implementation.

The appropriate assessment report should be sufficiently detailed to demonstrate how the final conclusion was reached, and on what scientific grounds. For instance, in its ruling in case C-404/09 the Court identified a number of gaps in the appropriate assessment under question (namely, that it did not give sufficient consideration to the possible disturbances to various species on the sites in question, such as noise and vibrations or to the risk of isolating sub-populations by blocking communication corridors linking those sub-populations to other populations)<sup>57</sup>.

### 3.6.3. ... *in view of the site's conservation objectives*

The appropriate assessment focuses on **assessing the implications for the site** of the plan or project, individually or in combination with other plans or projects, **in view of the site's conservation objectives**. Article 6(3) must therefore be read in close conjunction with Article 6(1) and 6(2) since the conservation objectives to be used in the appropriate assessment are linked also to these two earlier paragraphs.

As explained in section 2.3.1, 'conservation objectives' should be set at the level of each individual site and should concern, within that site, all the species and habitat types for which the site has been designated under the Habitats Directive or classified under the Birds Directive.

These **conservation objectives** should be based on the ecological requirements of the species and habitats present and should define the desired conservation condition of these species and habitat types on the site. This should be established in function of the conservation condition of each species and habitat type as recorded in the Standard Data Form. The conservation objectives should also reflect the importance of the site for the coherence of Natura 2000 so that each site contributes in the best possible way to achieving Favourable Conservation Status at the appropriate geographical level within the natural range of the respective species or habitat types.

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<sup>57</sup> See also C-441/17 paragraphs 134-144.

Where such conservation objectives have been set for a site, the effects must be assessed against these objectives.

This was confirmed by the Court in its *Waddenzee* Ruling (C-127/02 paragraphs 46-48) : ‘As is clear from the first sentence of Article 6(3) of the Habitats Directive in conjunction with the 10th recital in its preamble, the significant nature of the effect on a site of a plan or project not directly connected with or necessary to the management of the site is linked to the site's conservation objectives. So, where such a plan or project has an effect on that site but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned.’

‘Conversely, **where such a plan or project is likely to undermine the conservation objectives of the site concerned, it must necessarily be considered likely to have a significant effect on the site.** As the Commission in essence maintains, in assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project.’

Where conservation objectives have not yet been set for a site, and until this is done, then the appropriate assessment must assume as a minimum that the objective is to ensure that the habitat types or habitats of species present do not deteriorate below the current level or the species are not significantly disturbed, in accordance with the requirements of Article 6(2) and without prejudice to the effectiveness of the conservation measures necessary for the fulfilment of the requirements of Article 6(1).

This position has been confirmed by the Court (C-127/02 paragraph 36) ‘*Authorisation of a plan or project granted in accordance with Article 6(3) of the Habitats Directive necessarily assumes that it is considered not likely to adversely affect the integrity of the site concerned and, consequently, not likely to give rise to deterioration or significant disturbances within the meaning of Article 6(2).*’

#### 3.6.4. ***The concept of the ‘Integrity of the site’***

It is clear from the context and from the purpose of the Directive that the ‘integrity of a site’ relates to the site’s conservation objectives (see point 4.6.3 above). For example, it is possible that a plan or project will adversely affect the site only in a visual sense or only affect habitat types or species other than those listed in Annex I or Annex II for which the site has been designated. In such cases, the effects do not amount to an adverse effect for purposes of Article 6(3).

In other words if none of the habitat types or species for which the site has been designated is significantly affected then the site’s integrity cannot be considered to be adversely affected. However, if just one of them is significantly affected, taking into account the site's conservation objectives, then the site integrity is necessarily adversely affected.

This is supported by the Court in its ruling in case C-258/11, paragraph 48: ‘*Article 6(3) of the Habitats Directive must be interpreted as meaning that a **plan or project** not directly connected with or necessary to the management of a site **will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive***

*characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal.*' The logic of such an interpretation would also be relevant to non-priority habitat types and to habitats of species.

The expression 'integrity of the site' shows that the focus is here on the specific site. Thus, it is not allowed to destroy a site or part of it on the basis that the conservation status of the habitat types and species it hosts will anyway remain favourable within the European territory of the Member State.

As regards the connotation or meaning of 'integrity', this clearly relates to **ecological integrity**. This can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation.

The 'integrity of the site' can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.

A site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required.

When looking at the 'integrity of the site', it is therefore important to take into account a range of factors, including the possibility of effects materialising in the short, medium and long-term.

**The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives.**

### 3.6.5. *Assessing the implications for the site*

The appropriate assessment itself involves looking at all the aspects of the plan or project that could cause a significant effect on the Natura 2000 site. In this context, each element of the plan or project should be examined in turn and their potential effects should be considered in relation to each of the species or habitat types for which the site has been designated<sup>58</sup>. Thereafter, the effects of the different features within the plan or project should

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<sup>58</sup> Work under Mapping and Assessment of Ecosystems and their Services can support the appraisal of effects, e.g. to identify ecological assets and functions in the site, define threats to habitats and species, measure ecological structure and functions of broad habitat types relevant to site integrity - see especially 5<sup>th</sup>

be looked at together, and in relation to each other, so that the interactions between them can also be identified.

*For instance, it may be that the risk of collision mortality with wind turbines alone is not likely to be significant but if it is taken in combination with the installation of overhead power lines, which could also cause collision mortality, then the effects for particular bird population could become significant.*

**It is evident that the effects of each project will be unique and must be evaluated on a case-by-case basis.** According to the *Waddenzee* ruling (C-127/02 paragraph 48), ‘*in assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project.*’ Relevant general regulations and specifications established by the Member States may also be used for that purpose.

Whilst the focus should be on the species and habitats of Community interest (including birds identified according to Article 4(1) and 4(2) of the Birds Directive) that have justified the site designation, it should not be forgotten that these target features also interact with other species and habitats, as well as the physical environment in complex ways.

It is therefore important to consider all the elements that are essential to the functions and the structure of the site and to the habitat types and species present. Furthermore, other species can also be relevant in determining the potential effects on protected habitats if they constitute typical species of the habitat in question<sup>59</sup> or play a role in the food chain on which the site’s target features depend.

The **appraisal of effects must be based on objective** and, if possible, **quantifiable criteria**. Impacts should be predicted as precisely as possible, and the basis of these predictions should be made clear and recorded in the appropriate assessment report (this means also including some explanation of the degree of certainty in the prediction). As with all impact assessments, the appropriate assessment should be undertaken within a structured framework to ensure that the predictions can be made as objectively and accurately as possible.

Bearing in mind that the Court has stressed the importance of using the best scientific knowledge when carrying out the appropriate assessment, further ecological and survey field work may be necessary to supplement existing data. Detailed surveys and fieldwork should be sufficiently long in duration and focus on those target features that are sensitive to the project actions. Sensitivity should be analysed taking into account the possible interactions between the project activities (nature, extent, methods, etc.) and the habitats and species concerned (location, ecological requirements, vital areas, behaviour, etc.).

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technical report on ecological condition  
([http://ec.europa.eu/environment/nature/knowledge/ecosystem\\_assessment/index\\_en.htm](http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm))

<sup>59</sup> For explanation of particular terms, see the *Interpretation Manual of European Union Habitats - EUR28* at [http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm#interpretation](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm#interpretation)

### 3.6.6. *Considering suitable mitigation measures to avoid or reduce the impacts*

If adverse impacts on the site's integrity have been identified during the appropriate assessment or cannot be ruled out, the plan or project in question cannot be approved. However, depending on the degree of impact identified, it may be possible to introduce certain mitigation measures that will avoid these impacts or reduce them to a level where they will no longer adversely affect the integrity of the site.

Mitigation measures must be directly linked to the likely impacts that have been identified in the appropriate assessment and can only be defined once these impacts have been fully assessed and described in the appropriate assessment. Thus, as pointed out in section 4.5.1, mitigation measures can only be considered at this stage and not at the screening stage.

The identification of mitigation measures, like the impact assessment itself, must be based on a sound understanding of the species and habitats concerned. For example, they may cover:

- the dates and the timetable of implementation (e.g.: do not operate during the breeding season of a particular species);
- the type of tools and operation to be carried out (e.g.: to use a specific dredge at a distance agreed upon from the shore in order not to affect a fragile habitat, or to reduce emissions which may cause harmful deposition of pollutants); and
- the strictly inaccessible areas inside a site (e.g. hibernation burrows of an animal species).

**Mitigation measures, which aim to avoid or reduce impacts or prevent them from happening in the first place, must not be confused with compensatory measures,** which are intended to compensate for any damage that may be caused by the project. Compensatory measures can only be considered under Article 6(4) if the plan or project has been accepted as necessary for imperative reasons of overriding public interest and where no alternatives exist (see Section 5).

This distinction was confirmed by the Court which found that *'Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site of Community importance, which has negative implications for a type of natural habitat present thereon and which provides for the creation of an area of equal or greater size of the same natural habitat type within the same site, has an effect on the integrity of that site. Such measures can be categorised as 'compensatory measures' within the meaning of Article 6(4) only if the conditions laid down therein are satisfied. (...) It is clear that these measures are not aimed either at avoiding or reducing the significant adverse effects for that habitat type caused by the project; rather, they tend to compensate after the fact for those effects. They do not guarantee that the project will not adversely affect the integrity of the site within the meaning of Article 6(3) of the Habitats Directive.'* (C-521/12 paragraphs 29-35, 38-39; see also C-387&388/15 paragraph 48).

In connection with these findings, the Court stated that *'...measures, contained in a plan or project not directly connected with or necessary to the management of a site of Community importance, providing, prior to the occurrence of adverse effects on a natural habitat type present thereon, for the future creation of an area of that type, but the completion of which will take place subsequently to the assessment of the significance of any adverse effects on*

*the integrity of that site, may not be taken into consideration in that assessment.’ (C-387&388/15 paragraph 64).*

Of course, well designed and implemented mitigation measures will limit the extent of the necessary compensatory measures (if applicable, in the context of Article 6(4)), by reducing the residual impacts that require compensation.

For the competent authority to be able to decide if the mitigation measures are sufficient to remove any potential adverse effects of the plan or project on the site (and do not inadvertently cause other adverse effects on the species and habitat types in question), each **mitigation measure must be described in detail**, with an explanation based on scientific evidence of how it will eliminate or reduce the adverse impacts which have been identified. Information should also be provided of how, when and by whom they will be implemented, and what arrangements will be put in place to monitor their effectiveness and take corrective measures if necessary. The need for definitive data at the time of authorization is also raised in case C-142/16, paragraphs 37-45.

If the competent authority considers the mitigation measures are sufficient to avoid the adverse effects on site integrity identified in the appropriate assessment, they will become an integral part of the specification of the final plan or project or may be listed as a condition for project approval. If, however, there is still a residual adverse effect on the integrity of the site, even after the introduction of mitigation measures, then the plan or project cannot be approved (unless the conditions set out in Article 6(4) are fulfilled).

**Mitigation measures may be proposed by the plan or project proponent and/or required by the competent national authorities in order to avoid the potential impacts identified in the appropriate assessment or reduce them to a level where they will no longer adversely affect the site’s integrity.**

**The identification of mitigation measures, like the impact assessment itself, must be based on a sound understanding of the species and habitats concerned and must be described in detail. Well designed and implemented mitigation measures will limit the extent of any necessary compensatory measures, if applicable in the context of Article 6(4), by reducing the residual impacts which require compensation.**

### 3.7. DECISION MAKING

#### 3.7.1. *The ‘competent national authorities’*

It is clear that the word ‘national’ in this expression has been used in contrast with the word ‘EU’ or ‘international’. Thus, the term refers not only to authorities within the central administration but also to regional, provincial or municipal authorities that have to give an authorisation or consent to a plan or project. A court may constitute a competent authority if it has the discretion to make a decision on the substance of a proposed plan or project for purposes of Article 6(3) (C-127/04, paragraph 69).

Under certain circumstances, authorisation of a plan or project may be granted by a legislative authority (national or regional parliament) and take the form of a legislative text. In this context, in case C-182/10 paragraphs 69-70, the Court has ruled that: ‘*Those [Article*

6(3)] obligations are incumbent on the Member States by virtue of the Habitats Directive **regardless of the nature of the national authority with competence to authorise the plan or project concerned**. Article 6(3) of the Habitats Directive, which refers to the ‘competent national authorities’, does not lay down any special rule for plans or projects approved by a legislative authority. That status consequently has no effect on the extent or scope of the obligations imposed on the Member States by Article 6(3) of the Habitats Directive... Article 6(3) of the Habitats Directive must be interpreted as not allowing a national authority, even if it is a legislative authority, to authorise a plan or project without having ascertained that it will not adversely affect the integrity of the site concerned’

In other words, permission cannot be granted to a plan or project by means of law if an appropriate assessment has not been undertaken beforehand, in accordance with Article 6(3) of the Habitats Directive, or if the appropriate assessment has not concluded with certainty that there will be no adverse effect on the integrity of the site<sup>60</sup>.

**Competent national authorities are those entitled to give authorisation or consent to a plan or project.**

### 3.7.2. *When is it appropriate to obtain the opinion of the general public?*

The Habitats Directive does not contain an explicit obligation to obtain the opinion of the general public when authorising plans or projects requiring an appropriate assessment. According to the wording of Article 6(3) this has only to be done if it is ‘*considered appropriate*’. However, consultation of the public is an essential feature of the EIA and SEA directives. Clearly therefore, where the assessment required by Article 6(3) is coordinated with the assessment under these directives, public consultation is necessary in line with their requirements.

Nonetheless, even if a plan or project does not fall under the scope of the SEA or EIA directives and is assessed solely on the basis of Article 6(3) of the Habitats Directive, the Court has clarified in a recent judgment on the basis of the requirements of the Aarhus Convention<sup>61</sup>, that the public concerned, including recognised environmental NGOs, has the right to participate in the authorisation procedure (C-243/15 paragraph 49). This right involves in particular, ‘*the right to participate “effectively during the environmental decision-making” by submitting, “in writing or, as appropriate, at a public hearing or inquiry with the applicant, any comments, information, analyses or opinions that it considers relevant to the proposed activity”*’ (C-243/15, paragraph 46).

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<sup>60</sup> See also C-142/16, para 33: ‘*As the Court has previously held, competent national authorities may authorise an activity subject to an assessment only if they have made certain that it will not adversely affect the integrity of the protected site. This is so when there is no reasonable doubt from a scientific point of view as to the absence of such adverse effects*’.

<sup>61</sup> Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. This Convention was concluded in Aarhus, Denmark in June 1998. The EU is one of the signatories since 2005 under Decision 2005/370/EC <http://ec.europa.eu/environment/aarhus/legislation.htm>.

In this context, it is also worth mentioning that the Court, on the basis of the public participation rights, provides in particular for recognised environmental NGOs a right to challenge *'decisions adopted by the competent national authorities within the framework of Article 6(3) of Directive 92/43, whether they concern a request to participate in the authorisation procedure, the assessment of the need for an environmental assessment of the implications of a plan or project for a protected site, or the appropriateness of the conclusions drawn from such an assessment as regards the risks of that plan or project for the integrity of the site'* (C-243/15, paragraph 56).

### 3.7.3. *Making a decision on the basis of the appropriate assessment*

It is for the competent national authorities, in the light of the conclusions of the appropriate assessment into the implications of a plan or project for the Natura 2000 site concerned, to approve the plan or project. This can be done **only after they have made certain that the plan or project will not adversely affect the integrity of the site**. That is the case where no reasonable scientific doubt remains as to the absence of such effects.

*Where doubt remains as to the absence of adverse effects on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse authorisation* (C-127/02 paragraph 57).

Furthermore, *'The authorisation criterion laid down in the second sentence of Article 6(3) of the Habitats Directive integrates the precautionary principle and makes it possible effectively to prevent adverse effects on the integrity of protected sites as the result of the plans or projects being considered. A less stringent authorisation criterion than that in question could not as effectively ensure the fulfilment of the objective of site protection intended under that provision'* (C-127/02, paragraph 58).

**The onus is therefore on demonstrating the absence of adverse effects rather than their presence**, reflecting the precautionary principle (C-157/96 paragraph 63). It follows that the appropriate assessment must be sufficiently detailed and reasoned to demonstrate the absence of adverse effects, in light of the best scientific knowledge in the field (C-127/02 paragraph 61).

## 5. ARTICLE 6(4)

### **Clarification of the Concepts of: *Alternative solutions, Imperative reasons of overriding public interest, Compensatory measures, Overall Coherence, Opinion of the Commission.***

#### 5.1 TEXT

*'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

*Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest'.*

#### 5.2 SCOPE

This provision forms part of the procedure of assessment and possible authorisation, by the competent national authorities, of plans and projects likely to affect a Special Area of Conservation (SAC), a Special Protection Area (SPA) or a Site of Community Importance (SCI). Two fundamental considerations arise:

- on the one hand, it deals with exceptions to the general rule in Article 6(3), according to which authorisation can only be granted to plans or projects not affecting the integrity of the site(s) concerned;
- on the other hand, its application in practice has to abide by the various steps provided for and in the sequential order established by the Directive. This has been repeatedly confirmed by the Court (C-209/02, C-239/04, C-304/05, C-560/08, C-404/09).

In its ruling in case C-304/05, paragraph 83, the Court clearly stated that: *'Article 6(4) of Directive 92/43 can apply only after the implications of a plan or project have been studied in accordance with Article 6(3) of that directive. Knowledge of those implications in the light of the conservation objectives relating to the site in question is a necessary prerequisite for application of Article 6(4) since, in the absence thereof, no condition for application of that derogating provision can be assessed. The assessment of any imperative reasons of overriding public interest and that of the existence of less harmful alternatives require a weighing up against the damage caused to the site by the plan or project under*

*consideration. In addition, in order to determine the nature of any compensatory measures, the damage to the site must be precisely identified* (see also C-399/14, C-387&388/15, C-142/16).

**The application of Article 6(4) is not automatic.** It is up to the authorities to decide whether the conditions for a derogation from Article 6(3) can be applied in the event that the appropriate assessment has concluded that the plan or project will adversely affect the integrity of the site concerned, or in case of doubt over the absence of such adverse effects.

The optional nature of Article 6(4) was confirmed by the Court in case C-241/08, paragraph 72: *‘Thus, following the assessment of the implications undertaken pursuant to Article 6(3) of the Habitats Directive and in the event of a negative assessment, **the competent authorities have the choice of either refusing authorisation for the plan or project or of granting authorisation under Article 6(4) of that directive, provided that the conditions laid down in that provision are satisfied**’.*

The decision to go ahead with a plan or project must meet the conditions and requirements of Article 6(4). In particular, it must be documented that:

1. the alternative put forward for approval is the least damaging for habitats, for species and for the integrity of the Natura 2000 site(s), regardless of economic considerations, and that no other feasible alternative exists that would not adversely affect the integrity of the site(s);
2. there are imperative reasons of overriding public interest, including ‘those of a social or economic nature’;
3. all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected are taken.

Being an exception to Article 6(3), this provision must be interpreted strictly (C-239/04 paragraphs 25 – 39) and can only be applied to circumstances where all the conditions required by the Directive are fully satisfied. In this regard, it falls on whoever wants to make use of this exception to prove, as a prerequisite, that the aforementioned conditions are indeed met in each particular case.

Once the lack of suitable alternatives and the acceptance of imperative reasons of overriding public interest are fully ascertained and documented, all compensatory measures that are needed to ensure the protection of the overall coherence of the Natura 2000 network have to be taken. The compensatory measures adopted must always be communicated to the Commission.

**Article 6(4) allows for exceptions to the general rule of Article 6(3) but its application is not automatic. It is up to the authority to decide whether a derogation from Article 6(3) can be applied. Article 6(4) must be applied in the sequential order established by the Directive – that is after all the provisions of Article 6(3) have been undertaken in a satisfactory manner.**

### 5.3 INITIAL CONSIDERATIONS

#### 3.7.4. *Examining alternative solutions*

The first obligation of the Article 6(4) derogation procedure is to examine whether there are alternative solutions to the plan or project. In this respect the Court has made it clear that this examination falls formally within the scope of Article 6(4) and not Article 6(3) (C-441/03 paragraph 15, C-241/08 paragraph 69, C-142/16 paragraph 72).

In line with the need to prevent undesired impairment to the Natura 2000 network, the thorough revision and/or withdrawal of a proposed plan or project should be considered when negative effects on the integrity of a site have been identified. Thus, the competent authorities have to analyse and demonstrate the need of the plan or project concerned, considering the zero option too at this stage.

Subsequently, the competent authorities should examine the possibility of resorting to alternative solutions which better respect the integrity of the site in question. All feasible alternatives that meet the plan or project aims, in particular, their relative performance with regard to the site's conservation objectives, integrity and contribution to the overall coherence of the Natura 2000 network have to be analysed, taking also into account their proportionality in terms of cost. They might involve alternative locations or routes, different scales or designs of development, or alternative processes.

As concerns the economic cost of the steps that may be considered in the review of alternatives, it cannot be the sole determining factor in the choice of alternative solutions (C-399/14, paragraph 77). In other words, a project proponent cannot claim that alternatives have not been examined because they would cost too much.

In line with the principle of subsidiarity, it is for the competent national authorities to assess the relative impact of these alternative solutions on the site concerned. It should be stressed that the reference parameters for such comparisons deal with aspects concerning the conservation and the maintenance of the integrity of the site and of its ecological functions. In this phase, therefore, other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria.

The **absence of alternatives must be demonstrated**, before proceeding with the examination of whether the plan or project is necessary for imperative reasons of public interest (Court ruling in Castro Verde case C-239/04 paragraphs 36-39).

**It is for the competent national authorities to ensure that all feasible alternative solutions that meet the plan/project aims have been explored to the same level of detail. This assessment should be made against the species and habitats for which the site has been designated and the site's conservation objectives.**

#### 3.7.5. *Examining imperative reasons of overriding public interest*

In the absence of alternative solutions - or in the presence of solutions having even more negative environmental effects on the site(s) concerned, with regard to the above-mentioned conservation aims of the Directive - the competent authorities have to examine the existence

of imperative reasons of overriding public interest, including those of a social or economic nature, which require the carrying out of the plan or project in question.

The concept of ‘imperative reason of overriding public interest’ is not defined in the Directive. However, Article 6(4) second subparagraph mentions human health, public safety and beneficial consequences of primary importance for the environment as examples of such reasons. As regards the ‘*other imperative reasons of overriding public interest*’ of a social or economic nature, it is clear from the wording that only public interests, irrespective of whether they are promoted either by public or private bodies, can be balanced against the conservation aims of the Directive. Thus, projects developed by private bodies can only be considered where such public interests are served and demonstrated.

This was confirmed by the Court in its ruling in case C-182/10, paragraphs 75-78: ‘*An interest capable of justifying, within the meaning of Article 6(4) of the Habitats Directive, the implementation of a plan or project **must be both ‘public’ and ‘overriding’, which means that it must be of such an importance that it can be weighed up against that directive’s objective of the conservation of natural habitats and wild fauna and flora. Works intended for the location or expansion of an undertaking satisfy those conditions only in exceptional circumstances. It cannot be ruled out that that is the case where a project, although of a private character, in fact by its very nature and by its economic and social context presents an overriding public interest and it has been shown that there are no alternative solutions. In the light of those criteria, the mere construction of infrastructure designed to accommodate a management centre cannot constitute an imperative reason of overriding public interest within the meaning of Article 6(4) of the Habitats Directive.***’

It may also be helpful to refer to other fields of EU law, where similar concepts appear.

The ‘imperative requirement’ concept was worked out by the Court as an exception to the principle of free movement of goods. Among the imperative requirements which can justify national measures restricting freedom of movement, the Court recognised public health and environmental protection, as well as the pursuit of legitimate goals of economic and social policy.

In addition, EU law also recognises the concept of ‘service of general economic interest’, evoked in Article 106(2) of the Treaty on the Functioning of the European Union, within the framework of the exception to the rules of competition envisaged for companies responsible for managing such services. In a Communication on services of general interest in Europe<sup>62</sup>, the Commission, taking account of case law on the matter, gave the following definition of services of general economic interest: ‘*economic activities which deliver outcomes in the overall public good that would not be supplied (or would be supplied under different conditions in terms of quality, safety, affordability, equal treatment or universal access) by the market without public intervention*’.

Having regard to the *structure of the provision*, in the specific cases the competent national authorities have to make their approval of the plans and projects in question subject to the condition that the balance of interests between the conservation objectives of the site

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<sup>62</sup> A Quality Framework for Services of General Interest in Europe, COM(2011) 900 final 20.12.2011.

affected by those initiatives and the above-mentioned imperative reasons weighs in favour of the latter. This should be determined according to the following considerations:

- a) There must be an **imperative reason** for implementing the plan or project;
- b) the public interest must be **overriding**: it is therefore clear that not every kind of public interest of a social or economic nature is sufficient, in particular when seen against the particular weight of the interests protected by the Directive (see for instance recital 4, which refers to ‘*Community’s natural heritage*’);
- c) in this context, it seems also reasonable to assume that the public interest can only be overriding if it is a **long-term interest**; short term economic interests or other interests yielding only short-term benefits for the society would not appear to be sufficient to outweigh the long-term conservation interests protected by the Directive.

As an example of what are considered imperative reasons of overriding public interest, the Court ruled, in a case concerning a large region (region of Thessaly in Greece), that: ‘*Irrigation and the supply of drinking water meet, in principle, those conditions and are therefore capable of justifying the implementation of a project for the diversion of water in the absence of alternative solutions*’ (C-43/10, paragraph 122)<sup>63</sup>.

**It is reasonable to consider that the ‘imperative reasons of overriding public interest, including those of social and economic nature’ refer to situations where plans or projects envisaged prove to be indispensable:**

- **within the framework of actions or policies aiming to protect fundamental values for the citizens' life (health, safety, the environment);**
- **within the framework of fundamental policies for the State and the society;**
- **within the framework of carrying out activities of an economic or social nature, fulfilling specific obligations of public service.**

**It is for the competent authorities to weigh up the imperative reasons of overriding public interest of the plan or project against the objective of conserving natural habitats and wild fauna and flora. They can only approve the plan or project if the imperative reasons for the plan or project outweigh its impact on the conservation objectives.**

To provide readers with a more precise indication of what might legitimately be considered as potential imperative reasons of overriding public interest, examples can be extracted from the Opinions delivered by the Commission in the framework of Article 6(4), second subparagraph, and the related reasoning given by the Member States: [http://ec.europa.eu/environment/nature/natura2000/management/opinion\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/management/opinion_en.htm)

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<sup>63</sup> In this context, this does not mean that drinking water supply and irrigation projects can always be justified for imperative reasons of overriding public interest.

### 5.3 ADOPTING COMPENSATORY MEASURES

#### 3.7.6. *What is meant by ‘compensatory measures’ and when should they be considered?*

The term ‘*compensatory measures*’ is not defined in the Habitats Directive. Experience would suggest the following distinction between compensatory and mitigation measures:

- mitigation measures in the broader sense, are those measures that aim to minimise, or even eliminate, the negative impacts likely to arise from the implementation of a plan or project so that the site’s integrity is not adversely affected. These measures are considered in the context of Article 6(3) and are an integral part of the specifications of a plan or project or conditional to its authorisation (see section 4.6.5);
- compensatory measures are independent of the project (including any associated mitigation measures). They are intended to offset the residual negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 network is maintained. They can only be considered in the context of Article 6(4).

Of course, well-designed and implemented mitigation measures may limit the extent of the necessary compensatory measures by reducing the residual negative impacts that require compensation.

*For instance, an extension of a colliery’s underground coal mining activities into areas which so far have not been exploited will cause large scale ground subsidence, accompanied by flooding and increase of ground water levels with considerable impacts on all ecosystems in the area. To compensate for the negative effects of the project, land will be selected following ecological criteria for the creation of non-priority habitat types (beech and oak forests) through re-forestation or transformation/improvement of existing forests. It is also considered to create and improve alluvial forests and restore or optimise riverbeds to compensate for the loss of a priority habitat type (alluvial forests with *Alnion glutinoso-incanae*) and a non-priority habitat type (water courses of plain to montane levels with floating vegetation). The measure will also help counteract the negative impact of the project on the *Lampetra planeri* species.*

**Compensatory measures should be additional to the actions that are normal practice under the Habitats and Birds Directives or obligations laid down in EU law.** For example, the implementation of conservation measures under Article 6(1), or the proposal/designation of a new area already inventoried as being of Community importance, constitute ‘normal’ measures for a Member State. Thus, compensatory measures should go beyond the normal/standard measures required for the designation, protection and management of Natura 2000 sites.

*Another example of compensation relates to a harbour extension leading to the destruction of a roosting site for birds and the decrease of low depth inter-tidal mudflats and reedbeds. The recreation of a high tide roosting site and of shallow mudflats, coupled with the habitat restoration of reedbeds and wet meadows through hydraulic works and with environmental measures for the agricultural use of reedbeds and meadows, would compensate for the negative impact caused by the project.*

Consequently, compensatory measures are not a means to allow the implementation of plans or projects while escaping the appropriate assessment obligations under Article 6. It is clear from the sequence of Article 6(4) that **they constitute the ‘last resort’**. They are to be considered only when a negative impact on the integrity of a Natura 2000 site is ascertained or it cannot be excluded, despite all other measures taken to avoid or reduce adverse effects on it, and once it is decided that the project/plan should proceed for imperative reasons of overriding public interest and in absence of alternative solutions.

**The compensatory measures constitute measures specific to a project or plan, additional to the normal duties stemming from the Birds and Habitats Directives. These measures aim to offset precisely the negative impact of a plan or project on the species or habitats concerned. They constitute the ‘last resort’ and are used only when the other safeguards provided for by the directive are exhausted and the decision has been taken to consider, nevertheless, a project/plan having a negative impact on the integrity of a Natura 2000 site or when such an impact cannot be excluded.**

### 3.7.7. *‘Overall coherence’ of the Natura 2000 network*

The expression *‘overall coherence’* appears in Article 6(4) in the context where a plan or project is allowed to be carried out for imperative reasons of overriding public interest and measures are to be taken to compensate for the damage.

It also appears in Article 3(1) which states that Natura 2000 is a *‘coherent European ecological network of special areas of conservation’* that shall enable *‘the natural habitats types and the species’ habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range’*. Hence, two different criteria are considered, on the one hand the targeted species and habitats in terms of quantity and quality, and on the other hand the role of the site in ensuring the adequate geographical distribution in relation to the range.

Article 3(3) stipulates that *‘where they consider it necessary, Member States shall endeavour to improve the ecological coherence of Natura 2000 by maintaining, and where appropriate developing, features of the landscape which are of major importance for wild fauna and flora, as referred to in Article 10.’*

Article 10, which deals more generally with land-use planning and development policy, stipulates that

*‘Member States shall endeavour, where they consider it necessary, in their land-use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the features of the landscape which are of major importance for wild fauna and flora.*

*Such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks...) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species.’*

The word ‘ecological’ is used both in Article 3 and Article 10 to explain the nature of the coherence. It is obvious that the expression ‘*overall coherence*’ in Article 6(4) is used in the same meaning.

Having said this, it is clear that the importance of a site to the coherence of the network depends on the site’s conservation objectives, on the number and status of the habitats and species for which it has been designated, and on its role in securing an adequate geographical distribution in relation to the range of the habitats and species concerned.

*For instance, if the plan or project will damage an area of a rare habitat type which has a very restricted range, which is very hard to recreate and for which the site in question is only one of 10 sites designated for that habitat type, the compensatory measures will clearly need to be very substantial if they are to be capable of protecting the overall coherence of Natura 2000. If on the other hand, the plan or project will damage a habitat for a species (e.g. Triturus cristatus) which has a wide range across the EU, which is relatively straightforward to recreate, and for which the site in question has only a minor role to play in its conservation, the compensatory measures will be more feasible and much less onerous.*

Article 6(4) requires that the overall coherence of Natura 2000 is protected. Thus, the Directive presumes that the ‘original’ network has been coherent. If the exception regime is used, the situation must be corrected so that the coherence is fully restored.

With regard to a plan or project, the compensatory measures defined to protect the overall coherence of Natura 2000 network will have to address the criteria mentioned above. This would mean that compensation should refer to the site’s conservation objectives and to the habitats and species negatively affected in comparable proportions in terms of number and status. At the same time the role played by the site concerned in relation to the biogeographical distribution has to be replaced adequately.

At this stage it would be useful to recall that under the Habitats Directive the selection of a site for the Natura 2000 network takes into account:

- the habitat(s) and species in proportions (surface areas, populations) described in the Standard Data Form;
- the location of the site within the respective biogeographical region; and
- the selection criteria established by the Habitats Committee and used by the European Topic Centre on Biological Diversity to advise the Commission to place a site on the Union list<sup>64</sup>.

Competent authorities should be looking at these criteria when designing the compensatory measures for a project, and should ensure that the measures provide properties and functions comparable to those which had justified the selection of the original site.

The Birds Directive does not provide for biogeographical regions, or selection at EU level. However by analogy, it could be considered that *the overall coherence of the network* is ensured if:

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<sup>64</sup> [https://biodiversity.eionet.europa.eu/activities/Natura\\_2000/chapter6](https://biodiversity.eionet.europa.eu/activities/Natura_2000/chapter6)

- compensation fulfils the same purposes that motivated the site's classification under Article 4(1) and 4(2) of the Birds Directive;
- compensation fulfils the same function along the same migration path; and
- the compensation areas are accessible with certainty by the birds usually occurring on the site affected by the project.

*For instance, if an SPA, whose specific function is to provide resting areas for migratory bird species in their way towards the north, is negatively affected by a project, the compensatory measures proposed should focus on the specific function played by the site. Therefore, compensating with measures that could recreate the necessary conditions for resting of the same species in an area outside the migratory path or within the migratory path but at some distance, would not be sufficient to ensure the overall coherence of the network. In this case, compensation should provide for suitable resting areas for the targeted species located correctly in the migratory path so that they will be realistically accessible to the birds which would have used the original site affected by the project.*

**In order to ensure the overall coherence of Natura 2000, the compensatory measures proposed for a project should therefore: a) address, in comparable proportions, the habitats and species negatively affected; and b) provide functions comparable to those which had justified the selection criteria for the original site, particularly regarding the adequate geographical distribution. Thus, it would not be enough for the compensatory measures to concern the same biogeographical region in the same Member State.**

**The distance between the original site and the place of the compensatory measures is not necessarily an obstacle as long as it does not affect the functionality of the site, its role in the geographical distribution and the reasons for its initial selection.**

### 3.7.8. *Objective and general content of compensatory measures*

The compensatory measures have to ensure that a site continues contributing to the conservation at a favourable status of natural habitats types and habitats of species 'within the biogeographical region concerned', in short, ensure the maintenance of the overall coherence of the Natura 2000 network. It follows from this, that:

- as a general principle, a site should not be irreversibly affected by a project before the compensation is in place. However, there may be situations where it will not be possible to meet this condition. For example, the recreation of a forest habitat would take many years to ensure the same functions as the original habitat negatively affected by a project. Therefore, best efforts should be made to *ensure* that compensation is in place beforehand and, in the case this is not fully achievable, the competent authorities should consider extra compensation for the interim losses that would occur in the meantime;
- the compensation must be additional to the contribution to the Natura 2000 network that the Member State should have made under the Directives.

Member States should pay particular attention when the negative effects of a plan or project are produced in rare natural habitats types or in natural habitats that need a long period of time to provide the same ecological functionality.

While designations of new Natura 2000 sites can be part of a compensation package under Article 6(4), the designations alone are insufficient without the accompanying management measures.

In terms of the Birds Directive, compensation might for example include work to improve the biological value of an area, which is or will be classified, so that the carrying capacity or the food potential are increased by a quantity corresponding to the loss on the site affected by the project. Accordingly, the re-creation of a habitat favourable to the bird species concerned is acceptable provided that the created site is available at the time when the affected site loses its natural value.

In terms of the Habitats Directive, the compensation might, similarly, consist of the re-creation of a comparable habitat or the biological improvement of a substandard habitat of the same type within an existing designated site, or even the addition to the Natura 2000 network of a new site of comparable quality to the original site. In the last of these cases one might argue that overall the project would result in a net loss for this habitat at Member State level. However, at EU level, a new site would benefit from the protection provided for in Article 6, thus contributing to the objectives of the Directive.

Compensatory measures appropriate or necessary to offset the adverse effects on a Natura 2000 site (i.e. in addition to what is already required under the Directives) may consist of:

- habitat improvement in existing sites: improving the remaining habitat on the site concerned or restoring the habitat on another Natura 2000 site, in proportion to the loss due to the plan or project;
- habitat re-creation: creating a habitat on a new or enlarged site, to be incorporated into Natura 2000; or
- as described above, and in association with other works, proposing a new site of sufficient quality under the Habitats or Birds Directive and establishing/implementing conservation measures for this new site.

The range of compensatory and accompanying measures found in current practice in the EU under the Habitats Directive also includes:

- species reintroduction;
- species recovery and reinforcement, including reinforcement of prey species;
- land purchase;
- rights acquisition;
- reserve creation (including strong restrictions in land use);
- incentives for certain economic activities that sustain key ecological functions;
- reduction in (other) threats, usually to species, either through action on a single source or through co-ordinated action on all threat factors (e.g. factors stemming from space-crowded effects).

**In principle, the result of compensation measures has to be achieved at the time when the damage occurs on the site concerned. Under certain circumstances where this cannot be fully achieved, overcompensation would be required for the interim losses.**

### 3.7.9. *Key elements to consider in the compensation measures*

The compensatory measures under Article 6(4) must address all issues, be they technical, legal or financial, needed to offset the negative effects of a plan or project and to maintain the overall coherence of the Natura 2000 network.

The following list provides an overview of elements to consider:

- Tight coordination and cooperation between Natura 2000 authorities, assessment authorities and the proponent of the plan or project.
- Clear objectives and target values according to the site's conservation objectives.
- Description of the compensatory measures, accompanied by a scientifically robust explanation of how they will effectively compensate for the negative effects of the plan or project on the species and habitats affected in light of the site's conservation objectives, and how they will ensure that the overall coherence of Natura 2000 is protected.
- Demonstration of the technical feasibility of the measures in relation to their objectives.
- Demonstration of the legal and/or financial feasibility of the measures according to the timing required.
- Analysis of suitable locations and acquisition of the rights (purchase, lease...) to the land to be used for the compensatory measures.
- Explanation of the time-frame in which the compensation measures are expected to achieve their objectives.
- Timetable for implementation and co-ordination with the schedule for the plan or project implementation.
- Public information and/or consultation stages.
- Specific monitoring and reporting schedules based on progress indicators according to the objectives of compensation measures.
- The financing programme approved during the necessary period to guarantee the success of the measures.

## 5.4 CRITERIA FOR DESIGNING COMPENSATORY MEASURES

### 3.7.10. *Targeted compensation*

Compensatory measures under the Habitats Directive must be established according to reference conditions that are defined after the description of the integrity of the site likely to be lost or deteriorated, and according to the likely significant negative effects that would remain after mitigation.

Once the integrity of the site likely to be damaged and the actual extent of the damage have been identified, the compensatory measures must address these issues specifically, so that the elements of integrity contributing to the overall coherence of the Natura 2000 network are compensated for in the long term. Thus, these measures should be the most appropriate to the type of impact predicted and should be focused on objectives and targets clearly addressing the Natura 2000 elements affected. They must clearly refer to the structural and functional aspects of the site integrity, and the related types of habitats and species populations that are affected.

This entails that the compensatory measures must necessarily consist of ecological measures. Therefore, payments to individuals or towards special funds, regardless of whether or not these are ultimately allocated to nature conservation projects are not suitable under the Habitats Directive. In addition, any secondary or indirect measure that might be proposed to enhance the performance of the core compensatory measures must have a clear relationship to the objectives and targets of the compensatory measures themselves.

As an example, in designing compensatory measures for species, there is a need to identify:

- the species adversely affected, their total numbers and the proportion of the total population(s) that these occur in;
- the principal function(s) of the habitats that will be adversely affected that the species depend on e.g. feeding, roosting, etc.;
- the measures needed to compensate for the damage to the habitat functions and species affected so that they are restored to a state that reflects the favourable condition of the area affected.

#### 3.7.11. *Effective compensation*

The feasibility and effectiveness of compensatory measures are critical to the implementation of Article 6(4) of the Habitats Directive, in keeping with the precautionary principle and good practice. In ensuring effectiveness, technical feasibility must go hand in hand with the appropriate extent, timing and location of the compensatory measures.

Compensatory measures must be feasible and operational in reinstating the ecological conditions needed to ensure the overall coherence of the Natura 2000 network. The estimated timescale and any maintenance action required to enhance performance should be known and/or foreseen right from the start before the measures are rolled out. This must be based on the best scientific knowledge available, together with specific investigations for the precise location where the compensatory measures will be implemented. Measures for which there is no reasonable guarantee of success should not be considered under Article 6(4), and the likely success of the compensation scheme should influence the final approval of the plan or project in line with the prevention principle. In addition, when it comes to deciding between different possibilities for compensation, the most effective options, with the greatest chances of success, must be chosen.

The programme of compensatory measures needs to include detailed monitoring during implementation to ensure effectiveness in the long term. Being in the framework of the

Natura 2000 network, such monitoring should be co-ordinated with, and possibly integrated into monitoring under Article 11 of the Habitats Directive.

Measures showing in practice a low level of effectiveness in contributing to the objectives should be modified accordingly.

#### 3.7.12. *Technical feasibility*

According to current knowledge, it is highly unlikely that the ecological structure and function or the related habitats and species populations can be reinstated to the status they had before the damage by a plan or project. To overcome the intrinsic difficulties standing in the way of full success for the ecological conditions, the design of compensatory measures must:

- (1) follow scientific criteria and evaluation in accordance with best scientific knowledge, and
- (2) take into account the specific requirements of the ecological features to be reinstated (e.g. soil, humidity, exposure, existing threats and other conditions critical to the success of reinstatement).

The aspects critical to technical feasibility will determine the suitability of the location of compensatory measures (spatial feasibility), the appropriate timing and their required extent.

In addition, the choice of particular measures and their design must follow the existing guidance for each particular practice, i.e. habitat creation, habitat restoration, population reinforcement, species reintroduction, or any other measure considered in the compensatory programme.

#### 3.7.13. *Extent of compensation*

The extent required for the compensatory measures to be effective is directly related to the quantitative and qualitative aspects inherent to the elements of integrity (i.e. including structure and functionality and their role in the overall coherence of the Natura 2000 network) likely to be impaired and to the estimated effectiveness of the measures.

Consequently, compensation ratios are best set on a case-by-case basis and must be initially determined in the light of the information from the Article 6(3) appropriate assessment and ensure ecological functionality. The ratios may then be redefined according to the results observed when monitoring the effectiveness, and the final decision on the proportion of compensation must be justified.

There is wide acknowledgement that ratios should be generally well above 1:1. Thus, compensation ratios of 1:1 or below should only be considered when it is shown that with such an extent the measures will be fully effective in reinstating structure and functionality within a short period of time (e.g. without compromising the preservation of the habitats or the populations of key species likely to be affected by the plan or project nor their conservation objectives).

### 3.7.14. *Location of compensatory measures*

Compensatory measures should be located in areas where they will be most highest effective in maintaining the overall coherence of the Natura 2000 network. This entails a set of pre-conditions that any compensatory measure should meet:

- The area selected for compensation must be within the same biogeographical region (for sites designated under the Habitats Directive) or within the same range, migration route or wintering area for bird species (i.e. sites designated under the Birds Directive) in the Member State concerned. Furthermore, the area should provide functions comparable to those which had justified selecting the original site, particularly regarding adequate geographical distribution.
- The area selected for compensation must have - or must be able to develop - the specific features attached to the ecological structure and functions, and required by the habitats and species populations. This relates to qualitative aspects like the uniqueness of the assets impaired and requires that local ecological conditions be taken into account.
- Compensatory measures must not jeopardize the preservation of the integrity of any other Natura 2000 site contributing to the overall coherence of the network. When carried out on existing Natura 2000 site(s), the measures must be consistent with the conservation objectives of the site(s) and go above the conservation measures established under Article 6(1). Management plans will be a useful reference to steer sensible compensation measures.

In addition, there is general agreement that the local conditions necessary to reinstate the ecological assets at stake are found as close as possible to the area affected by the plan or project. Therefore, locating compensation within or near the Natura 2000 site concerned where suitable conditions for the measures to be successful seems the most preferred option. However, this is not always possible and a range of priorities should therefore be applied when searching locations that meet the requirements of the Habitats Directive:

- 1) Compensation within the Natura 2000 site, provided the necessary elements to ensure ecological coherence and network functionality exist within the site.
- 2) Compensation outside the Natura 2000 site concerned, but within a common topographical or landscape unit, provided the same contribution to the ecological structure and/or network function is feasible. The new location can be in another designated Natura 2000 site or a non-designated location. In the latter case, the location must be designated as a Natura 2000 site and be subject to all the requirements of the Nature Directives.
- 3) Compensation outside the Natura 2000 site, in a different topographical or landscape unit. The new location can be another designated Natura 2000 site. If compensation takes place on a non-designated location, this location must then be designated as a Natura 2000 site and be subject to all the requirements of the Nature Directives.

New designations forming part of compensation measures must be submitted to the Commission before the measures are implemented and before the carrying out of the project but after its authorisation. The new designations should be made available to the

Commission through the established channels and procedures as happens with SCI lists and SPA classifications, and qualify for designation according to relevant criteria under the Habitats and Birds directives respectively.

Best cooperation and coordination shall be ensured by Member States when dealing with the location of compensatory measures in the frame of transboundary projects.

#### 3.7.15. *Timing of compensation*

Timing the compensatory measures calls for a case-by-case approach. The schedule adopted must provide continuity in the ecological processes essential for maintaining the structure and functions that contribute to the overall coherence of the Natura 2000 network. This requires a tight coordination between the implementation of the plan or project and the implementation of the compensatory measures, and relies on issues such as the time required for habitats to develop and/or for species populations to recover or establish in a given area.

In addition, other factors and processes must also be considered:

- A site must not be irreversibly affected before compensation is in place.
- The result of compensation should be operational at the time the damage occurs on the site concerned. Under certain circumstances where this cannot be fully achieved, overcompensation would be required for the interim losses.
- Time lags might only be admissible when it is ascertained that they would not compromise the objective of ‘no net losses’ to the overall coherence of the Natura 2000 network.
- Time lags must not be permitted, for example, if they lead to population losses for any species protected on the site under Annex II to the Habitats Directive or Annex I to the Birds Directive; priority species listed in Annex II to the Habitats Directive merit special attention.
- It may be possible to scale down in time compensatory measures, depending whether the significant negative effects are expected to arise in the short, medium or long term.

Specific measures to outweigh interim losses that would occur until the conservation objectives are met may be advisable. All technical, legal or financial provisions needed to implement the compensatory measures must be completed before the plan or project implementation starts, so as to prevent any unforeseen delays that may hinder the effectiveness of the measures.

#### 3.7.16. *Long term implementation*

Compensatory measures require that a sound legal and financial basis for long-term implementation and for the protection, monitoring and maintenance of the sites be secured before impacts on habitats and/or species occur. This could involve:

- Providing for temporary protection, even if the SCI/SPA status is only granted later.

- Applying binding enforcement tools at the national level to ensure the full implementation and effectiveness of compensation (e.g. linked to the EIA Directive, if applicable, or to the Environmental Liability Directive; or linking the plan or project approval to the robustness of the relevant provisions for implementing compensatory measures).
- Applying the necessary legal means in case land or rights purchase is deemed essential for the effective implementation of the measures in line with good practice (e.g. standard procedures for compulsory purchase on grounds of nature conservation).
- Establishing monitoring programmes to ensure that the compensatory measures reach their objective and are maintained over the longer term, and if not, that corrective measures are taken to address this, including objectives, responsible bodies and resource needs, indicators, and requirements for reporting to the Commission. This could be best performed by independent bodies specifically set up for the purpose and in close coordination and cooperation with the Natura 2000 authorities.

### **3.8. WHO BEARS THE COST OF THE COMPENSATION MEASURES?**

It appears logical that, in line with the 'polluter pays' principle, the promoter of a plan or project bears the cost of the compensatory measures. It may include it in the total budget submitted to the public authorities in the event of co-financing. In that regard, EU funds could, for example, co-finance the compensatory measures for transport infrastructure that is part of the TEN (Trans-European Networks) and financed from these funds, provided such financial assistance complies with the objectives, rules and procedures applicable to the EU fund in question.

### **3.9. INFORMING THE COMMISSION OF THE COMPENSATORY MEASURES**

The competent national authorities have to inform the Commission of the compensatory measures adopted. Article 6(4) does not specify the form nor the purpose of this information. However, in order to facilitate the process the Commission has prepared a standard form<sup>65</sup> for supplying it with information under Article 6(4). In any case, it is not the Commission's role either to suggest compensatory measures or to validate them scientifically.

The information should enable the Commission to assess the manner in which the adverse effects are compensated for, so that the elements of integrity contributing to the overall coherence of the Natura 2000 network are maintained in the long term. While the national authorities are only specifically obliged to communicate the compensatory measures adopted, it may also prove necessary to provide certain elements relating to the studied alternative solutions and to the imperative reasons for overriding public interest which have led to the approval of the plan or project, insofar as these elements have affected the choice of the compensatory measures.

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<sup>65</sup> Available at: [http://ec.europa.eu/environment/nature/natura2000/management/guidance\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm)

The obligation to inform the Commission of the compensatory measures adopted – which is set out in the second sentence of the first subparagraph of Article 6(4) - has to be fully transposed into national law. If that provision, laying down adequate detailed rules concerning information on the compensatory measures adopted, is absent from national law, ‘it is not possible to ensure that the second sentence of the first subparagraph of Article 6(4) has full effect and attains its objective’ (C-324/01 paragraph 21).

- *When in the planning process must the Commission be informed about compensatory measures and who is responsible for this information?*

In order to allow the Commission to request additional information on the measures taken or to take actions in case it considers that the legal requirements of the Directive have not been applied correctly, compensatory measures should be submitted to the Commission before they are implemented – and, indeed, before the implementation of the plan or project concerned but after its authorisation. Compensatory measures should therefore be submitted to the Commission as soon as they have been adopted to allow the Commission, within its competence as Guardian of the Treaties, to assess whether the provisions of the Directive are being applied correctly.

As those responsible for the maintenance of the overall coherence of, and updating the information on, the Natura 2000 network, the authorities in charge of Natura 2000 in each Member State must play an important role in this process. The information should be submitted by the national authority via the Permanent Representation of each Member State, as happens with the process for adopting site lists.

**The information about compensatory measures must enable the Commission to assess the manner in which the adverse effects are offset, so that the elements of integrity contributing to the overall coherence of the Natura 2000 network are maintained in the long term. However, it is not the Commission’s role to suggest compensatory measures.**

### **3.10. WHAT HAPPENS WITH SITES HOSTING PRIORITY HABITATS AND/OR SPECIES?**

The second subparagraph of Article 6(4) provides for a special treatment whenever the plan or project concerns a site hosting priority habitats and/or species and will affect these priority habitats and/or species. In such cases carrying out the plan or project could be justified only if the evoked imperative reasons of overriding public interest concern human health and public safety or overriding beneficial consequences for the environment, or if, before granting approval to the plan or project, the Commission expresses an opinion on the envisaged initiative.

In other words, damage to the sites would only be accepted as overruling the fulfilment of the objectives of the directive when the specific imperative reasons mentioned above occur or, alternatively, after the additional procedural safeguard of an independent appraisal by the Commission.

This provision raises a number of questions relating to:

- the identification of sites concerned;

- the interpretation of the concepts of human health, public safety and the primary beneficial consequences for the environment; and
- the procedure for adopting the Commission's opinion and the consequences arising from this opinion.

### 3.10.1. *The sites concerned*

Article 6(4), second subparagraph, applies when carrying out the plan or project will affect a site hosting priority habitats and/or species. In this regard, it would be reasonable to consider that a plan or project:

- a) not affecting, in any manner, a priority habitat/species; or
- b) affecting a habitat/species which has not been taken into account in the selection of a site ('non-significant presence' in the Standard Data Form)

should not de facto justify making a site subject to this second subparagraph.

Since the Birds Directive does not rank any species as priority, compensatory measures aiming to offset effects on SPAs' bird populations would never require the Commission's opinion.

**Article 6(4), second subparagraph may be understood as applying to all sites hosting priority habitats and/or species, when these habitats and species are affected.**

### 3.10.2. *The concepts of 'human health', 'public safety' and 'primary beneficial consequences for the environment'*

Human health, public safety and primary beneficial consequences for the environment constitute the most important imperative reasons of overriding public interest. However, like the concept of 'imperative reasons of overriding public interest' these three categories are not expressly defined.

As mentioned in section 5.3.2, EU law refers to public health and public safety as reasons justifying the adoption of restrictive national measures on the free movement of goods, workers and services, as well as on the right of establishment. In addition, the protection of people's health is one of the fundamental aims of EU environment policy. In the same vein, the primary beneficial consequences for the environment constitute a category which must be included in these fundamental aims of environment policy.

In line with the subsidiarity principle, it is for the competent national authorities to check whether such a situation exists. Of course, any such situation is likely to be examined by the Commission under its work to monitor the correct application of EU law.

As regards the concept of 'public safety', it is useful to refer to the judgement of the Court in case C-57/89 (*Leybucht Dykes*). That judgement preceded the adoption of Directive 92/43/EEC and hence Article 6. However, it is still relevant, not least because the Court's approach influenced the drafting of Article 6. At issue were construction works to reinforce

dykes on the North Sea at Leybucht. These works involved reducing the area of an SPA. As a matter of general principle, the Court stated that the grounds for such a reduction must correspond to a general interest superior to the general interest represented by the ecological objective of the relevant directive. In this specific case the Court confirmed that the danger of flooding and the protection of the coast constituted sufficiently serious reasons to justify the dyke works and the strengthening of coastal structures as long as the measures were kept to a strict minimum.

In a subsequent case (C-43/10 paragraph 128) the Court held that: *‘Where such a project adversely affects the integrity of a SCI hosting a priority natural habitat type and/or a priority species, its implementation may, in principle, be justified by grounds linked with the supply of drinking water. In some circumstances, it might be justified by reference to beneficial consequences of primary importance which irrigation has for the environment. On the other hand, irrigation cannot, in principle, qualify as a consideration relating to human health or public safety, justifying the implementation of a project such as that at issue in the main proceedings.’*

In case C-504/14 paragraph 77 the Court stated that *‘...the construction of a platform designed to facilitate the movement of disabled persons may, in principle, be regarded as having been carried out for imperative reasons of overriding public interest relating to human health...’*

**The national authorities may authorize a plan or project only if the proof of the existence of the afore mentioned reasons of overriding public interest is given and within the limits within which the plan or project in question proves necessary for the fulfilment of the public interest in question.**

### 3.10.3. *The adoption of Commission’s opinion and its consequences*

In the case of imperative reasons of overriding public interest other than human health, safety and environmental benefits, the prior opinion of the Commission is a necessary procedural step. Article 6(4), second subparagraph, does not specify a procedure or the specific contents of such an opinion<sup>66</sup>. We must therefore refer once again to the economy and to the aims pursued by the provision in question.

The opinion has to cover the assessment of the ecological values which are likely to be affected by the plan or project, the relevance of the invoked imperative reasons and the balance of these two opposed interests, as well as an evaluation of the compensatory measures. That assessment involves both a scientific and economic appraisal as well as an examination of the necessity and proportionality of the plan or project with regard to the invoked imperative reason.

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<sup>66</sup> The relevant standard form (at: [http://ec.europa.eu/environment/nature/natura2000/management/guidance\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm)) covers also the request for a Commission opinion under Article 6(4), second subparagraph.

The Commission can assess whether the implementation of the plan or project meets the requirements of EU law and, if necessary, initiate the appropriate legal action.

While the Directive does not include a specific deadline for adopting its opinion, the Commission will make all necessary efforts to carry out the assessments and issue its opinion as speedily as possible.

**The Commission, in delivering its opinion, should check the balance between the ecological values affected and the invoked imperative reasons, and evaluate the compensation measures.**

**ANNEX I**

*Comparison of procedures under Appropriate Assessment (AA), EIA and SEA*

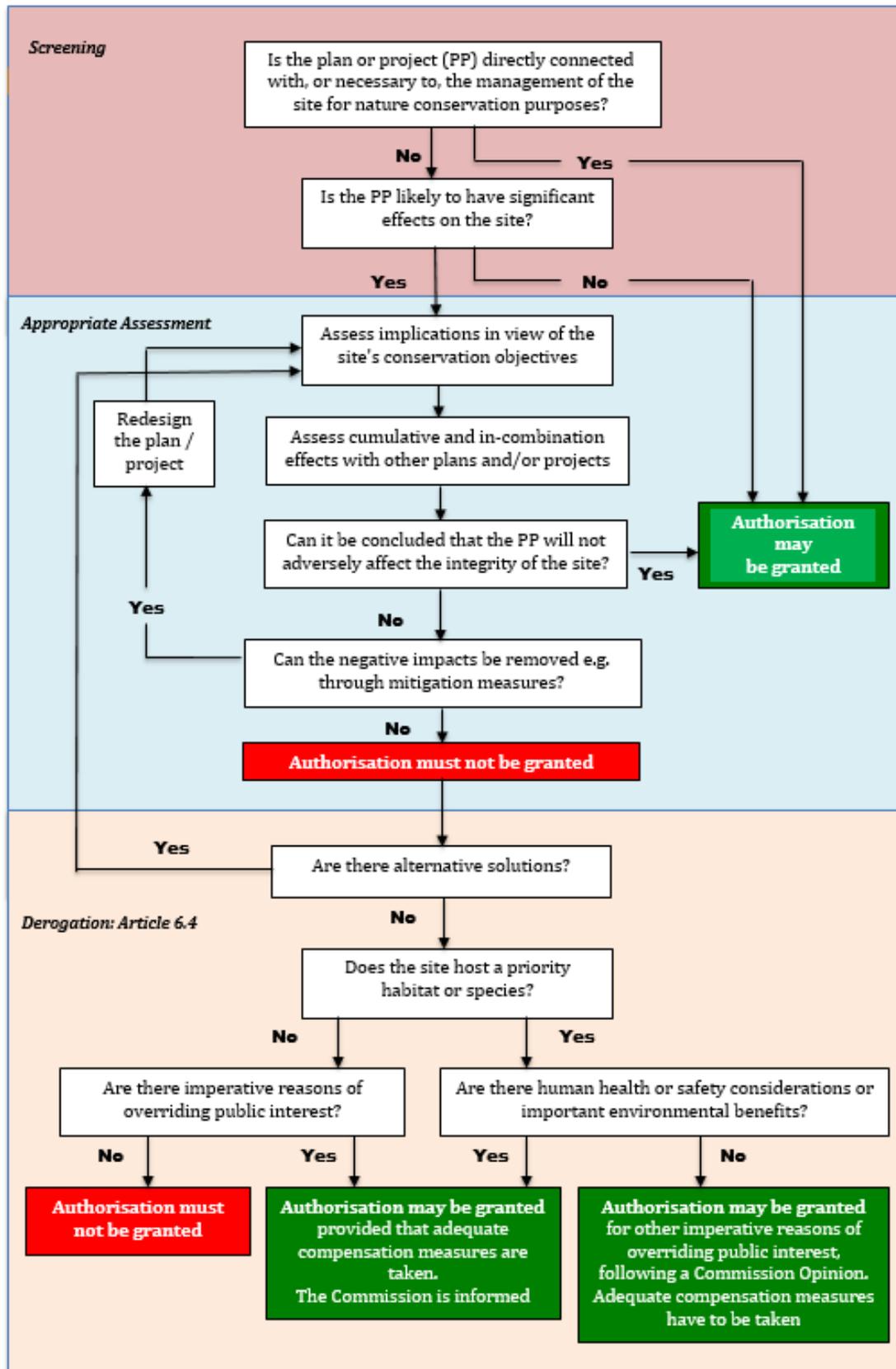
	AA	EIA	SEA
<i>Which types of developments are targeted?</i>	Any <b>plan</b> or <b>project</b> which - either individually or in combination with other plans/projects - is likely to have a significant effect on a Natura 2000 site (excluding plans or projects directly connected to the conservation management of the site).	All <b>projects</b> listed in Annex I. For projects listed in Annex II the need for an EIA shall be determined on a case-by-case basis or through thresholds or criteria set by Member States (taking into account criteria in Annex III).	All <b>plans</b> and <b>programmes</b> , or amendments thereof, which: (a) are subject to preparation and/or adoption by an authority and national, regional and local level; (b) are required by legislative, regulatory or administrative provisions; (c) are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use <u>and</u> set the framework for future development consent of projects listed in Annexes I and II to the EIA Directive; or which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC.
<i>What impacts need to be assessed relevant to nature?</i>	The assessment should be made in view of the <b>site's conservation objectives</b> (which relate to the species/ habitat types for which the site was designated). The impacts should be assessed to determine whether or not they will adversely affect the integrity of the site concerned.	Direct and indirect, secondary, cumulative, transboundary, short, medium and long-term, permanent and temporary, positive and negative significant effects on population and human health; biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; land, soil, water, air and climate and landscape; material assets, cultural heritage and the landscape; and the interaction between these factors.	Likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

<p><i>Who is responsible for the Assessment?</i></p>	<p>It is the responsibility of the competent authority to ensure that the AA is carried out. In that context the developer may be required to carry out all necessary studies and to provide all necessary information to the competent authority in order to enable it to take a fully informed decision. In so doing the competent authority may also collect relevant information from other sources as appropriate.</p>	<p>The developer supplies the necessary information to be duly taken into account, together with the results of consultations, by the competent authority issuing the development consent.</p>	<p>The SEA Directive leaves Member States with a wide margin of discretion in assigning the responsible authorities for SEA. These could either be the authorities in charge of making a plan/programme, the environmental authorities, who are consulted <i>ex lege</i> on the scope and level of detail of the information that must be included in the environmental report, as well as the draft plan/programme and the accompanying environmental report; or the authorities specifically entrusted with running the SEA procedure.</p>
<p><i>Are the public/ other authorities consulted?</i></p>	<p>Compulsory - consultation of the general public before the authorisation of the plan of project</p> <p>Member States shall ensure that the public concerned, in particular environmental NGOs, can participate early and effectively, already at screening, in an authorisation procedure following an appropriate assessment. This involves in particular the possibility to submit any comments, information, analyses or opinions that are considered relevant to the proposed activity.</p>	<p>Compulsory – consultation before adoption of the development proposal.</p> <p>Member States shall take the measures necessary to ensure that the authorities likely to be concerned by the project (including environmental, local and regional authorities) are given an opportunity to express their opinion on the request for development consent. The same principles apply for consulting the public concerned.</p> <p>In case of likely significant effects on the environment in another Member State, the relevant authorities and the public in that Member State must be consulted.</p>	<p>Compulsory – consultation before adoption of the plan or programme.</p> <p>Member States shall consult the authorities, which by reason of their specific environmental responsibilities are likely to be concerned by the environmental effects of implementing a plan/programme. The public, including the public affected or likely to be affected or having an interest in, the decision-making, including NGOs, should be consulted.</p> <p>The authorities and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme or its submission to the legislative procedure.</p> <p>In case of likely significant effects on the environment in another Member State, the relevant authorities and the public in that Member State must be consulted.</p>

<p><i>How binding are the outcomes of the Assessment?</i></p>	<p><b>Binding.</b> The competent authorities may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site.</p>	<p>The results of the consultations and the information gathered as part of the EIA <b>shall be duly taken into account</b> in the development consent procedure.  The decision to grant development consent shall incorporate at least the reasoned conclusion (i.e. the EIA decision) and any environmental conditions attached to the decision.</p>	<p>The environmental report and the opinions expressed <b>shall be taken into account</b> during the preparation of the plan or programme and before its adoption or submission to the legislative procedure.</p>
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**ANNEX II**

**Consideration of plans and projects affecting Natura 2000 sites**



**ANNEX III**

**Form for submission of information to the European Commission  
according to Art. 6(4)**

Member State:

Date:

**Information to the European Commission  
according to Article 6 of the Habitats Directive  
(92/43/EEC)**

Documentation sent for:

information  
(Art. 6(4).1)

opinion  
(Art. 6(4).2)

Competent national authority:

Address:

Contact person:

Tel., fax, e-mail:

Does the notification contain sensitive information? If yes, please specify and justify

**1. PLAN OR PROJECT**

Name of the plan/project:

Promoted by:

Summary of the plan or project having an effect on the site:

Description and location of the elements and actions of the project having potential impacts and identification of the areas affected (include maps):

## 2. ASSESSMENT OF NEGATIVE EFFECTS<sup>67</sup>

Name and code of Natura 2000 site(s) affected:

This site is:

- |   |  |
|---|--|
| <input type="checkbox"/> an SPA under the Birds directive | <input type="checkbox"/> an SCI/SAC under the Habitats directive |
|   | <input type="checkbox"/> hosting a priority habitat/species      |
|   | <input type="checkbox"/> priority habitats/species are affected  |

Site's conservation objectives and key features contributing to the site integrity:

Habitats and species that will be adversely affected (e.g. indicate their representativity, if applicable their conservation status according to Article 17 on national and biogeographic level and degree of isolation, their roles and functions in the site concerned).

Importance of the site for the habitats and species that will be affected (e.g. explain the role of the site within the national and biogeographical region and in the coherence of the Natura 2000 network).

Description of adverse effects expected (loss, deterioration, disturbance, direct and indirect effects, etc.); extent of the effects (habitat surface and species numbers or areas of occurrence affected by the project); importance and magnitude (e.g. considering the affected area or population in relation to the total area and population in the site, and possibly in the country) and location (include maps).

Potential cumulative impacts and other impacts likely to arise as a result of the combined action of the plan or project under assessment and other plans or projects.

Mitigation measures included in the project (indicate how these will be implemented and how they will avoid or reduce negative impacts on the site).

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<sup>67</sup> NB.: focus on the adverse effects expected on the habitats and species for which the site has been proposed for the Natura 2000 network. Include all the information that may be relevant in each case, depending on the impacts identified for the species and habitats affected.

### 3. ALTERNATIVE SOLUTIONS

Identification and description of possible alternative solutions, including the zero option (indicate how they were identified, procedure, methods)

Evaluation of alternatives considered and justification of the alternative chosen (reasons why the competent national authorities have concluded that there is absence of alternative solutions)

**4. IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST**

Reasons to carry out this plan or project in spite of its negative effects

- Imperative reasons of overriding public interest, including those of a social or economic nature (in the absence of priority habitats/species)
- human health
- public safety
- beneficial consequences of primary importance for the environment
- other imperative reasons of overriding public interest

Description and justification of the reasons and why they are overriding<sup>68</sup>:

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<sup>68</sup> A different level of detail may be required depending on whether the notification is submitted for information or for opinion.

**5. COMPENSATORY MEASURES<sup>69</sup>**

Objectives, target features (habitats and species) and ecological processes/functions to be compensated (reasons, why this measures are suitable to compensate the negative effects)

Extent of the compensatory measures (surface areas, population numbers)

Identification and location of compensation areas (including maps)

Former status and conditions in the compensation areas (existing habitats and their status, type of land, existing land uses, etc.)

Expected results and explanation of how the proposed measures will compensate the adverse effects on the integrity of the site and will allow preserving the coherence of the Natura 2000 network

Time schedule for the implementation of the compensatory measures (including long-term implementation), indicating when the expected results will be achieved.

Methods and techniques proposed for the implementation of the compensatory measures, evaluation of their feasibility and possible effectiveness

Costs and financing of the proposed compensatory measures

Responsibilities for implementation of compensatory measures

Monitoring of the compensatory measures, where envisaged (e.g. if there are uncertainties concerning the effectiveness of the measures), assessment of results and follow-up

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<sup>69</sup> A different level of detail may be required depending on whether the notification is submitted for information or for opinion.

**Appendix C - Contracts for Difference CfD Draft Budget Notice for the  
Third Allocation Round 2019**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**







Department for  
Business, Energy  
& Industrial Strategy

20 November 2018

**Contracts for Difference (CfD): Draft Budget Notice for the third allocation round, 2019**

**From: Secretary of State for Business, Energy and Industrial Strategy**

**To: National Grid, EMR Delivery Body**

This notice is given pursuant to Regulation 11 of the Contracts for Difference (Allocation) Regulations 2014. A copy of that regulation is included in the schedule to this notice.

This notice applies to the third Contracts for Difference (CfD) Allocation Round, which is planned to open by May 2019. It should be read in conjunction with the accompanying note. A final budget notice will be issued no later than 10 working days prior to the commencement of the Allocation Round.

**CfD Budget allocation**

The overall budget<sup>1</sup> applicable to this CfD Allocation Round is set out in Tables 1 and 2. To note the overall (monetary) budget and overall capacity cap for the Allocation Round are the values given in respect of each Delivery Year<sup>2</sup>. A project has a budgetary impact (in monetary terms) in the Delivery Year in which its Target Commissioning Date falls and all subsequent Delivery and Valuation Years.

**Table 1: CfD Budget, in monetary terms, for the third Allocation Round, 2019 (figures are total support payments)**

Delivery Year <sup>3</sup>	2023/24	2024/25
Overall budget (£ million in 2011/12 prices)	60	60

**Table 2: CfD Budget, in capacity terms, for the third Allocation Round, 2019**

Delivery Year	2023/24	2024/25
Overall capacity cap (GW)	6	6

<sup>1</sup> Overall budget as defined in Regulation 2 of the Contracts for Difference (Allocation) Regulations 2014 as amended.

<sup>2</sup> Overall capacity cap is subject to State aid approval, which is expected to be received by the start of the Allocation Round.

<sup>3</sup> Delivery Year as defined in Regulation 2 of the Contracts for Difference (Allocation) Regulations 2014 as amended.



## Department for Business, Energy & Industrial Strategy

The “less established” technologies included in this Pot 2 Allocation Round are:

- Advanced Conversion Technologies
- Anaerobic Digestion (> 5MW)
- Dedicated Biomass with CHP
- Geothermal
- Offshore Wind
- Remote Island Wind (> 5MW)
- Tidal Stream
- Wave

### Administrative Strike Prices

The Administrative Strike Prices applicable to this allocation round are:

**Table 3: CfD Administrative Strike Prices (£/MWh, in 2012 prices)**

Technology Type	2023/24 Strike prices	2024/25 Strike prices
<b>ACT</b>	<b>113</b>	<b>111</b>
<b>AD (&gt; 5MW)</b>	<b>122</b>	<b>121</b>
<b>Dedicated Biomass with CHP</b>	<b>121</b>	<b>121</b>
<b>Geothermal</b>	<b>129</b>	<b>127</b>
<b>Offshore Wind</b>	<b>56</b>	<b>53</b>
<b>Remote Island Wind (&gt; 5MW)</b>	<b>82</b>	<b>82</b>
<b>Tidal stream</b>	<b>225</b>	<b>217</b>
<b>Wave</b>	<b>281</b>	<b>268</b>

### Use of Maxima or Minima

No maxima or minima will be applied.



## Re-basing CfD Budgets

The monetary budget presented here has been calculated in real terms on the basis of a £2011/12 price level. To convert this into a more recent price base, a CPI index can be used.

Given that strike prices have been published in £2012 values, the government will inflate the budgets presented here by a CPI inflator<sup>4,5</sup> to a £2012 price base, before National Grid values the bids (which will be submitted in £2012 values) against the available budget.

The inflator which we will use is 1.0193. This has been derived using the following formula:

$$CPI\ Adjustor_{\text{£2011/12} \rightarrow \text{£2012}} = AverageCPI_{2012} / AverageCPI_{2011/12}$$

This results in a budget of £60M<sup>6</sup> in £2012 values.

It is also possible to convert the budgets into current monthly prices. An illustration of this formula is provided below.

$$CPI\ Adjustor_{\text{£2011/12} \rightarrow \text{£current}} = CPI_{current} / AverageCPI_{2011/12}$$

For stakeholders to convert the £2011/12 budget into the most recently available price base (September 2018 at time of publication), the following inflator should be used 1.1313.

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<sup>4</sup> Please note that CPI index values are subject to the ONS CPI Revisions Policy and may change in the future.

<sup>5</sup> Published by the Office of National Statistics (ONS)  
<https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/d7bt>

<sup>6</sup> Rounded to the nearest £5M.



## Department for Business, Energy & Industrial Strategy

### **Schedule to the Draft Budget Notice for CfD Allocation Round**

The Contracts for Difference (Allocation) Regulations 2014 Regulation 11.

#### **Budget notices**

11. (1) The Secretary of State must by notice (“a budget notice”) specify—

(a) the overall budget which is available for each delivery year applicable to an allocation round; and

(b) the administrative strike prices applicable to applications in an allocation round.

(2) The Secretary of State may in a budget notice specify any of the following—

(a) budgets which are reserved for the descriptions of applications specified in the notice (“minima”);

(b) maximum budgets which apply to the descriptions of applications specified in the notice (“maxima”);

(c) a division of the overall budget such that a different part (“pot”) of the overall budget applies to the description of applications specified in the notice.

(3) Where maxima or minima are specified, they may be expressed as—

(a) a sum of money;

(b) an amount of capacity of electricity generation; or

(c) a combination of (a) and (b).

(4) Where—

(a) the overall budget is expressed as a sum of money; and

(b) that sum is stated by reference to a price which is not current at the date of the budget notice,

the budget notice must include a factor which, when applied to that sum, converts that sum into a price which is current at that date.

(5) A budget notice must—

(a) be given to the delivery body;

(b) identify the allocation round to which the budget notice applies; and

(c) be given no later than 10 working days before the commencement date of the allocation round.

**END**

**Appendix D - Hornsea Two – Written Representations for The Royal  
Society for the Protection of Birds**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**





**Written Representations  
for the  
Royal Society for the Protection of Birds**

**15 July 2015**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by SMartWind for an Order granting Development Consent for the  
Hornsea Offshore Wind Farm – Project Two  
located 89 km east of the East Riding of Yorkshire Coast**

**Planning Inspectorate Ref: EN010053  
Registration Identification Ref: 10031166**



## **1. Introduction**

- 1.1 These representations have been prepared with Dr McCluskie, whose qualifications and experience are provided in Annex 1.

### **The RSPB**

- 1.2 The Royal Society for the Protection of Birds (the RSPB) was set up in 1889. It is a registered charity incorporated by Royal Charter and is Europe's largest wildlife conservation organisation, with a membership of more than 1.1 million<sup>1</sup>. The principal objective of the RSPB is the conservation of wild birds and their habitats. The RSPB therefore attaches great importance to all international, EU and national law, policy and guidance that assist in the attainment of this objective. It campaigns throughout the UK and in international fora for the development, strengthening and enforcement of such law and policy. In so doing, it also plays an active role in the domestic processes by which development plans and proposals are scrutinised and considered, offering ornithological and other wider environmental expertise. This includes making representations to, and appearing at, public inquiries and hearings during the examination of applications for development consents.

- 1.3 The RSPB considers that climate change is the most pressing threat to the UK's wildlife and that wind energy has an important role to play in countering this threat. However, the RSPB will continue to oppose wind farms in inappropriate locations that risk significant damage to protected species and sites, in just the same way that we do for other developments. At the same time, we work with applicants to find ways to minimise the risk of such damage. Early engagement helps this process, by identifying information requirements and anticipated problems at the earliest stage, so that ways forward can be found and accommodated without unnecessary delay.

### **The RSPB's interest in offshore wind development**

- 1.4 Faced with the threats of climate change to the natural world the RSPB considers that a low-carbon energy revolution is essential to safeguard biodiversity. However, inappropriately designed and/or sited developments can also cause serious and irreparable harm to biodiversity, and damage the public acceptability of the necessary low-carbon energy transition technologies.

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<sup>1</sup> RSPB Annual Review 2013-2014 at page 45, [http://www.rspb.org.uk/Images/annualreview20132014\\_tcm9-384063.pdf](http://www.rspb.org.uk/Images/annualreview20132014_tcm9-384063.pdf).

- 1.5 The UK is of outstanding international importance for its breeding seabirds, most notably northern gannet, great skua, lesser black-backed gull and Manx shearwater, for which it supports over 50% of their respective biogeographical populations. As a consequence, the UK has particular responsibility under the Birds Directive<sup>2</sup> to secure the conservation of these important seabird populations.
- 1.6 The available evidence suggests that the main risks of offshore wind farms for birds are collision, disturbance/displacement, barriers to movement e.g. migrating birds, or disruption of access to such as between the breeding areas and feeding areas, habitat change particularly with associated changes in food availability and the in-combination effects of these across multiple wind farms.
- 1.7 Such impacts are avoidable, and the RSPB has spent considerable time working with stakeholders in the UK offshore wind industry to ensure that decisions about deployment of renewable energy infrastructure take account of environmental constraints and seek to avoid or minimise impacts wherever possible. The RSPB therefore strongly advocates the use of rigorous, participative environmental assessments to inform the development of projects.

### **The RSPB's interest in this case and summary of its position**

- 1.8 The RSPB engaged with the pre-submission consultation process, as reported by the Applicant.<sup>3</sup> However, matters of serious concern to the RSPB have not been resolved.
- 1.9 The primary concerns of the RSPB are due to the wind farm footprint and surrounding area lying within the foraging range of the Flamborough Head and Bempton Cliffs Special Protection Area (the SPA) and the Flamborough and Filey Coast potential SPA (the pSPA) and their designation species. These include northern gannets, in respect of which the area is the only breeding colony in England, black legged kittiwakes (kittiwakes) particularly in light of its reduction from the 83,370 breeding pairs in 1993 to an average of 44,520 breeding pairs between 2008 and 2011, common guillemot, razorbill and Atlantic puffin. In addition the RSPB has concerns over both great black and lesser black backed gulls, which NE defines as EIA species (RR, para 3.3).

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<sup>2</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version) (the Birds Directive).

<sup>3</sup> In the Applicant's Consultation Report (PINS Document Ref 2.1).

- 1.10 The RSPB is concerned about the robustness of the assessment of the applications' offshore impacts and how these are addressed. These concerns can be broadly summarised as follows:
- 1.10.1 The assessment of the collision risk to gannet, kittiwakes, greater and lesser black backed gulls (both migratory, breeding and non breeding birds), including the use of the extended Band Model for collision risk modelling (CRM) and avoidance rates adopted;
  - 1.10.2 The assessment of disturbance and displacement for some seabird species namely guillemot, razorbill and puffin, including the extent of buffer zones adopted; and
  - 1.10.3 The continued use of Potential Biological Removal (PBR) as a means of assessing the overall impact of the Project on bird species and the associated inadequate reliance on proper Population Viability Analysis (PVA) to assess impact.
- 1.11 The RSPB is concerned that due to deficiencies and uncertainties in the methodological information on the likely effects of the applications on the SPA/pSPA and their species, it cannot be concluded with certainty that the applications, alone or in combination with other plans/projects, will not have an adverse effect on the integrity of the SPA and pSPA and their species.
- 1.12 The RSPB is also concerned with some of the possible onshore impacts on the Humber Estuary SPA (and Ramsar site) and its designation species. These concerns are all in relation to the intertidal area beyond Horseshoe Point and the laying of cables, in particular the timing of these works.
- 1.13 These concerns are set out in more detail below, following a brief summary of the SPA and pSPA and two of their key species, so far as is material to these representations, and of relevant legislation and guidance.

## 2. Protected Sites and Species

### The Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA

2.1 The Flamborough Head and Bempton Cliffs SPA was designated under Article 4(2) of the Birds Directive as an SPA in 1993 due to the presence of 83,370 pairs of black-legged kittiwake (*Rissa tridactyla*), representing 4% of the Eastern Atlantic breeding population. In 2001 the UK SPA Review found that it also qualified under Article 4(2) as a site regularly supporting at least 20,000 seabirds. At the time of designation, the site regularly supported 305,784 individual seabirds including: puffin (*Fratercula arctica*), razorbill (*Alca torda*), guillemot (*Uria aalge*), herring Gull (*Larus argentatus*), Gannet (*Morus bassanus*), and Kittiwake. Kittiwake and the seabird assemblage are therefore the qualifying features of the SPA. Further information on those species is set out in Annex III.

2.2 On 29 May 2012, Natural England published revised Conservation Objectives for the SPA, and subsequently revised them on 30 June 2014<sup>4</sup>. These are:

*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (“the Qualifying Features” listed below), and subject to natural change;*

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:**

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The populations of the qualifying features, and,*
- *The distribution of the qualifying features within the site.*

*This document should be read in conjunction with the accompanying Supplementary Advice document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.*

**Qualifying Features:**

*A188 Rissa tridactyla; Black-legged kittiwake (Breeding)*

2.3 In January 2014, Natural England opened a formal consultation on proposals to extend the SPA and rename it as the Flamborough and Filey Coast SPA. The proposals comprise changes to the designated site boundary and changes to the qualifying species.

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<sup>4</sup> Available here: <http://publications.naturalengland.org.uk/publication/5400434877399040> (accessed 12 July 2015).

- 2.4 Natural England has also conducted a review of the seabird populations using contemporary data. A summary of Natural England's review of the ornithological interest of the pSPA is as follows with the key species set out in more detail in Table 2.1 below<sup>5</sup>:

The application of SPA selection guidelines (JNCC 1999) to current data for this site confirm that it qualifies by regularly supporting internationally important numbers of breeding black-legged kittiwakes, northern gannet, common guillemot and razorbill and an assemblage of European importance of over 20,000 breeding seabirds. Black-legged kittiwake, northern gannet, common guillemot and razorbill are all main components of the assemblage and present in internationally important numbers. However, northern fulmar is also present in sufficient numbers to warrant being listed as main component species of the assemblage, since numbers exceed 2,000 individuals (10% of the minimum qualifying assemblage of 20,000 individuals). In addition, Atlantic puffin, herring gull, European shag *Phalacrocorax aristotelis* and great cormorant *Phalacrocorax carbo* are also part of the breeding seabird assemblage.

**Table 2.1: Summary of Ornithological Interest of the pSPA**

Species	Count (period)	% of subspecies or population (pairs)	Interest Type
<b>Original classification</b>			
Black-legged kittiwake <i>Rissa tridactyla</i>	83,700 pairs (1987)	4% Western Europe	Migratory
<b>Revised proposal</b>			
Black legged kittiwake <i>Rissa tridactyla</i>	44,520 pairs 89,041 breeding adults (2008-2011)	2% North Atlantic	Migratory
Northern gannet <i>Morus bassanus</i>	8,469 pairs 16,938 breeding adults (2008-2012)	2.6% North Atlantic	Migratory
Common guillemot <i>Uria aalge</i>	41,607 pairs 83,214 breeding adults (2008-2011)	15.6% ( <i>Uria aalge albionis</i> )	Migratory
Razorbill <i>Alca torda</i>	10,570 pairs 21,140 breeding adults (2008-2011)	2.3% ( <i>Alca torda islandica</i> )	Migratory
	<b>Count period</b>	<b>Average number of individuals</b>	
Seabird assemblage	2008-2012	215,750	

- 2.5 Since this site achieved SPA status, the national populations of both kittiwake and some assemblage species have suffered substantial declines. For example the UK breeding kittiwake population has reduced by 72%<sup>6</sup> (between 1986 and 2013). Within the SPA there has been a reduction from the 83,370 breeding pairs of kittiwakes (at time of designation, 1993) to an average of 44,520 breeding pairs between 2008 and 2011.

<sup>5</sup> Proposed extension to Flamborough Head and Bempton Cliffs Special Protection Area and renaming as Flamborough and Filey Coast potential Special Protection Area, Departmental Brief. Natural England, January 2014 at page 4.

<sup>6</sup> State of the UK's Birds 2014, [http://www.rspb.org.uk/Images/state-of-the-uks-birds\\_tcm9-383971.pdf](http://www.rspb.org.uk/Images/state-of-the-uks-birds_tcm9-383971.pdf).

- 2.6 Due to these steep national declines for both kittiwake and species of the assemblage feature, consideration of contemporary data alone is inappropriate. The RSPB considers that historic population levels should also be taken into account due to the SPA's conservation objectives as set out above – *by maintaining or restoring ... the populations of the qualifying features.*
- 2.7 Attached to this written representation at Annex II is a more detailed description of both the SPA and the pSPA. Information on two of the relevant species is set out below.

### **Gannet**

- 2.8 The RSPB's concern over the possible impacts to gannets is in part due to the SPA being the only gannetry (breeding colony) in England and in 2015 it supported 12,494 occupied nests<sup>7</sup> (HRA Report Part 2 (ref 12.6), paragraph H.22), concentrated in an approximately 5 km stretch of cliff<sup>8</sup>. Within this area is the RSPB's Bempton Cliffs Reserve. This SPA population accounts for approximately 3.3% of the North Atlantic biogeographic population<sup>9</sup>.
- 2.9 Gannets (and other seabirds) are central-place foragers during the breeding season, i.e. they have to return to their nest regularly. This results in frequent foraging trips. These breeding adults therefore may be more at risk to a collision hazard than for example migrating birds on passage. Conversely, if the wind farm is located within a preferred foraging area and the birds display a high degree of avoidance of wind turbines when making their frequent foraging trips during the breeding season, there is still a concern that gannets may be effectively displaced from suitable foraging areas. Whilst gannets have greater foraging flexibility than many other seabirds, there are potential implications for breeding productivity if their foraging areas are constrained. The SPA has had high levels of breeding productivity in recent years but, as described above, is the only gannet colony in England.
- 2.10 In recent tracking studies from the RSPB's Bempton Cliffs Reserve, adult gannets, during the breeding season, were fitted with transmitters.

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<sup>7</sup> Apparently Occupied Nests (AON) is a standard census unit used to estimate the number of pairs of colonially nesting bird species, which includes most seabirds. AON is one way to estimate the number of breeding parts.

<sup>8</sup> There were also approximately 2,500 non-breeders on potential nest sites.

<sup>9</sup> A biogeographic population is defined by JNCC as a group of birds which breed in a particular location (or group of locations), breed freely within the group and rarely breed or exchange individuals with other groups.

- 2.11 The tracked birds from the SPA showed considerable use of the Hornsea Zone, including the proposal area for Project Two, both for foraging and flying through to reach other foraging areas, during the chick-rearing season. Of the 42 individuals tracked 24 were recorded within the Hornsea Project Two area. The area of active use identified showed marked similarity over the three years, although in 2012 the core area used extended further into the proposed Hornsea Project Two. Although densities diminish with increased distance offshore foraging flights and feeding behaviours were still recorded<sup>10</sup>.
- 2.12 Tracking continued after the breeding season. In 2010 post-breeding locations were obtained for 18 of the tracked gannets, including use of the marine environment in and around the Hornsea Zone. The results from 2011 and 2012 also indicated an overlap with the Hornsea Zone, including this project, but showed dispersal to other parts of the North Sea before the individuals' winter migration<sup>10</sup>.
- 2.13 There is therefore a need to distinguish between breeding, non-breeding/winter seasons in assessing the possible impacts to gannets. For example from October especially, there is considerable overlap of gannets from different breeding colonies<sup>11</sup>. Due to the diverse pattern of migration there is an increased potential for interaction with this and other proposed or constructed wind farms. There are indications of a high degree of flight avoidance by migratory gannets around the Egmond aan Zee<sup>12</sup> and Horns Rev<sup>13</sup> offshore wind farms, although in the case of Horns Rev, no gannets were recorded in the wind farm area prior to or post-construction. The well designed and executed studies from which this information is drawn relate to inshore wind farms and the results may not be applicable to breeding gannets.

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<sup>10</sup> Langston, R., Teuten, E. & Butler, A., 2013. *Foraging ranges of northern gannets *Morus bassanus* in relation to proposed offshore wind farms in the North Sea: 2010-2012*. RSPB Report to DECC, December 2013.

<sup>11</sup> Fort, J., Pettex, E., Tremblay, Y., Lorentsen, S.-H., Garthe, S., Votier, S., Baptiste Pons, J., Siorat, F., Furness, R. W., Grecian, W. J., Bearhop, S., Montecchi, W. A. & Gremillet, D. 2012. *Meta-population evidence of oriented chain migration in northern gannets (*Morus bassanus*)*. *Frontiers in Ecology and the Environment* 10:237-242.

<sup>12</sup> Krijgsveld, K. L., Fijn, R. C., Japink, M., van Horsen, P. W., Heunks, C., Collier, M., Poot, M. J. M., Beuker, D. & Dirksen, S. 2011. *Effect studies offshore wind farm Egmond aan Zee: Final report on fluxes, flight altitudes, and behaviour of flying birds*. NoordzeeWind report nr WEZ\_R\_231\_T1\_20111114\_flux&flight. Bureau Waardenburg report nr 10-219 to Noordzeewind, Culemborg, The Netherlands. Final report November 2011. [http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ\\_R\\_231\\_T1\\_20111114\\_2\\_fluxflight.pdf](http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ_R_231_T1_20111114_2_fluxflight.pdf), last accessed 25 June 2012.

<sup>13</sup> Petersen, I. K., Christensen, T. K., Kahlert, J., Desholm, M. & Fox, A. D. 2006. *Final results of bird studies at the offshore wind farms of Nysted and Horns Rev, Denmark*. NERI report commissioned by DONG energy and Vattenfall A/S. National Environmental Research Institute, Ministry of the Environment, Denmark.

- 2.14 In addition available evidence shows that all the adult gannets, and most of the immature gannets (age 3-4 years), were recorded in the Hornsea Project Two area during the breeding season come from the SPA.

***Black-legged Kittiwake***

- 2.15 The SPA is the only English SPA supporting black-legged kittiwake in numbers of international importance. Between 2008 and 2011 the SPA, including the proposed extension, supported an average of 44,520 pairs of black-legged kittiwakes, which represents 2% of the North Atlantic biogeographic population<sup>14</sup>, but is also a substantial decline on historical population levels. At the time of designation of the SPA, the population estimate was 83,370 pairs.
- 2.16 When not at the nest kittiwakes loaf on the sea below the cliffs and forage up to 120 km offshore<sup>15</sup> (ES Vol 2, Ch 5, paragraph 5.5.120, p5-41), although the FAME data indicate kittiwakes regularly forage considerably further, up to 231 km.
- 2.17 The RSPB has carried out tracking of kittiwakes from the SPA. The GPS data collected in 2010-2014, show the kittiwakes making foraging trips across the Hornsea zone, including the proposal area for Hornsea Project Two (please see attached Annex IV, Figure 4). There was considerable overlap in areas used in different years by kittiwakes from the SPA. Birds tracked from Filey north-west of the SPA and proposed as part of the pSPA, in 2013, covered a larger area of sea than was recorded for the kittiwakes from the SPA in 2010-2012. The sinuous sections of tracks from the GPS data collected indicate foraging behaviour being conducted on these longer journeys
- 2.18 The available evidence supports the precautionary allocation of all adult kittiwakes recorded in Hornsea Project Two area during the breeding season to the SPA. But the Applicant's HRA Report has taken a substantially lower figure of 19.34% (HRA Report part 1, paragraph 5.8.178).

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<sup>14</sup> AEWA, 2012. *African-Eurasian Waterbird Agreement 2012: Report on the Conservation Status of Migratory Waterbirds in the Agreement Area*. Fifth Edition. AEWA, Bonn

<sup>15</sup> Thaxter, C. B., B. Lascelles, K. Sugar, A. S. C. P. Cook, S. Roos, M. Bolton, R. H. W. Langston, and N. H. K. Burton. 2012. *Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas*. *Biological Conservation* 156: 53–61.

### 3. Legislation and Policy Background

#### Introduction

- 3.1 Section 104 of the Planning Act 2008 provides that an application for development consent for energy infrastructure must be decided in accordance with the relevant National Policy Statement (NPS) except where in doing so it would lead to the UK being in breach of its international obligations; be in breach of any statutory duty that applies to the Secretary of State; be unlawful; result in adverse impacts which would outweigh the benefits; or be contrary to regulations about how decisions are to be taken. The suite of Energy NPSs set out the Government's approach to ensuring the security of energy supplies and the policy framework within which new energy infrastructure proposals are to be considered. The presumption in favour of granting consent, as identified in NPS EN-1, *Overarching National Policy Statement for Energy*, is subject to the tests set out in section 104 of the Planning Act (see paragraphs 4.1.2 and 1.1.2).
- 3.2 The international obligations and statutory duties to which the 2008 Act refers include legislation designed to protect nature conservation interests. EN-1 recognises the need to comply with the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations)(paragraph 4.3.1) within a wider objective of protecting the most important biodiversity conservation interests (see section 5.3 generally). It records that the Habitats Regulations provide statutory protection for important sites identified through international conventions and European Directives, including Ramsar sites, listed under the Ramsar Convention<sup>16</sup>, SPAs designated under the Birds Directive and Special Areas of Conservation (SACs) designated under the Habitats Directive<sup>17</sup>.
- 3.3 NPS EN-1 also confirms that for the purposes of considering development proposals affecting them, as a matter of policy the Government wishes potential SPAs (pSPAs) to be considered in the same way as if they had already been classified. Listed Ramsar sites should also, as a matter of policy, receive the same protection (paragraph 5.3.9).
- 3.4 NPS EN-3, *National Policy Statement for Renewable Energy Infrastructure*, specifically identifies birds as a biodiversity concern to be taken into account (paragraph 2.6.59 and 2.6.68). Whilst it is stated that the designation of an area as a protected European site does

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<sup>16</sup> The Convention on Wetlands of International Importance 1971.

<sup>17</sup> Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

not necessarily restrict the construction or operation of offshore wind farms (paragraph 2.6.69), the legislative requirements identified above are still to be met. The protection afforded by legislation, to which the 2008 Act and the NPSs refer, are addressed briefly below.

### **The Birds and Habitats Directives**

3.5 The Birds Directive requires the conservation of all species of naturally occurring birds in the wild state in the European territory of the Member States to which the Treaty applies. It applies to birds, their eggs, nests and habitats (Article 1).

3.6 The Directive imposes a requirement on Member States to maintain all wild bird populations at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or if necessary to restore the population of these species to that level (Article 2). They are required to take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all wild bird species, including the creation of protected areas (Article 3). The requirement to establish a system of protection for all wild bird species, includes prohibiting certain activities such as deliberate killing or disturbance (Article 5).

3.7 Article 4 provides particular protection for species listed in Annex I to the Directive. These species are to be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Member States must classify in particular the most suitable territories in number and size as SPAs. Similar measures are to be taken for regularly occurring migratory species not listed in Annex I due to the need for coherent protection in both their wintering and breeding areas to ensure their survival.

3.8 Article 7 of the Habitats Directive replaced the first sentence of Article 4 of the Birds Directive by applying the obligations in Articles 6(2)-(4) of the Habitats Directive to SPAs established under the Birds Directive. Those obligations require that:

“2. Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive.

3. Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

4. If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.”

3.9 Once designated SPAs and their species benefit from the requirement for plans and projects to be assessed in accordance with the above requirements.

3.10 The Natura 2000 Network is intended to be a coherent European ecological network including both SACs and SPAs that enables the natural habitat types and the species habitats concerned to be maintained or, where appropriate, restored, at a favourable conservation status in their natural range (Article 3(1) of the Habitats Directive).

3.11 The second sentence of Article 4(4) of the Birds Directive continues to provide that outside SPAs, Member States must strive to avoid pollution or deterioration of habitats. Article 13 further provides that application of measures taken pursuant to the Directive may not lead to deterioration in the present situation as regards the conservation of the wild bird species.

**The Conservation of Habitats and Species Regulations 2010 and Offshore Habitat Regulations 2007**

3.12 SACs and SPAs are protected as “European sites” in inshore waters (up to 12 nautical miles from the baselines) by the Conservation of Habitats and Species Regulations 2010 (as amended); and in offshore waters (i.e. from 12-200 nautical miles) by the Offshore Marine Conservation (Natural Habitats etc) Regulations (as amended)(Offshore Regulations). In each case the regulations transpose in a similar form Article 6 of the Habitats Directive, through regulations 61, 62 and 66 of the Habitats Regulations and regulations 25, 26 and 30 of the Offshore Regulations respectively.

3.13 The Habitats Regulations thus set out the sequence of steps to be taken by the competent authority (here the Secretary of State) when considering authorisation for a project that may have an impact on a European site before deciding to authorise that project. These are as follows:

- a. Step 1: Under regulation 61(1)(b), consider whether the project is directly connected with or necessary to the management of the SPA. If not –
- b. Step 2: Under regulation 61(1)(a) consider, on a precautionary basis, whether the project is likely to have a significant effect on the SPA, either alone or in combination with other plans or projects (the Likely Significance Test).
- c. Step 3: Under regulation 61(1), make an appropriate assessment of the implications for the SPA in view of its conservation objectives. Regulation 61(2) empowers the competent authority to require an applicant to provide information for the purposes of the appropriate assessment. There is no requirement or ability at this stage to consider extraneous (non-conservation e.g. economics, renewable targets, public safety etc) matters in the appropriate assessment.
- d. Step 4: Pursuant to regulation 61(5) and (6), consider whether it can be ascertained that the project will not, alone or in combination with other plans or projects, adversely affect the integrity of the SPA, having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (the Integrity Test).
- e. Step 5: In light of the conclusions of the assessment and in accordance with regulation 61(5) and (6), the competent authority shall agree to the project only after having ascertained that it will not adversely affect the integrity of the SPA, alone or in combination with other plans or projects.
- f. Step 6: as required by regulation 62(1), only if the competent authority is *satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest* (which, subject to [regulation 62(2)], *may be of a social or economic nature*), they may agree to the plan or project notwithstanding a negative assessment of the implications for the European site. Or put another way whether the need satisfies the high hurdle of “*imperative reasons of overriding public interest*” must be tested against the internationally and nationally important nature conservation designations that are affected by the project.

g. Step 7: and finally regulation 66 of the Habitats Regulations, requires that in the event of the imperative reasons of overriding public interest and alternative solutions tests being satisfied, the Secretary of State must *secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected*. The essential steps in fulfilling this duty are to ascertain precisely the ecological function and resource which is lost and how that function and resource can be permanently secured elsewhere.

3.14 In relation to both inshore area and the offshore marine area, any competent authority must exercise its functions so as to secure compliance with the requirements of the Habitats Directive and the Birds Directive; and to take such steps as it considers appropriate to secure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds, having regard to the requirements of Article 2 of the Birds Directive.<sup>18</sup>

#### **Alternative Solutions**

3.15 Section 9 below considers the scope of possible alternative solutions, along with relevant Government Policy and the Planning Inspectorate's guidance on alternative solutions. We consider what alternative solutions, in our view, could be considered in determining this application and the Environmental Impact Assessment and Habitats Regulations requirements.

3.16 It is the RSPB's view that the Secretary of State must consider **all** renewable energy proposals that are in the public domain as at the date of the present Proposal as possible alternative solutions. Thus ensuring that consideration is given to those alternative solutions at the same time as considering the Hornsea Project Two proposal.

3.17 The concept of an alternative solution clearly includes variations to the project promoted, whether in form, size, layout, location or otherwise (as required by the EIA Regulations). But in addition all potential alternative solutions to meet the public interest objectives need to be assessed by the Secretary of State against their relative impact upon European sites and their species.

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<sup>18</sup> See regulation 9 of the Habitats Regulations and regulation 6 of the Offshore Regulations.

- 3.18 Alternative solutions to be preferred are those which satisfy the imperative reasons of overriding public interest test, as identified by the competent authority, but which also better respect the integrity of the European sites and their species (see *Managing Natura 2000 (MN2000)*<sup>19</sup> paragraph 5.3.1) and the value of the Natura 2000 Network as a whole. This means that a competent authority must consider the comparative ecological impacts on European sites and species arising from alternatives in order to identify alternative solutions.
- 3.19 Ecological, not economic, considerations are the reference parameters for the identification of alternative solutions. Economic considerations cannot, as a matter of law, be determinative in the assessment of alternative solutions (see e.g. *MN2000* paragraph 5.3.1).
- 3.20 It is for the Secretary of State, as the competent authority, to be satisfied that no alternative solutions exist. If she cannot be so satisfied, e.g. because there are potential alternative solutions but they have not been properly evaluated, she must reject the project.
- 3.21 It will therefore be necessary for the Secretary of State to rank the competing alternative solutions against the Hornsea Project Two scheme in terms of their ecological impact.
- 3.22 It is fundamental to do so because unless such an exercise is undertaken, the Secretary of State cannot rationally form the view that there is no alternative solution. Nor can she form the view that the Hornsea Project Two proposal must be carried out for imperative reasons of overriding public interest unless she is satisfied that the “*need*” said to justify the harm will not be or cannot be appropriately met elsewhere.
- 3.23 Ranking of the alternative solutions will require a thorough analysis of all relevant and available information.
- 3.24 The need to consider alternative solutions is not limited to other schemes within that area as confirmed in the Secretary of State’s Diben Bay Port Proposal Decision Letter, para 51:

“51. The Secretary of State notes, however, that the consideration of alternatives for projects which would have a significant impact upon a site designated in accordance with the Habitats Regulations must necessarily range more widely. The Secretary of State agrees with the Inspector’s conclusion that the Applicant’s proposal would have a significant effect upon the integrity of designated sites. It follows that consideration of alternatives must

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<sup>19</sup> EC (2000) *Managing Natura 2000 sites – the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC*.

concern alternative ways of avoiding impacts on the designated sites. The Secretary of State considers that such alternatives would not be confined to alternative local sites for the project. He draws attention to the European Commission's methodological guidance on the Assessment of Plans and Projects significantly affecting Natura 2000 sites, which interprets article 6 (4) of the Habitats Directive. The guidance states that a competent authority should not limit consideration of alternative solutions to those suggested by a project's proponents and that alternative solutions could be located even in different regions or countries."

### ***Principles of appropriate assessment***

- 3.25 The Habitats Directive and Regulations are to be applied in accordance with the precautionary principle<sup>20</sup> such that a project is to be made subject to an appropriate assessment if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site: the Waddenzee case.<sup>21</sup> Where a project is likely, applying this precautionary approach, to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site.<sup>22</sup>
- 3.26 If likely significant effects cannot be excluded at this screening stage, a plan or project may only be approved if the competent authority is convinced that it will not affect the integrity of the European site(s) concerned. Waddenzee confirmed that where doubt remains as to the absence of adverse effects on the integrity of the site, approval should be refused<sup>23</sup> (subject to the considerations of alternative solutions, imperative reasons of overriding public interest and the provision of compensatory measures). Thus an appropriate assessment implies that all aspects of the project which can affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field.<sup>24</sup> The competent authority, "taking account of the conclusions of the appropriate assessment of the implications...for the site concerned, in the light of the conservation objectives, are to authorise such activity only if they have made certain that it will not adversely affect the integrity of the site. That is the case where no reasonable scientific doubt remains as to the absence of such effects"<sup>25</sup> (emphasis added).
- 3.27 *Sweetman v. An Bord Pleanála*,<sup>26</sup> concerned a candidate SAC, in which a road scheme would involve the permanent loss of 1.47 ha of limestone pavement, from a distinct sub-area of a

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<sup>20</sup> See Article 191 of the Treaty on the Functioning of the European Union ("TFEU").

<sup>21</sup> CJEU Case-127/02; [2004] ECR-7405 at [45].

<sup>22</sup> [49].

<sup>23</sup> [56]-[57].

<sup>24</sup> [61].

<sup>25</sup> [59].

<sup>26</sup> CJEU CaseC-258/11; [2013] ECR-000.

priority habitat containing 85 ha of limestone pavement, which itself formed part of a total of 270 ha of such limestone pavement in the entire area. It was held that when considering the effect of a project on the integrity of a site:

- a. “The competent national authorities cannot therefore authorise interventions where there is a risk of lasting harm to the ecological characteristics of sites which host priority natural habitat types. That would particularly be so where there is a risk that an intervention of a particular kind will bring about the disappearance or the partial and irreparable destruction of a priority natural habitat type present on the site concerned”;<sup>27</sup>
- b. an appropriate assessment cannot “have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned”;<sup>28</sup>
- c. if “that plan or project will lead to the lasting and irreparable loss of the whole or part of a priority natural habitat type whose conservation was the objective that justified the designation of the site concerned as an SCI, the view should be taken that such a plan or project will adversely affect the integrity of that site”<sup>29</sup> (emphasis added).

3.28 The Opinion of the Advocate General identified, in the context of the case involving a cSAC, the provisions of the Habitats Directive which refer to the maintenance and restoration of habitats at a favourable conservation status including sites within the Natura 2000 network (which would also include SPAs); and the requirement under Article 6(2) for steps to be taken to avoid the deterioration of the habitats concerned.<sup>30</sup> The purpose of these provisions was to pre-empt damage being done to the site,<sup>31</sup> having regard to its conservation objectives, and to avoid those objectives being prejudiced.<sup>32</sup>

3.29 European Commission guidance “Managing Natura 2000” advises<sup>33</sup> that “as regards the connotation or meaning of ‘integrity’, this can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation. The ‘integrity of the site’ has been usefully defined as ‘the coherence of the site’s ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified’.<sup>34</sup> A site can

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<sup>27</sup> [43].

<sup>28</sup> [44]. The need for reliable data was emphasised, in relation to birds, in Case C-43/10 *Nomarchiaki Aftodioikisi Aitoloakarnanias and Others v Ypourgos Perivallontos, Chorotaxias kai Dimosion ergon and Others* (judgment 11 September 2012).

<sup>29</sup> [46].

<sup>30</sup> Paragraphs 39-41 of the Opinion.

<sup>31</sup> Paragraph 43.

<sup>32</sup> Paragraph 44.

<sup>33</sup> Paragraph 4.6.3.

<sup>34</sup> See ODPM Circular 6/2005 para. 20.

be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required. When looking at the 'integrity of the site', it is therefore important to take into account a range of factors, including the possibility of effects manifesting themselves in the short, medium and long-term".<sup>35</sup>

3.30 Commission guidance on "Assessment of plans and projects significantly affecting Natura 2000 sites" includes an "integrity of site checklist"<sup>36</sup> which asks whether the project has the potential to cause delays towards achieving the conservation objectives of the site; interrupt progress towards achieving the conservation objectives of the site; disrupt the factors that help to maintain the conservation objectives of the site; and interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site.

3.31 As is clear from Article 6(3) of the Directive (as transposed into e.g. regulation 25(1) of the Offshore Regulations), this assessment of integrity is to be considered by reference to the impact of the project alone and in combination with other plans and projects. As clearly set out in *Waddenzee*, para 61:

**61** In view of the foregoing, the answer to the fourth question must be that, under Article 6(3) of the Habitats Directive, **an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field.** The competent national authorities, taking account of the appropriate assessment of the implications of mechanical cockle fishing for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects. (emphasis added)

## Ramsar Sites

3.32 The UK is a party to the Convention on Wetlands of International Importance 1971, which is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

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<sup>35</sup> See too the European Commission Guidance; Wind Energy Developments and Natura 2000, 2011, page 82-83, paragraph 5.5.3.

<sup>36</sup> P. 28 paragraph 3.2.4.

Sites listed under the Convention are known as “Ramsar Sites”.<sup>37</sup> The Government designates Ramsar sites in accordance with criteria set out in the Convention, so as to recognise the importance of these sites as a wetland wildlife habitat.

- 3.33 As with pSPAs, Government policy is that such sites are to be made subject to the same requirements as those described above which apply to European sites.<sup>38</sup>

### **Environmental Impact Assessment**

- 3.34 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) transposed Council Directive 85/337/EC on the assessment of certain public and private projects on the environment (as amended). That Directive and its amendments have been codified by Council Directive 2011/92/EU, which was itself amended by Directive 2014/52/EU. Development consent cannot be granted for EIA development unless the decision-maker has taken into account environmental information including an environmental statement which describes the likely significant effects, including cumulative effects, of the development on the environment. This will include effects on wild bird species regardless of any designation of a site as a SPA.

- 3.35 NPS EN-3 acknowledges that offshore wind farms have the potential to impact on birds through collision with rotating blades, direct habitat loss, disturbance from construction activities, displacement during the operational phase (resulting in loss of foraging/roosting area) and impact on bird flight lines (i.e. barrier effect) and associated increased energy use by birds for commuting flights between roosting and foraging areas.<sup>39</sup> These potential impacts have been taken into account by the RSPB and its remaining concerns with the applications are set out below, in the context of the legislative provisions summarised above, in particular those relating to appropriate assessment.

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<sup>37</sup> See Article 4.

<sup>38</sup> See NPS EN-1 para. 5.3.9; Circular 6/2005 para 5.

<sup>39</sup> Paragraph 2.6.101; see paragraphs 2.6.100-110 and 2.6.58-71 generally. Effects on foraging areas outside an SPA are to be taken into account when assessing the effects on bird populations of the SPA: see *Hargreaves v Secretary of State for Communities and Local Government* [2011] EWHC 1999 (Admin), which concerned effects on pink-footed geese which commuted inland from their roosting sites in the SPA to feed on grain and winter cereal crops on fields adjacent to the proposed development site.

## 4. Offshore Ornithology Concerns

4.1 The main focus of this written representation is the qualifying interest species of both the SPA and the pSPA, comprising northern gannet, black-legged kittiwake, common guillemot, razorbill and Atlantic puffin. We identify below the concerns which cover more than one species before placing them in the context of the individual species that are relevant to the SPA and pSPA. As stated above, these concerns relate to collision risk modelling; displacement; and PBR, which are addressed in turn below. We are also concerned as to the potential collision impacts on great black-backed gull and lesser black-backed gull, until a more rigorous assessment of population scale impacts is carried out.

## 5. Collision Risk Modelling

### Introduction

- 5.1 A method of quantifying the risk of bird collisions with the turbines of wind farms, known as the Band model, was formalised in 2007<sup>40</sup>, and has become the standard method for collision risk assessments. It combines a series of parameters describing the turbine design and operation with estimates of a birds size and behaviour, to generate a predicted number of birds that would collide with a turbine over a given time period.
- 5.2 The model was subsequently refined to account for differences in survey methodology for offshore wind farms in 2012<sup>41</sup>, and this also included an “extended” Band model. Supporting guidance recommended that the extended model be used, and presented alongside the basic model, if the data were suitably robust, (Band, 2012 Page 7, para 13).
- 5.3 The difference between these models is addressed below, but in essence the Band model now has two versions, the basic and extended, and 4 options. These are differentiated by the assumption of a uniform or heterogeneous flight distribution, and by how site specific and generic flight height data are incorporated into the model (see box). The key distinction is between the basic and the extended Band models, the other subdivisions are related to the source of input data.

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<sup>40</sup> Band, W., Madders, M. And Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms. Pp. 259-275 In: de Lucas, M., Janss, G.F.E. and Ferrer, M. (eds.) Birds and Wind Farms: Risk Assessment and Mitigation. Quercus, Madrid.

<sup>41</sup> Band, W. 2012. Using a Collision Risk Model to assess bird collision risks for offshore wind farms. Final report on Project SOSS-01, March 2012, to The Crown Estate, London.

- 5.4 The extended Band model relies on flight height distribution curves. In most cases, these are those derived from a review of flight heights and Avoidance Rates (see below)(Cook et al 2012)<sup>42</sup> that included “generic” flight height distributions. These distributions, which were incorporated into the Band model, were subsequently refined in Johnston et al., (2014 with corrigendum<sup>43</sup>). They use coarse banded survey data from surveys of proposed off shore wind farms to generate species-specific distributions of the proportions of birds that would occupy 1m height bands above the water surface, along with confidence intervals around the distributions. In the original source data, heights were allocated to broad bands during survey, and as these were delineated differently at different sites, so there was an overall spread of height bands when these data were pooled. The medians of the height bands<sup>44</sup> were then plotted and a distribution function fitted to the best fit, with associated confidence intervals.
- 5.5 These confidence intervals presented alongside the height distribution curves give an indication of the variability in flight height. The guidance accompanying the Band model recommends that these are used in the model to generate a measure of the uncertainty associated with such variability.
- 5.6 It should be noted that the Band 2012 Guidance also notes that due to simplifications in the model and potential sources of under- and over-estimation that the outputs should be considered to have a 20% margin of error (page 19, para 50).
- 5.7 The Band Collision Risk Model (CRM) has been used by the Applicant to determine whether there will be an impact on a number of bird species due to collision with turbines. For the Hornsea Project Two application the extended version of the Band CRM has been used. This is in the form of “Option 4” which utilises data collected on site, but assigned to 1m height bandwidths<sup>45</sup>, (see box below summarising CRM options). Below these representations explain the difficulties with the use of the Band model in this case, and how the application has incorrectly taken into account the latest recommendations from the BTO in its Avoidance Rate Review and the SNCBs AR Guidance.

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<sup>42</sup> Cook et al., 2012

<sup>43</sup> Johnston *et al* 2014

<sup>44</sup> Or for Johnston et al 2014, the “maximum likelihood estimate”, analogous to the median.

## Summary explanation of collision risk options for the “Band” model

### Summary explanation of collision risk options for the “Band” model<sup>41</sup>

#### Basic model

The basic model assumes a uniform distribution of bird flight heights between the lowest and highest blade sweep. This means that collision risk is the same no matter what position the bird is in the rotor swept area.

Option 1 – the original “Band” model utilises data on bird movements collected on site, usually from boat-based bird surveys. Observers most commonly assign flight height into bands; such as below rotor, within rotor swept height or above the rotor, often also using fixed structures to delineate bands.

Option 2 – this Option is mathematically identical to Option 1 but derives numbers of birds at collision height from the overall density (from the site-specific counts), combined with the proportion of these at potential collision height (determined by generic flight height distributions). This version of the model permits subsequent changes in rotor hub height to be incorporated, and examine how these changes influence bird collision mortality. Option 1 is restricted to the rotor dimensions specified during survey.

#### Extended model

The extended model differs from the basic model in that it allows for a heterogeneous distribution of birds in the rotor swept area. For the basic model, average collision risk is calculated across the whole rotor swept area, but the extended model includes variability in bird flux (from height distribution) and collision risk (from distance from rotor hub).

Option 3 – uses the generic bird flight height data, as described under Option 2, allocated to 1m bandwidths, alongside data on bird density derived from site surveys. As the generic distributions of bird flight height are skewed toward the lower end of the potential collision window, this therefore predicts a reduced risk of collision the greater the distance from the turbine.

Option 4 – the extended model, as for Option 3, but using site-specific bird survey data allocated to 1m bandwidths. Hornsea Project One was the first project to apply this modified version of the model (but the DECC Secretary of State’s decision, on 10 December 2014, did not rely on this Option and instead determined that Option 2 was the more appropriate). Hornsea Project Two is the second project to apply this modified version of the model.

5.8 After the publication of the extended Band model, Marine Scotland Science<sup>46</sup> commissioned the BTO<sup>47</sup> to carry out a review of one aspect of collision risk modelling, the application of a correction factor known as “Avoidance Rate”, and this review has now been completed<sup>48</sup>. In

<sup>46</sup> Marine Scotland Science undertakes research and provides scientific and technical advice on a number of marine and fisheries issues including aquaculture and fish health, freshwater fisheries, sea fisheries and the marine ecosystem, to the Scottish Government.

<sup>47</sup> The British Trust for Ornithology is an independent charitable research institute combining professional and citizen science aimed at using evidence of change in wildlife populations, particularly birds, to inform the public, opinion-formers and environmental policy- and decision-makers.

<sup>48</sup> Cook, A.S.C.P., Humphries, E.M., Masden, E.A., and Burton, N.H.K. 2014. The avoidance rates of collision between birds and offshore turbines. BTO research Report No 656 to Marine Scotland Science.] Report of work carried out by the British Trust for Ornithology in collaboration with the Environmental Research Institute on behalf of the Marine Scotland Science – “The Avoidance Rates of Collision Between Birds and Offshore Turbines”, BTO 2014 (officially dated

response to this review, the Statutory Nature Conservation Bodies (SNCBs)<sup>49</sup> have published new guidance to the use of Avoidance Rates with the basic and extended model (the SNCBs AR Guidance)<sup>50</sup>.

5.9 This Report and the SNCBs review of it was not available at the time of Examination into Hornsea Project One. However, the BTO Review was concluded before the completion of the Secretary of State's determination and was taken into account by the Secretary of State in the Hornsea Project One Appropriate Assessment, where its importance was acknowledged, as explained further below.

5.10 It is the RSPB's view that the CRM carried out by the applicant has not been done correctly and the RSPB does not think the application of the extended Band model is appropriate and hence the collision risk estimates for gannet, kittiwake, great and lesser black-backed gulls, at Hornsea Project Two are not reliable. In particular we are very concerned that advice as to the use of the extended model, included in the Band (2012) model guidance itself, in the BTO Avoidance Rate Review, in the SNCB AR Guidance and the Hornsea Project One Appropriate Assessment, has been disregarded. Therefore, the manner in which the Band model has been used by the Applicant cannot provide the necessary reassurance that there will not be an impact on the gannet and kittiwake SPA populations due to collision, either alone or in combination with other wind farms.

5.11 It is the RSPB's view that the Applicant's CRM assessment is incorrect for four reasons:

5.11.1 The manner in which data on birds in flight, in particular flight height, were collected during survey, and subsequently manipulated for analysis, exacerbates potential errors in collision risk modelling;

5.11.2 The extended Band model has been used in the absence of suitable data and contrary to the guidance in the BTO review and SNCB response;

5.11.3 There is an inappropriate use of an elevated correction factor (Avoidance Rate) which is applied to the final outputs, against the BTO AR Review and the SNCBs AR Guidance;

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3.12.14 but circulated to stakeholders as final version in September 2014)

<sup>49</sup> These are the UK Governments' advisers and include Natural England, Scottish Natural Heritage, Joint Nature Conservancy Council (JNCC), Marine Scotland Science and Natural Resources Wales.

<sup>50</sup> Joint Nature Conservation Committee (JNCC), Natural England (NE), Natural Resource Wales (NRW), Northern Ireland Environment Agency (NIEA), Scottish Natural Heritage (SNH). (2014). Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review. 25th November 2014.

5.11.4 No account is given for uncertainty and variability in the model outputs, contrary to the Band model guidance and the SNCB AR Guidance.

5.12 The results of collision risk modelling have been presented by the Applicant in summary in Table 5.46, 5.46, 5.48 and 5.49 of Volume 2 Chapter 5 of the Environmental Statement, and in full in Appendix C of the Chapter 5.5.1 Ornithology Technical Report. The concerns of the RSPB with this information are set out below, taking the above reasons in turn.

#### **Survey data**

5.13 The methods for obtaining bird densities for input into collision risk modelling from boat surveys are detailed in sections C.2 and C.3 of Appendix C of Annex 5.5.1

5.14 However, the method for deriving the density of birds in flight is poorly explained (C.23), neither is the justification of this approach provided, although it appears to differ from standard methodologies, as described in the Band model guidance (page 11, para 22). The RSPB agrees with Natural England as set out in its Relevant Representations (paras 2-9) that a fully worked example of how the snap shot surveys have been converted into density estimates must be provided, along with an explanation of how these values have been used for collision risk modelling. Without such an explanation, the values presented seem unexpectedly low. Furthermore complete presentation of the density values for each month as entered into the model should be provided.

5.15 The RSPB also agrees with Natural England that there has been an inadequate survey effort undertaken at Hornsea Project Two, and so it is impossible to currently make a complete assessment.

5.16 A requirement of the basic Band model is that a value of the proportion of birds at Potential Collision Height (PCH) is inputted. As described above, for Option 1, this is obtained from site specific data, for Option 2 from the generic data (most recently Johnston *et al.*, 2014). For the extended Band model, rather than a simple PCH, flight height distributions are used. Option 3, the conventional use of extended Band model, relies on the flight height distribution curves also presented in Johnston *et al.* 2014.

- 5.17 Johnston *et al.* 2014 used available survey data from proposed off shore wind farms to generate species specific distributions of the proportions of birds that would occupy 1m height bands above the water surface, along with confidence intervals around the distributions. While the RSPB is satisfied with the mathematical procedures used to generate these curves, we have concerns about the assumptions implicit in these models, which are largely acknowledged in the Band (2012) report (page 28, para 86) and Johnston *et al.*, paper (page 39 para 5-8). In particular, the extended model assumes that birds are correctly assigned to the appropriate height category. This assumption is not validated, and initial indications, including from offshore post-construction monitoring, are that it may not be a valid assumption<sup>51</sup>.
- 5.18 Flight height estimation to the nearest five metres intervals, as undertaken for Hornsea Project Two, is likely to provide a large degree of error, as it can be considered extremely unlikely that observers in a moving vessel, even with experience and training, are able to make such estimation with any degree of accuracy. Such an approach differs from the usual survey method, whereby flight height is allocated to broad bands, often defined by fixed structures such as mast height as reference points, as well as the upper and lower swept heights of the proposed turbine blades. The subsequent analytical approach taken for Hornsea Project Two is also novel, for both the calculation of PCH (for the basic Band model, and for the calculation of height distribution curves (for the extended model).
- 5.19 For the calculation of PCH, the Applicant allocates all height estimations between 22.5 and 32.5 meters into a 10m band, and from this calculates a proportion above the stated minimum rotor height of 28.04 m above mean sea level. The RSPB agrees with Natural England (as set out in its Relevant Representation (RR), para 27) that it is unclear why this novel method was used, and that it is inconsistent with methods used elsewhere. Furthermore it is entirely unnecessary for the following reason. Turbine dimensions are usually expressed in relation to sea level at Highest Astronomical Height (HAT), for reason of navigational clearance requirements (see for example Band 2012, page 52, para 3). However, the Applicant describes turbine height in relation to Mean Sea Level (MSL). If the minimum rotor height used was expressed as distance from HAT rather than MSL, as is more conventional, it would be 21.93m, meaning there is only 57cm difference between it and the 22.5m height band. Variability between sea level at survey, (assumed to be MSL) and turbine

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<sup>51</sup> Furness, R. W., Wade, H. M., & Masden, E. A. 2013. *Assessing vulnerability of marine bird populations to offshore wind farms*. Journal of Environmental Management, 119, 56-66.

height as HAT is then corrected for by the Tidal Correction stage in the Band model (Annex 7 of Band 2012, page 52), taking account of tidal variation). The RSPB agrees with Natural England (RR para 28) that this approach highlights the spurious accuracy of the Applicant's methods for estimating flight height.

5.20 The Applicant's derivation of flight height for use in the extended Band model differs significantly from that used to derive conventional flight height distribution curves. In Johnston *et al.*, the key source for flight height data, complex statistical models are used, pooling data from a large number of surveys where heights have been allocated to bands, often with reference to fixed structures. For Hornsea Project Two the height estimates carried out during survey were allocated to 5m bands *post hoc*, which are then subdivided into 1m bands by simple averaging. This manipulation of data that are likely to be inaccurate in the first place and their subsequent use in a mathematically sophisticated model is likely to compound the fundamental error in height estimation from boats, whereas the methods used by Johnston *et al.* 2014 are designed to minimise such error.

5.21 The Band CRM recommends that the collision risk assessment should determine whether site specific data are compatible with generic data from multiple wind farms reviewed on behalf of SOSS<sup>52</sup>. This generic review assumed that year-round data from 40 surveys at 32 existing or proposed offshore wind farms in UK waters would capture the range of variability in seabird flight height, and used these data to model flight height distribution curves. This paper has been updated and peer-reviewed as Johnston *et al.*, 2014. For most key species, the proportion of flights estimated to be at collision height (percentage at collision height), at Hornsea Project Two, is substantially lower, compared with those in Johnston *et al.*,. For kittiwake, lesser and great black-backed gulls this proportion was lower than the lowest 95% confidence intervals for the generic data. (ES Vol. 2, Ch. 5, Figure 5.2, pg5-66) These species are incorrectly referred to in the text (Appendix 5.5.1., page 5-65, para 5.6.76) as kittiwake, Arctic skua and common tern, although correctly labelled in Figure 5.2. (Appendix 5.5.1 page 5-66)

5.22 As described below, the Johnston *et al.*, data are presented with confidence intervals, which allow for the expression of uncertainty associated with variability in flight height. The

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<sup>52</sup> Strategic Ornithological Support Services.

method used for Hornsea Project Two to generate flight height distributions does not allow for this, and, aside from the issues of inaccuracy, is a major drawback of the approach.

- 5.23 This disparity leads to concern that assessment based on site-specific data presented by Hornsea Project Two may lead to underestimation of the risk of collision, notably for kittiwake, the PCH for which is substantially lower than in Johnston *et al.*. These figures for flight height of kittiwake at Hornsea Project Two are also considerably lower than those obtained from elsewhere by different means (e.g. Krijgsveld *et al.*, 2011<sup>53</sup> and Mendel *et al.*, 2014<sup>54</sup>.)
- 5.24 Whilst site-based data are likely to be most relevant to the site-specific conditions prevailing during data collection, the magnitude of the observed difference merits critical examination. Such a critical examination has not been presented for Hornsea Project Two; rather there is the statement that standard methods were used by experienced surveyors. While we would not question the experience of the surveyors, the method used to determine flight height for Hornsea 2 was the *estimation* of height to the nearest 5m metres, (HRA, Annex 5.5.1, para 2.1.7 pg 4: “*in addition, the estimated height of flying birds was also recorded, to the nearest 5m*”). This is contrary to standard practise which is that birds are *apportioned* to height bands, often with reference to fixed structures (see discussion above). This methodological difference is the most likely explanation for the discrepancy in flight heights.
- 5.25 Bird flight height is dependent on bird species, wind/weather conditions, “topography” (at sea, this is influenced by waves), behaviour, and the interactions between these factors. Consequently, recorded flight height will vary within and between individual surveys and sites, as well as between bird species. Any assessment of collision risk needs to take account of different bird activity, for each species, across the site or between seasons in order to identify any site-specific factors that might help to explain the difference in the proportion of flights at collision height recorded at the Hornsea Project Two area compared with Johnston *et al.*

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<sup>53</sup> Krijgsveld, K.L., Fijn, R.C., Japink, M., van Horssen, P.W., Heunks, C., Collier, M.P., Poot, M.J.M., Beuker, D. & Dirksen, S. 2011. Effect Studies Offshore Wind Farm Egmond aan Zee. Final report on fluxes, flight altitudes and behaviour of flying birds. Bureau Waardenburg report 10-219, NZW-ReportR\_231\_T1\_flu&flight. Bureau Waardenburg, Culemborg, Netherlands.

<sup>54</sup> Mendel, B., Kotzerka, J., Sommerfeld, J., Schwemmer, H., Sonntag, N. & Garthe, S. (2014) Chapter 11. Effects of the alpha ventus offshore test site on distribution patterns, behaviour and flight heights of seabirds. In Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Eds.) Ecological Research at the Offshore Windfarm alpha ventus, Federal Maritime and Hydrographic Agency. DOI 10.1007/978-3-658-02462-8\_11, © Springer Fachmedien Wiesbaden 2014.

5.26 Given the outstanding questions with the approach taken to assessing flight height at Hornsea 2, the collision risk figures presented that rely only on site specific data (Options 1 and 4) cannot be relied upon in isolation. Those model options that use the generic data, Options 2 and 3, should also be considered, and in the absence of any reasoning why there are consistently lower flight heights recorded at this site compared with other studies, such results should be considered a more accurate reflection of collision risk (subject however to the further issue with the extended model as set out below).

### **Incorrect Model Version**

5.27 As described below, the BTO, under commission of Marine Scotland Science, carried out a Review of Avoidance Rates for Collision Risk Modelling (BTO AR Review). Notwithstanding the further discussion of recommended Avoidance Rates below, one conclusion of the BTO AR Review was that the data that exist for kittiwake and gannet were inadequate to calculate an avoidance rate for use with the extended Band model for these species. This meant that the BTO recommended that only a no-avoidance collision estimate should be presented when using the extended model for gannet and kittiwake, until better data were available.

5.28 Consequently, the SNCBs issued AR Guidance (in response to the BTO Review), in which they were clear that: *“it is not appropriate to use the Extended Band model in predicting collision figures for [gannet and kittiwake] at the current time”*. Pg 4, para 3.2.

5.29 The Secretary of State’s decision, on 10 December 2014 for Hornsea Project One did not consider the use of the extended Band model appropriate and relied on the basic Band model, Option 1 outputs within the Appropriate Assessment for both gannets and kittiwakes.

5.30 As such the RSPB does not believe that the extended Band model should be used for either gannet nor kittiwake to predict collision risk (assuming avoidance behaviour) and that only the basic model should be considered. This position is in alignment with that of Natural England (RR para 82). Therefore, those figures presented for Hornsea Project Two for these species which use the extended model, are unreliable.

## Avoidance Rates

- 5.31 The extended Band CRM has been the subject of considerable debate across the SNCBs and offshore wind stakeholders. Concerns have partly focused on the correction factor (Avoidance Rate) to the output from the CRM, notably because of the paucity of empirical data to determine appropriate rates for seabirds. This correction factor encompasses a range of factors<sup>55</sup> that influence the CRM predictions, not just avoidance per se, although avoidance is a key factor<sup>56</sup>. The theoretical derivation of this correction factor has been based entirely on the original, basic version of the Band CRM (Options 1 and 2), and includes modelling error and uncertainty specific to that version.
- 5.32 Uncertainty applies to all versions of the Band CRM options and the related outputs, notably because of the lack of validation through pre- and post-construction monitoring of offshore wind farms that use the CRM predicatively, starting with pre-construction survey data and then follow up with post-construction data collection for comparison with the pre-construction predictions. Therefore, as explicitly acknowledged by the Band CRM, the Avoidance Rate for the basic model should not be directly applied to the extended model. As mentioned above, Marine Scotland Science (MSS), commissioned a review of Avoidance Rates and aspects of the Band CRM, which examined these issues – the BTO AR Review and the SNCBs AR Guidance responding to that BTO review.
- 5.33 Avoidance Rate is the inverse of the ratio of number of actual collisions to number of predicted collisions. As such “Avoidance Rate” is a misnomer; it is a catch all term for the inconsistency between predicted and actual mortalities, an inconsistency that can be derived from a variety of sources, including avoidance behaviour, observer bias and model error. Developing this argument further, because Avoidance Rate encompasses model error it is inappropriate to use the same Avoidance Rate for what are essentially different models, the basic and extended versions of the Band CRM.
- 5.34 Other sources of error in the extended Band model include incorrect estimation of height, decreased detection of higher flying birds, natural variability in numbers detected, and many

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<sup>55</sup> Whitfield, D.P. & Urquhart, B. 2013. *Avoidance Rates in Offshore Collision Risk Modelling: a Synthesis*. Report from Natural Research Projects (NRP) to Marine Scotland. NRP, Banchory.

<sup>56</sup> Chamberlain, D.E., Rehfish, M.R., Fox, A.D., Desholm, M. & Anthony, S.J. 2006. *The effect of avoidance rates on bird mortality predictions made by wind turbine collision risk models*. *Ibis* 148 (Suppl. 1), 198-202.

others. This means that until full validation of the extended Band model has been done, the assumption that the model needs no further correction is not valid.

- 5.35 Previous Scottish Natural Heritage guidance (SNH 2010) gives a default Avoidance Rate of 98% for seabird species. However this predated the extended Band CRM, and therefore could only be considered applicable to the basic model. In addition that Guidance was focused on terrestrial wind farms.
- 5.36 The BTO AR Review was overseen by a steering group of expert stakeholders, and provides a comprehensive review. In particular it took a qualitative approach to the available evidence, and its applicability to offshore developments. The key objective of the project was to calculate avoidance rates for five priority species of seabird; gannet, kittiwake, lesser black-backed, herring and great black-backed gulls by reviewing all the available data.
- 5.37 The review was unable to calculate species-specific avoidance rates for gannet, kittiwake, lesser black-backed and great black-backed gulls using either the basic or extended model. Where possible the review made recommendations based on the species groups: “all gulls”, “large gulls” and “small gulls”. The review makes clear that these recommendations are not applicable for other species.
- 5.38 For the basic Band model, recommendations for kittiwake were based on the small gulls group, for gannet, the all gulls group, and for lesser and great black-backed gulls the large gulls group. There was sufficient evidence to calculate a species specific avoidance rate for herring gull. These avoidance rates are shown in Table 5.1, below.
- 5.39 For the extended Band model, it was impossible to make any recommendation for gannet and kittiwake. As such the extended model is functionally useless for these species (see above) although the BTO Review says that a “no-avoidance” calculation can be carried out using the extended model. As shown below it was possible for some species, e.g. lesser and great black-backed gulls, to recommend a “large-gulls” avoidance rate. In addition there was sufficient evidence to calculate a species specific avoidance rate for herring gull. That this was the only species where it was possible to calculate a species-specific avoidance rate for use with the basic model demonstrates that there remains very little quantitative evidence

on which to base the calculations of avoidance rate at offshore wind farms.<sup>57</sup> These avoidance rates are shown in Table 5.1.

**Table 5.1. BTO recommended avoidance rates for priority species.**

Species	Basic model	Extended model
Gannet	98.9% <sup>a</sup>	n/a
Kittiwake	99.2% <sup>b</sup>	n/a
Lesser black backed gull	99.5% <sup>c</sup>	98.9% <sup>c</sup>
Herring gull	99.5%	99.0%
Great black-backed gull	99.5% <sup>c</sup>	98.9% <sup>c</sup>

<sup>a</sup>Based on “all gulls” group

<sup>b</sup>Based on “small gulls” group

<sup>c</sup>Based on “large gulls” group

5.40 The SNCBs AR Guidance is broadly in agreement with the BTO Review recommendations, except with regard to kittiwake, for which they advocate the more precautionary avoidance rate derived for “all-gulls”, and applied also to gannet, in the absence of empirical data specific to these species. The SNCBs recommended avoidance rates are shown in Table 5.2. Their response makes the important point, “a key finding of the report is the absence of studies of collision mortality and avoidance rates at offshore wind farms” (page 1, second para) and this is particularly pertinent.

**Table 5.2. SNCB recommended avoidance rates for priority species.**

Species	Basic model	Extended model
Gannet	98.9%	n/a
Kittiwake	98.9%	n/a
Lesser black backed gull	99.5%	98.9%
Herring gull	99.5%	99.0%
Great black-backed gull	99.5%	98.9%

5.41 As we have mentioned, the SNCB AR Guidance makes clear that, as the BTO Review was unable to *present* an avoidance rate for either kittiwake or gannet, “...it is not appropriate to use the extended model for these species at this time”.

5.42 The RSPB are broadly in agreement with the recommendations of the SNCBs Guidance. This is an interim position, guided by the review of limited information, with the expectation of further data to permit a modified and, hopefully, better-informed position in due course,

<sup>57</sup> There were however quite large difference between site specific and generic flight height data for this species, which could arguably invalidate this.

notably for kittiwake and gannet. However, there remains the concern that little information relates to breeding seabirds which have different constraints compared with non-breeding seabirds. Consequently, site-specific cases require the inclusion of the basic model with 98% AR, notably for breeding gannets from colonies close to proposed offshore wind farms, as well as for species not included in the review.

5.43 The use of Avoidance Rates in the Hornsea Project Two assessment claims to follow those presented in the BTO Review (Annex 5.5.1 Part 2, Appendix C, C.42). However, as Avoidance Rates for the extended model are used, this represents a fundamental mis-reading of the BTO report, and also contradicts the advice of the SNCBs.

5.44 In particular, the Applicant misinterprets the BTO Review for gannet and kittiwake, stating that the BTO made no recommendation for the avoidance rate for these species, (ES Appendix 5.5.1, Appendix C, C.38). The BTO made it clear that based on the current evidence it was impossible to calculate an avoidance rate for gannet and kittiwake. The Applicant has provided no new evidence to support its suggested avoidance rates.

5.45 Notwithstanding the problems associated with the use of the extended model for gannet and kittiwake described in the previous sections, in the absence of an appropriate Avoidance Rate, the extended Band model cannot be used to make an assessment for gannet and kittiwake, and the basic Band model must be relied upon for these species. This position is in agreement with that of Natural England (RR para 82). We would further recommend that the avoidance rates recommended by the SNCBs are used, alongside 98% for breeding gannet.

### **Expression of uncertainty**

5.46 As illustrated by the BTO Review, there are scant data to validate all Collision Risk Models for most seabirds, notably in a UK context and for breeding seabirds, whatever version of the Collision Risk Model is used. This means that outputs from the Collision Risk Model can provide only a relative estimate of collision risk for most bird species. The single figure output from the Collision Risk Model that is usually presented for each bird species, presents a misleading impression of accuracy when in fact the model output is an approximation that may or may not be close to the actual collision risk.

- 5.47 The flight height distribution curves by Johnston *et al* 2014, have confidence intervals alongside the curves, and the guidance accompanying the Band model recommends that these are used in the model to generate a measure of the uncertainty associated with variability in flight height.
- 5.48 This expression of uncertainty is only part of the recommendations in the Band (2012) guidance. As a Stage F of the calculation, he recommends consideration of the following: general variability in survey data, data unavailability out with favourable survey conditions, natural variability in bird populations, observer bias in flight height information, the simplified geometry of the Collision Risk Model, potential collision with turbine towers, variability in bird parameters (length, wingspan, flight speed), insufficient empirical data on bird displacement avoidance and attraction.
- 5.49 The Band model guidance also recommends the use and presentation of a range of Avoidance Rates and model options, with justification for the model option and Avoidance Rate considered most likely to characterise the collision risk at the site. Over-reliance on single figure outputs from CRM gives an erroneous impression of precision in the collision risk estimates. As described, an attempt should be made to convey the uncertainty in the estimates, aiming to express this in terms of 95% confidence intervals as set out in the Band CRM report<sup>41</sup>. In addition, comparison of outputs from all the different Band CRM options, contributes to a critical examination of the pronounced differences in recorded flight heights at collision risk height described above. Currently, the Applicant presents only the Band Options 1 and 4 in its HRA Report, and EIA Chapter 5, although the other options are presented in tables C5 to C 12 in Appendix C of Annex 5.5.1 of the ES. This approach does not allow for the examination of error in flight height estimation and other potential reasons for the discrepancy between site-specific and generic data. Notwithstanding the value of the presentation of a range of options in understanding uncertainty, until the outstanding questions surrounding flight height accuracy and Avoidance Rates are answered, any assessment of whether harm will be avoided should be based on the outputs of the basic model.
- 5.50 The BTO review makes clear that model error was previously considered as a component of avoidance rate, and therefore the derived rates presented include this component to lesser extent. As such, following the recommendations in the Band model and the BTO Review, the

SNCB response to the BTO Review details the need to take into account uncertainty, and provides the means to do this. These include the use of confidence intervals presented in Johnston *et al.*, 2014. As such only the options of the Band model that use this generic data (Options 2 and 3) can express uncertainty, and the Applicant has presented no other means of expressing variability and uncertainty in flight, these Options should be preferred (though see caveats above to the use of the extended model).

5.51 Despite these specific acknowledgements of the need to incorporate uncertainty into collision risk modelling the Applicant has made no consideration of it in their assessment of Hornsea 2, and without this crucial contextual information, such assessment cannot be considered reliable. This position is in agreement with that of Natural England (RR para 81).

### **The RSPB's Conclusions on Hornsea Project Two CRM**

5.52 The RSPB does not consider that the collision risk modelling undertaken for Hornsea Project 2 is reliable or appropriate, for the following reasons:

5.52.1 The means by which the survey data are inputted into the model, in terms of survey effort, calculation of density and flight height are not adequately explained or justified. In particular the novel method for deriving flight heights is unreliable, and consequently only options that use generic data should be considered, provided the other issues with survey data can be resolved.

5.52.2 An incorrect option of the Band model is preferred, despite the recommendations of the BTO, the SNCBs and the Secretary of State in the Hornsea Project 1 decision. The model version used in the assessment of kittiwake and gannet should be the basic model.

5.52.3 The avoidance rates preferred are contrary to the advice of the BTO and SNCBs for the extended model.

5.52.4 There has been expression of uncertainty or variability in the expression of collision risk, contrary to the advice of the SNCBs.

5.53 Provided the issues around survey data can be resolved, the RSPB would accept the results of analysis using Option 2 of the Band model, with the associated 95% confidence intervals presented. This position is in alignment with that of Natural England with whose representations on CRM the RSPB essentially agrees. In the Secretary of State's decision for

Hornsea Project 1, the preferred Band model version was the basic model option was Option 1. The RSPB therefore remain in agreement that the basic model should be used, but differ in our preference for Option 2. The reason for this preferred option are firstly that the survey data for Hornsea Project 2 are not suitably reliable to calculate a crucial input parameter for Option 1, the PCH, and secondly that Option 2 allows for the presentation of confidence intervals that expressed some of the variability and uncertainty in collision risk estimation. This later reason has only become apparent in response to the BTO review, which was not available at the time of the Hornsea Project 1 inquiry, although the importance of it was acknowledged by the Secretary of State.

5.54 Due to the inadequacy of the model outputs presented, it is impossible at this stage to come to a conclusion with regard to the assessment of in-combination collision risk.

## **6. Displacement**

### **Summary**

6.1 The RSPB concerns in summary are:

6.1.1 The population estimates derived from survey data appear unrealistic and cannot be relied upon for assessment; and

6.1.2 Uncertainty as to the extent of mortality as a consequence of displacement has been inadequately expressed.

6.2 Therefore a risk of harm in respect of effects on populations of guillemot, razorbill and puffin, due to displacement, cannot be ruled out, either alone or in-combination. This position is in alignment with that of Natural England with whose representations on displacement the RSPB essentially agrees.

### **Introduction**

6.3 Displacement arises when there is a significant reduction in the density of birds within the wind farm footprint and the surrounding area (the buffer zones), which may be partial or total displacement, compared with the baseline situation. Displacement is equivalent to habitat loss and may be temporary or permanent, depending on whether or not there is habituation, i.e. adjustment to the presence of the wind farm and a resumption of use of the

area. It may be triggered during construction<sup>58</sup>, or during operation, depending on the direct cause.

- 6.4 Assessment of displacement is carried out by the Applicant in both the Environmental Statement and the Habitats Regulations Assessment, mainly in:
- 6.5 The ES Volume 2, Chapter 5 (Ornithology) paragraphs 5.5.3-7 (survey methodology), 5.6.41-60 (assessment methodology), 5.6.96-140 (construction effects) and 6.6.225-345 (operational effects), 5.7.223-38, 5.7.181-296 (cumulative impacts).
- 6.6 The Habitats Regulations Assessment paragraphs 5.8.56-77 then within individual SPA and species accounts 5.8.98-350.
- 6.7 The buffer of at least 2km as presented in Appendix A to the ES (Volume 5, Chapter 5.5.1 Ornithology Technical Report) and in the HRA (5.8.64) is appropriate for the assessment of displacement.
- 6.8 The concerns of the RSPB with this information fall under the following headings.

### **Population estimates**

- 6.9 As described in the Natural England Relevant Representation, there are inconsistencies in the manner that the boat survey data have been analysed to produce population estimates, such that these estimates are much lower than would be expected, for the survey data and from the population estimates from Hornsea Project One. Because of this, unless the Applicant can provide a fully worked example to confirm that the estimation has been carried out correctly, the data put forward for analysis of displacement effects cannot be relied upon. As such it is impossible to rule out adverse impacts on common guillemot, puffin and razorbill due to displacement effects.

### **Displacement magnitude**

- 6.10 In its HRA Report, the Applicant has a preferred value of 30% as the magnitude of displacement for guillemot (Tables 5.50 & 5.51 pg 136 & 137) and 40% for razorbill (Tables

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<sup>58</sup> Pearce-Higgins, J. W., L. Stephen, A. Douse, and R. H. W. Langston. 2012. *Greater impacts of wind projects on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis*. *Journal of Applied Ecology* 49:386–394.

5.53 & 5.54, pgs. 142 & 143) and puffin (Tables 5.58 & 5.59, pg150 & 151), although these figures are presented in a matrix, and the values preferred by Natural England are discussed. This presentation of a range of values is welcomed as the available evidence indicates considerable variation in the observed magnitude of displacement for these species. It is important to note that this evidence has variable study methods which are not always clearly documented, so studies may not be directly comparable. Furthermore, study design is critical to the statistical power to detect change<sup>59, 60</sup>. The observed variability in the studies that do exist warrants further consideration and impact assessment for a range of magnitude of displacement.

### **Displacement and mortality**

- 6.11 The selected displacement mortality values taken forward in the HRA Report for Hornsea Project Two do not exceed 10%, e.g. 10% and 1% respectively for guillemots during breeding, non-breeding seasons and 10% and 2% for razorbills during breeding, non-breeding seasons, and 2%, 1% and 1% respectively for gannet during breeding, post-breeding pre-breeding. Inadequate justification is given for which of these values have been chosen. We do not know the consequences for mortality of the effects of displacement and therefore cannot determine whether or not these values are precautionary, as indicated, or if they are underestimates. While we welcome the matrix approach to setting out the mortality values, further justification for the preferred values is needed
- 6.12 In the Hornsea Project Two assessment of displacement, a higher mortality rate has been allocated to breeding rather than non-breeding seasons. The proximate effect of displacement of breeding seabirds is likely to be a reduction in breeding productivity, especially for those species, such as guillemots, that have to make frequent food deliveries to chicks. Long-lived breeding adult seabirds are thought to be more likely to abandon a breeding attempt in any one year than risk their own survival<sup>61, 62</sup>. However, this theory is not always borne out in practice and several studies indicate that seabirds may compromise

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<sup>59</sup> Maclean, I. M. D., Skov, H., & Rehfishch, M. M. & Thaxter, C. B. 2013. *Evaluating the statistical power of detecting changes in the abundance of seabirds at sea*. Ibis 155: 113-126.

<sup>60</sup> Krijgsveld, K. L., Fijn, R. C., Japink, M., van Horsen, P. W., Heunks, C., Collier, M., Poot, M. J. M., Beuker, D. & Dirksen, S. 2011. *Effect studies offshore wind farm Egmond aan Zee: Final report on fluxes, flight altitudes, and behaviour of flying birds*. NoordzeeWind report nr WEZ\_R\_231\_T1\_20111114\_flux&flight. Bureau Waardenburg report nr 10-219 to Noordzeewind, Culemborg, The Netherlands. Final report November 2011. [http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ\\_R\\_231\\_T1\\_20111114\\_2\\_fluxflight.pdf](http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ_R_231_T1_20111114_2_fluxflight.pdf), last accessed 25 June 2012.

<sup>61</sup> Oro, D. & Furness, R. W. 2002. *Influences of food availability and predation on survival of kittiwakes*. Ecology 83(9): 2516-2528.

<sup>62</sup> Monaghan et al. 1992. *Ardea* 80: 71-81.

their future survival prospects by persisting with a breeding attempt in unfavourable conditions, as found for e.g. kittiwake. In other words, the increased energetic demands of displacement on breeding seabirds, making repeat return foraging trips during the breeding season may lead to increased mortality. Such mortality may not occur immediately, but may act later, during the non-breeding season, due to loss of condition during the breeding season. Other species may adopt a strategy in between these extremes, with effects on both chick production and adult survival, e.g. Arctic skua<sup>63</sup>, Arctic tern<sup>64</sup>. Therefore the Applicant's approach, of apportioning a higher mortality rate to breeding than non-breeding seasons may not be appropriate for all species.

### **The RSPB's conclusions on the Hornsea Project Two displacement assessment**

- 6.13 Due to outstanding concerns with the methodology used to derive population estimates, it is impossible to assess whether there will be impact due to displacement.
- 6.14 There are also concerns with the values used to represent displacement mortality.
- 6.15 As such, the information presented in the ES and the HRA Report cannot provide the necessary reassurance that there is not a risk of harm in respect of effects on populations of guillemot, razorbill and puffin, due to displacement, either alone or in combination with other wind farms.

## **7. Population Level Effects/Thresholds**

- 7.1 The RSPB is very conscious that the Examining Authority is well aware of its strong objection and serious concerns about the use of Potential Biological Removal when considering possible impacts arising from Hornsea Project Two to the SPAs and their species. These are detailed in Annex 5.
- 7.2 However in light of the following:
  - 7.2.1 the Examining Authority's recommendations for Hornsea Project One;
  - 7.2.2 the Secretary of State's Appropriate Assessment for Hornsea Project One;

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<sup>63</sup> Davis, S. E. Nager, R. G., & Furness, R. W. 2005. *Food availability affects adult survival as well as breeding success of parasitic jaegers [Arctic skua]*. Ecology 86(4): 1047-1056.

<sup>64</sup> Monaghan, P., Uttley, J. D., Burns, M. D., Thaine, C., & Blackwood, J. 1989. *The relationship between food supply, reproductive effort and breeding success in Arctic terns Sterna paradisaea*. Journal of Animal Ecology 58: 261-274.

- 7.2.3 other offshore wind farm decisions;
- 7.2.4 recent SNCB Advice on the use of PBR; and
- 7.2.5 the Applicant continuing to partially rely on this method in the information provided for the Habitats Regulations Appropriate Assessment.

The RSPB does feel it is necessary to repeat our serious concerns as set out in our submissions to the Hornsea Project One Examination as well as expanding those views in light of the above.

***The Examining Authority's Report for Hornsea Project One***

7.3 In the Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State for Energy and Climate Change dated 10 September 2014 (the ExA Report), Section 5, population level effects are discussed.

7.4 At paragraph 5.64 PBR is described:

*5.64 PBR calculations provide a means of estimating the number of additional bird mortalities that a given population can sustain. It can be used to identify sustainable harvest rates that would maintain populations at, or above, maximum net productivity level (MNPL) or maximum sustained yield.*

7.5 Just considering the language used (before taking account of our serious concerns about the way it has been used) it is clear that conservation species within a protected area is not compatible with calculating a *productivity level* and maximum *sustainable harvest rates* to ensure there is sufficient for next year's yield.

7.6 The ExA recognised the importance of PVA at para 5.71:

*5.71 Overall the work by the various parties on PBR and PVA provided a further sensitivity analysis dimension for the ExA to the ornithological assessment of the impacts of the project.*

7.7 However for possible displacement effects PVA was not considered in the Appropriate Assessment for Hornsea Project One.

7.8 As set out in para 5.105:

*5.105 The applicant further states that the PVA analysis also demonstrates that this scale of additional mortality is sustainable [REP-378], and NE accepted that the PVA analysis was broadly in line with the PBR analysis....*

- 7.9 It is possible that due to NE's conclusion that the PVA and PBR analyses were broadly in line the ExA was not required to consider in detail the RSPB's serious concerns. Once again the RSPB wishes the language to be noted – *additional mortality is sustainable* and wishes to remind the ExA that the Conservation Objectives for all SPAs clearly state the need to maintain or if necessary restore their qualifying species' population levels.

***The Secretary of State's Appropriate Assessment for Hornsea Project One***

- 7.10 The Secretary of State's Appropriate Assessment dated 27 November 2014 for Hornsea Project One (the AA), having set out the SPA Conservation Objectives (para 6.5) namely:

*Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.*

*Subject to natural change, to maintain or restore:*

- *The extent and distribution of habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The distribution of the qualifying features within the site*

- 7.11 Goes on to recognise, at paragraph 6.18, that PBR analysis is used to determine additional mortality *without resulting in a long term population decline.*

- 7.12 Again supporting our view that, for reasons which have been explained by the RSPB, the concept of PBR involves the setting of thresholds which relate to the extinction of a population, or its reduction to low levels. It is not to be equated with a simple decline in population, and in particular its thresholds do not necessarily relate to a decline in population which has an adverse effect on the integrity of the SPA and therefore the use of PBR is not consistent with the SPA's Conservation Objective of e.g. *maintain*.

***Other Offshore Windfarm Decisions***

- 7.13 Reference was made during the Hornsea Project One Examination and within the Decision documents to the Firth of Forth offshore Windfarm applications – Neart na Gaoithe, Inch Cape and Seagreen Alpha and Bravo. The Scottish Ministers determined on 10 October 2014

(after the Hornsea Project One Examination had been concluded) to grant consent for all four applications.

- 7.14 During the Scottish Ministers' consideration of the applications they received advice from Scottish Natural Heritage, JNCC and Marine Scotland Science – all ultimately advising against the sole use of PBR as follows.

SNH and JNCC

- 7.15 In their 7 March and 6 June 2014 advice to Marine Scotland although PBR was recommended as an appropriate method for considering possible impacts, this was alongside thresholds from proxy species, was only for consideration of impacts to one species, namely puffin as a result of displacement within and around the windfarms footprints and due to the *low confidence in the reliability of the PVA outputs due to large uncertainties in the model. Puffins, as burrow nesters, are difficult to count and the Forth Islands population has only been counted sporadically since 1980.* (page 22).

- 7.16 And on the basis of several caveats about the use of thresholds generally, namely (page 3):

7.16.1 These thresholds are only indicative as there is considerable uncertainty in the modelling steps.

7.16.2 The population models for each species incorporate year round natural mortality but only address one form of anthropogenic mortality (wind farm impacts) and only during the breeding season.

7.16.3 These thresholds have been set without considering the status of the population; whether it is increasing or declining (see Appendix 4). Consequently, thresholds for declining species, such as kittiwakes, should be treated with caution.

7.16.4 **Consequently, allowing impacts on seabirds that are predicted to be very close to thresholds is a high risk approach and we strongly recommend that limits to additional impacts are not set close to thresholds, especially for declining species.**

- 7.17 And (page 22) clearly stating that *“the inability of more sophisticated population models to predict future population sizes for puffin, means that we can assign only relatively low confidence to these PBR thresholds.”*

MSS

*10 April advice to Scottish Ministers*

7.18 Confirms that *“For puffin the SNCBs have used PBR and the ruABC thresholds for guillemot and razorbill as proxy species. This is due to the lack of a ... PVA and the lack of suitable outputs from the [Inchcape] PVA.”*

7.19 MSS go on to criticise SNH and JNCCs’ PBR advice for puffins, preferring their own PBR calculations.

*Puffin PVA*

7.20 MSS went on to commission a puffin PVA and this was used instead of reliance on PBR calculations (as explained below).

7.21 Marine Scotland Licensing Operations Team – confirmed these positions in its letter to the RSPB on 1 August 2014 discussing the RSPB’s concerns with the FoF applications:

“RSPB Scotland consider that PBR is a wholly inappropriate tool for use in these assessments and ABC is not sufficiently precautionary. Marine Scotland have not relied on PBR in the Forth and Tay AA.”

7.22 The Scottish Ministers carried out a joint Appropriate Assessment for all four applications and concluded within that Assessment the PBR was not appropriate.

7.23 The FoF AA page 24 explains that there are several methods for calculating acceptable levels of change to SPA species’ population levels:

2.) Setting a precautionary level of acceptable change

Several methods have been used to set and sense-check thresholds of acceptable change and these are discussed below:

- Population Modelling;
- Interpreting population model outputs using Acceptable Biological Change (“ABC”);
- Interpreting population model outputs using reduced uncertainty Acceptable Biological Change (“ruABC”);
- Interpreting gannet population model using the probability of population decline at the end of the 25 year period of effect being lower than the starting population;
- Interpreting puffin population model using the probability of population decline in any year of the 25 year period of effect;
- Potential Biological Removal (“PBR”);
- Ratios of median change to populations with and without the acceptable effects.

7.24 And then on page 27-28 the SMs conclude that although:

PBR was used by the SNCBs to inform the puffin thresholds. The PBR equation is based on a simple form of population modelling, which was first formulated for marine mammals (Wade 1998) to estimate allowable by-catch. PBR requires the setting of a recovery factor (f), the value of which is a conservation management decision. Rationales in support of choice of f values rely upon criteria that are open to debate. PBR calculates the number of additional mortalities that can be sustained annually by a population, accepting the assumptions and goals of the method. **However there are concerns relating to the realism of PBR's assumptions about population dynamics. MSS recommend that reliance upon PBR should be limited to those scenarios where it constitutes the best available evidence, and this is unlikely to include scenarios where bespoke population models are available.** Although not used by MSS or MS-LOT in reaching conclusions, the PBR f values are presented in table 5 below. (emphasis added)

7.25 The AA relied upon the MSS advice and the PVA work carried out to information that assessment and did not rely on PBR in reaching its overall conclusions. For example at page 40:

“Having considered the advice provided by the SNCBs and MSS regarding the different assessment methods for puffin, MS-LOT acknowledge the issues advised by CEH over the use of their model of puffin and the limitations advised by MSS of reliance upon use of proxy species and PBR for setting thresholds. MS-LOT consider that the justification provided by MSS on the use of the common currency for estimating effects and the MacArthur Green model for looking at the population consequences use the best available evidence and the most suitable techniques.....”

7.26 Despite the RSPB having serious concerns with many aspects of the SMs' FoF Appropriate Assessment it welcomed the rejection of PBR as an acceptable method for use within such assessments as confirmed on page 69 *“Marine Scotland have not relied on PBR for reaching any conclusions on site integrity in this AA.”* Going on to support the use of PVAs where possible *“MSS are of the view that, where available, PVAs provide the best available evidence for informing thresholds.”...*

7.27 The AA also acknowledged several areas where more research, data and consideration was required, including *“Further exploration and assessment of methods for setting thresholds”* (FoF, AA, Appendix 5, Page 80).

### ***Natural England's Hornsea Project Two Relevant Representations***

7.28 NE have always been clear (as set out above) that at the very least PVA was useful as a sensitivity check of the conclusions on impacts to species' populations. In its RR for Hornsea

Project Two paragraph 5.1.1.1 (page 17) NE states that where possible PVA should be used *rather than PBR to investigate the population level impacts of the predicted additional mortality arising from the construction and operation of the project, and in combination with other projects*. And this position includes the consideration of displacement effects as set out on page 60 of its RR:

**Population modelling approaches and demographic parameters.**

104. The Applicant has used a combination of Potential Biological Removal (PBR) and Population Viability Analysis (PVA) modelling outputs and metrics to assess the significance of the predicted mortality impacts from collision and displacement on the feature populations of FFC pSPA. However, for the EIA assessments against a wider population scale, the Applicant has relied only on PBR as a method of assessing the significance of predicted mortality levels. Natural England advises that where possible PVA modelling should be used rather than PBR to investigate the population level impacts of the predicted additional mortality arising from the construction and operation of the project and in combination with other projects. Therefore, Natural England would welcome further discussion with the Applicant regarding population modelling options for assessing EIA impacts for relevant species as well as appropriate metrics for assessing impacts from PVA model outputs.

105. JNCC have recently commissioned a review of seabird demographic rates which gives age specific survival and productivity rates for a range of seabird species in the UK1 2(Horswill & Robinson 2015). Natural England would welcome discussion with the Applicant regarding the potential use of these demographic rates in the population modelling as some of the suggested rates and standard errors around these differ from those used by the Applicant in their population models (as documented in Table G-1 of Appendix G of the HRA report).

7.29 The RSPB welcomes and supports NE's position on the use of PVA, in particular the recognition that PVA should be used "rather" than PBR appears to acknowledge the concerns expressed by the RSPB regarding the use of PBR.

***The Applicant continuing to partially rely on this method in the information provided for the Habitats Regulations Appropriate Assessment***

7.30 Despite these helpful criticisms of PBR the Applicant has continued to partially rely on it in the information provided for the Habitats Regulations Appropriate Assessment. Although the RSPB does welcome the PVAs provided, the Applicant has not carried out an in-combination PVA for gannet collision mortality.

7.31 In light of our concerns with the survey methods and calculations for bird densities and flight height and the use of the extended Band Model Option 4, we are not able to comment in detail on those PVAs but would welcome a discussion with the Applicant to understand more

about the calculation undertaken due to the *workings* not being included within the technical information accompanying its Application for Hornsea Project Two. If it is possible to see those *workings* we can at least comment on how the PVA was carried out even if our concerns over the information put into it, remain.

7.32 The RSPB's welcomes the constructive dialogue it has already had with the Applicant including Statement of Common Ground discussions and as part of progressing with that statement can discuss the PVA once further information is provided. In addition to assist the Examination Authority it may be possible for the RSPB to carry out some further calculations before the next submission deadline.

7.33 The RSPB's serious concerns about the use of PBR are summarised below and are in full in the attached Annex V.

7.34 The attached Annex V evaluates the methods used in the HRA Report and associated documents to assess the effects of additional mortality caused by collisions and displacement. The Annex assesses the applicability of these methods to the HRA Report, the pitfalls involved in their interpretation and the way in which the calculations are performed. The text below sets out the conclusions of that Annex. In short, it concludes that the use of Potential Biological Removal as a mean of assessing the impact of the Project on bird populations is flawed, for reasons which are summarised below.

7.35 It is generally accepted that an informative assessment of the impact of an intervention, such as a built development, harvesting or pollution, upon an animal population should involve the evaluation of a counterfactual: a comparison of the expected outcome for the population of interest with and without the intervention. The two principal methods available for this are (1) simulation modelling of population processes and population size (often known as Population Viability Analysis (**PVA**)) and (2) comparison of additional numbers killed because of the intervention with the Potential Biological Removal (**PBR**).

#### **PVA and PBR**

7.36 A PVA population simulation model was conducted for the HRA of all the species considered, with the exception of in-combination collision mortality of gannet, but was not used specifically for evaluation of the likely effects of the Project on this or any other species. PBR

was used in preference. For the EIA assessments against a wider population scale, the Applicant relied solely on PBR.

- 7.37 PVA analysis is appropriate for assessing the expected outcomes for the populations of interest with and without the anticipated additional mortality caused by the Project. The RSPB agrees with Natural England that PVA modelling should be used in preference to PBR (Natural England Relevant Representation, Appendix 1, page 30, para 104). The PVA output metric presented in the HRA is reduction in population growth rate due to this additional mortality. A more informative, and robust metric, would be the percentage difference between the population with or without additional mortality, at the end of the lifetime of the wind farm. This metric is known as the Counterfactual of Population Size(CPS).
- 7.38 Additional mortality as a consequence of the wind farm is inputted into the PBR and PVA as either via collision or displacement. It would be more informative to model the two effects together.
- 7.39 PVAs are reliant on the input of demographic rates, such as age at first breeding and average clutch size. Since the PVAs set out in the HRA were carried out for the Hornsea Project One Appropriate Assessment (Applicant's Appendix X in Response to Deadline IV), there has been a review of seabird demographic rates carried out under commission of JNCC (Horswill & Robinson 2015). The RSPB agree with Natural England (Relevant Representation Appendix 1, page 30, para 105) that this would be a more appropriate source of demographic rates for use in the PVA models.
- 7.40 The RSPB agree with Natural England (Relevant Representation Appendix 1, page 13 para 31) that there are serious inadequacies in the Applicants' approach to apportioning the birds recorded in the Hornsea Project Two survey area to SPA colony. Until these inadequacies are resolved it is impossible to correctly carry out the PVA, as they are dependent on correct apportioning.
- 7.41 Inadequate use of the PVA approach is a serious flaw in the HRA.
- 7.42 PBR is presented preferentially to PVA. PBR calculations are designed to identify levels of additional mortality caused by a project or intervention that would almost certainly result in

the decline of the population of interest to extinction or, at best to low levels. Avoidance of extinction or reduction to low levels of populations of species of interest do not constitute the sole conservation objectives for the Flamborough Head & Bempton Cliffs SPA. Rather, the objectives include the maintenance or restoration of populations. An adequate test of the effects of the Project requires that the expected population size of species of interest is projected with and without the anticipated effects of the Project. PBR does not, and is not designed to do that and it is therefore inadequate for the purpose of the assessment.

- 7.43 The PBR approach is intended to identify levels of additional mortality that are almost certainly not sustainable by the population of interest because they exceed the levels the population could sustain, even if conditions were such that it could otherwise increase at the maximum possible rate. In the HRA, PBR results are incorrectly used in an attempt to identify the levels of additional mortality that are sustainable by the populations of interest.
- 7.44 The PBR calculations do not include all sources of additional mortality, so the possibility remains that the increment in additional mortality caused by the Project might be sufficient to increase the total of all additional deaths so that it exceeds the PBR.
- 7.45 The HRA relies upon the PBR method which requires the use of a recovery factor  $f$  which is set based upon opinion rather than being determined by theoretical or empirical constraints.
- 7.46 The HRA relies upon the PBR method which has not been subjected to empirical validation tests for birds or mammals.
- 7.47 In conclusion while the RSPB welcomes the inclusion of PVA into the HRA, we are in agreement with Natural England that it should be presented in preference to PBR for the reasons given above, and that further analysis is required, including the use of more up to date demographic rates, the modelling of displacement and collision mortality together, correct apportioning to SPA, and the use of the Counterfactual of Population Size as an output metric.

## **8. In Combination Considerations**

- 8.1 We note Natural England's position in relation to in - combination, as set out in its Relevant Representations (in particular paras 37, 132-3 and 137-144). The RSPB agrees with Natural England that at this stage due to for example the projects included (only Tiers One and Two are included within the assessment) and the failure to allow for full capacity build out, specific issues concerning population estimates, displacement figures, failure to consider impacts across annual cycles it is not possible to draw any conclusions on the in-combination assessment.
- 8.2 The RSPB is therefore concerned that the information provided will not enable the Examining Authority (and subsequently the Secretary of State) a carry out a comprehensive in-combination assessment.
- 8.3 As the Examining Authority is aware, one of the main reasons for the in-combination requirement is to ensure that European sites and their species do not suffer what the EU Commission terms death by a thousand cuts<sup>[1]</sup> i.e. European Sites would be irreversibly harmed by a series of plans or projects affecting part of the site only proceeding because it would be possible to say in relation to each plan or project that it would not adversely affect the integrity of the site.
- 8.4 If the combined effects from other projects are excluded, changed or confidence in them questioned, a true in-combination assessment cannot be carried out and the full impacts of these applications not recorded. In addition a fair apportionment of responsibility needs to be placed on relevant developers before determining whether their projects are allowed to proceed and what mitigation or compensatory measures may be required.

## **9. Alternative solutions**

### **Introduction**

- 9.1 In paragraph 2.2.14 of its Planning Statement, the Applicant advances the following contention:

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<sup>[1]</sup> CJEU Case C-258/11, Advocate General Opinion, para 76.

“In the case of renewables, applications should not be rejected simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site. This is because it is possible that all suitable sites for renewable energy infrastructure may be needed for future proposals (NPS EN-1, paragraph 4.4.3).”

- 9.2 The Applicant develops upon this in paragraphs 3.2.2 and 3.2.4 citing DECC’s Annual Energy Statement 2012 which suggests that electricity demand is likely to increase by 30% to 50% by 2050, and DECC’s Energy Security Strategy (in 2012) which suggests that capacity will need to grow by between 30 and 100% by 2050.
- 9.3 In essence the Applicant is arguing that future electricity demands are such that this scheme must be consented. The RSPB consider that this position is incorrect on a number of grounds, which we detail below.
- 9.4 The RSPB has concerns about the Applicant’s position and raised the issue of alternative solutions in its Relevant Representation of 22 April 2015<sup>65</sup>. This section develops those concerns further.
- 9.5 These concerns are due to the information set out in preceding sections in our view demonstrating that it is not possible, with the required degree of certainty, to conclude that Hornsea Project Two will not have an adverse effect upon the integrity of the Flamborough Head and Bempton Cliffs SPA or the Flamborough Head and Filey Coast pSPA either on its own or in combination with other offshore wind farm schemes. Consequently, it is important to consider the next decision-making steps set out in the Habitats Regulations.<sup>66</sup>
- 9.6 Avoiding damage to the species and habitats of European Sites is a key requirement of the Birds and Habitats Directives and damage should only be justified in exceptional circumstances. As set out above, the Habitats Regulations require a step by step approach to considering plans and projects likely to affect European Sites. If damage cannot be avoided further tests apply, namely the consideration of alternative solutions and IROPI arguments – they are intended to make sure damage permitted to European Sites is both unavoidable,

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<sup>65</sup> <http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/hornsea-offshore-wind-farm-zone-4-project-two/?ipcsection=relreps&relrep=30>. The RSPB asked how the issue would be dealt with within the Examination by letter of 1 June 2015 to the Planning Inspectorate - <http://infrastructure.planningportal.gov.uk/wp-content/uploads/projects/EN010053/2.%20Post-Submission/Representations/Additional%20Representations/The%20Royal%20Society%20for%20the%20Protection%20of%20Birds.pdf>, and the Planning Inspectorate replied by email of 2 June 2015, advising the RSPB to make these points in its written representations. This the RSPB has duly done.

<sup>66</sup> Throughout this section the term “Habitats Regulations” should be read as including references to both The Conservation of Habitats and Species Regulations 2010 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

necessary, imperative and that there is a genuine overriding public interest in the plan or project proceeding and ecological compensation is provided to ensure the overall coherence of the Natura 2000 network is maintained.

9.7 Therefore, the alternative solutions and IROPI tests should be about deciding, in the interests of wider society, where the balance lies between the public interest of conserving Europe's biodiversity and the public interest(s) provided by the plan or project but only in the absence of less damaging alternative solutions to the application.

9.8 In this context the aim of the alternative solutions test is to determine whether there are other ways the public need to be met by the plan or project can be delivered without damaging European Sites.

9.9 European Commission guidance states that the primary assessment criteria for considering alternative solutions are the conservation and maintenance of SPA and SAC integrity: economic criteria cannot be seen as overruling ecological criteria.<sup>67</sup> At page 42, para 5.3.1, the Commission Guidance states:

“It should be stressed that the reference parameters for such comparisons deal with aspects concerning the conservation and the maintenance of the integrity of the site and of its ecological functions. In this phase, therefore, other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria.

**It rests with the competent national authorities to assess alternative solutions. This assessment should be made against the site's conservation objectives.”**

### ***Identifying alternative solutions***

9.10 We consider four basic steps are necessary to ensure the alternative solutions test is applied rigorously and fairly:

9.10.1 **Identify the needs for (or benefits of) the plan or project and decide which are genuine public needs.** These should be objective and not restricted to the need or benefits claimed by the proponent;

9.10.2 **Identify all potential and feasible alternative solutions to meet the public needs.**

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<sup>67</sup> *Managing Natura 2000 Sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC* (European Commission, 2000) [http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision\\_of\\_art6\\_en.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf).

- 9.10.3 **Assess the impacts of these alternative solutions on Natura 2000 sites and their species/habitats.** This assessment will need to be undertaken by the competent authority. The RSPB recommends the use of a “common currency” approach as advocated by Natural England to ensure that the comparative impacts of the various possible alternative solutions are properly understood.
- 9.10.4 **Decide whether there are less damaging alternative solutions to the plan or project.**
- 9.11 The Habitats Directive requires a very wide range of options to be taken into consideration by the competent authority before a conclusion that there are no alternative solutions to a plan or project can be reached. In considering the needs or benefits relevant to the Hornsea Project Two the RSPB has reviewed the Government’s legal and policy framework on energy.
- 9.12 This section then considers the scope of alternative solutions that are permitted within Government Policy and by the Planning Inspectorate’s guidance on alternative solutions and what in our view should be considered in determining this application<sup>68</sup>. This section details how the RSPB has approached the issue of alternative solutions, including the schemes that have been considered, its initial conclusions on the issue, and the RSPB’s recommended further steps that may need to be taken by the Examining Authority and the Secretary of State before determining the Hornsea Project Two application.
- 9.13 Finally, the influence of Government funding decisions is also taken into account because even if the Application is consented it is likely that without Government funding support Hornsea Project Two may not actually be built.
- 9.14 Overall, on the basis of publicly available information, the RSPB considers that there are less damaging, alternative solutions to the Hornsea Project Two available, and these need to be considered by the Examining Authority in making its recommendations, and the Secretary of State in reaching a final decision on the Hornsea Two Project.
- 9.15 We set out below our detailed comments on these points. However, it needs to be noted that the RSPB has approached this on the basis of our conclusions that it is not possible to conclude that Hornsea Project Two will not have an adverse effect on the integrity of the SPA/pSPA and their bird species. If the Examining Authority and the Secretary of State agree

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<sup>68</sup> Both in terms of “alternatives” as required for Environmental Impact Assessment and “alternative solutions” as required under the Habitats Directive.

that consideration of alternative solutions needs to be had then of course they will need to consider all relevant European Sites and their features (see also paras 9.64 to 9.67 below).

## **The context for considering alternative solutions**

### ***The project context***

- 9.16 Hornsea Project Two is a proposal for a 1.8 GW offshore wind farm, which the Applicant indicates is expected to be generating energy by the end of 2022.<sup>69</sup> In addition to the private interest, commercial objectives and benefits, the project is clearly intended to contribute to meeting public interest objectives set out in the Government’s legal and policy framework. These public interest objectives are considered in more detail below.
- 9.17 The timescale for delivery of the project sets a clear framework for the consideration of the environmental impacts of this scheme, and alternative and potentially less damaging schemes, within the Government’s 2025 planning horizon set out in National Policy Statement EN-1, *Overarching National Policy Statement for Energy* (“EN-1”) (see below).

### ***Government legal and policy framework on energy***

- 9.18 Under the EU Renewable Energy Directive (2009)<sup>70</sup> the UK is required to source 15% of its energy consumption from renewable sources by 2020, including electricity, heat and transport<sup>71</sup>. Alongside the National Policy Statements, there are a number of Government plans which outline the UK’s delivery of renewable energy capacity against this 15% target. These include the National Renewable Energy Action Plan (NREAP), the UK Renewable Energy Roadmap and the Electricity Market Reform (EMR) Delivery Plan.
- 9.19 Beyond 2020, there is an EU wide target for at least 27% of the EU’s energy consumption to be produced from renewable sources by 2030<sup>72</sup>: however there is currently little clarity on what the UK’s contribution towards this target will be. This will be planned out in the UK’s 5<sup>th</sup> Carbon Budget, which will cover the period from 2028-2032. The Committee on Climate

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<sup>69</sup> Figure 14 – Indicative Programme for Project Two, *Round 3 Hornsea Zone Offshore Wind Farm – Development Update* (SMartWind, June 2014, issue 5).

<sup>70</sup> Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

<sup>71</sup> Article 3(1) and Annex I, *National overall targets for the share of energy from renewable sources in gross final consumption of energy in 2020*.

<sup>72</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A policy framework for climate and energy in the period from 2020 to 2030* COM/2014/015 Final.

Change<sup>73</sup> will publish its advice to Government on this in December 2015 with the Government proposing draft legislation for the fifth budget in 2016.<sup>74</sup> The UK's overall greenhouse gas emission reduction target is an 80% reduction (based on 1990 levels) by 2050, as stipulated in the Climate Change Act (2008)<sup>75</sup>.

9.20 It is the 15% target from the Renewable Energy Directive 2009 that forms the basis for current published Government policy for securing future renewable energy supplies. This is set out in EN-1 and provides the policy framework within which Hornsea Project Two should be considered. It is important to note at the outset that in our consideration of alternative solutions the RSPB is not challenging Government policy, instead using it as a framework within which to structure its approach.

9.21 EN-1 sets out the Government's main priorities for energy: a secure and affordable supply, which it expects to be provided via market-based schemes<sup>76</sup>. It also sets out a clear picture of what the Government considers must be delivered by 2025. EN-1 anticipates an increase in demand from 85 GW of electricity in 2011 to 113 GW by 2025. The key element relevant to this project is that EN-1 anticipated that around 33 GW would come from renewable sources.<sup>77</sup> EN-1 goes on to list possible renewable energy sources including on and offshore wind farms, biomass, energy from waste and wave and tidal<sup>78</sup> and it is important to note that EN-1 expresses no views on the relative amounts of energy that these different renewable energy sources should provide. For convenience we set out the key excerpts from EN-1:

3.3.22 If we assume, as is prudent, that total electricity demand is unlikely to remain at approximately current levels (and may have increased) in 2025<sup>33</sup> and that a larger amount of generating capacity will be required to serve even the same level of demand<sup>34</sup> then, based on the UEP high fossil fuel and carbon price scenario, the UK would need at least 113 GW of total electricity generating capacity<sup>35</sup> (compared to around 85 GW now), of which at least 59 GW would be new build. A further breakdown

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<sup>73</sup> The Committee on Climate Change is an independent, statutory body established under Part 2 of the Climate Change Act 2008. Its purpose is to advise the UK Government and Devolved Administrations on emissions targets and report to Parliament on progress made in reducing greenhouse gas emissions and preparing for climate change.

<sup>74</sup> See The Committee on Climate Change <http://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>. Accessed 10 July 2015.

<sup>75</sup> Section 1(1) of the Act: "It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline."

<sup>76</sup> EN-1, paragraph 2.2.19.

<sup>77</sup> EN-1, paragraph 3.3.22 states "around 33GW of the new capacity by 2025 would need to come from renewable sources to meet renewable energy commitments as set out in Section 3.4".

<sup>78</sup> EN-1 pages 26-27, paragraph 3.4.3

of this figure to illustrate the scale of the challenge facing us in terms of new electricity generating infrastructure provision by technology type would be as follows:

- around 33 GW of the new capacity by 2025 would need to come from renewable sources to meet renewable energy commitments as set out in Section 3.4;
- it would be for industry to determine the exact mix of the remaining 26 GW of required new electricity capacity, acting within the strategic framework set by the Government;
- of these figures of 33 GW and 26 GW respectively, around 2 GW of renewables and 8 GW of non-renewable technologies are already under construction<sup>36</sup>. This leaves a balance of 18 GW to come from new non-renewable capacity; and
- the Government would like a significant proportion of this balance to be filled by new low carbon generation and believes that, in principle, new nuclear power should be free to contribute as much as possible towards meeting the need for around 18 GW of new non-renewable capacity by 2025.

<sup>33</sup> See paragraph 3.3.14 on likely increases in electricity demand.

<sup>34</sup> See paragraph 3.3.11 on intermittency of renewable electricity generation.

<sup>35</sup> Annex J to the UEP shows total generation capacity.

<sup>36</sup> UEP 40 using National Grid figures April 2010. The Government is aware that there are also a number of energy projects (approximately 9 GW in total as of April 2010) that have obtained planning permission, but have not as yet started to be built. As we cannot be certain that these projects will become operational, the Government considers that it would not be prudent to consider these numbers for the purposes of determining the planning policy in this NPS. Such numbers evolve over time and are regularly updated by National Grid in their Seven Year Statement.

3.3.26 Reducing demand for electricity is a key element of the Government's strategy for meeting its energy and climate change objectives. The 2050 Pathways Analysis shows that total UK energy demand from all sectors (heating, transport, agriculture, industry and electricity demand) will need to fall significantly per head of population by 2050 and in the most extreme scenarios, total energy demand could be almost 50% lower than 2007 levels by 2050. The analysis highlights the importance of energy efficiency and the potential that this can have to help achieve our carbon emission reduction targets.

3.4.1 The UK has committed to sourcing 15% of its total energy (across the sectors of transport, electricity and heat) from renewable sources by 2020<sup>40</sup> and new projects need to continue to come forward urgently to ensure that we meet this target. Projections<sup>41</sup> suggest that by 2020 about 30% or more of our electricity generation – both centralised and small-scale – could come from renewable sources, compared to 6.7% in 2009<sup>42</sup>. The Committee on Climate Change in Phase 1 of its advice to Government in September 2010 agreed that the UK 2020 target was appropriate, and should not be increased. Phase 2 was published in May 2011 and provided recommendations on the post 2020 ambition for renewables in the UK, and possible pathways to maximise their contribution to the 2050 carbon reduction targets.

<sup>40</sup> DECC (2009): The UK Renewable Energy Strategy (p.30). (The original URL in the footnote no longer works.)

<sup>41</sup> It is important to recognise that we may reach our renewable energy goals in different ways, depending on how the drivers to investment, supply chain and non-financial barriers evolve. As a result, the lead scenario presented in the Renewable Energy Strategy should not be seen as a sector or technology target.

<sup>42</sup> DUKES 2010 (p.184)

9.22 In light of the 15% target and Government policy, nine Round 3 offshore wind farm zones, including Hornsea, were released by the Crown Estate in 2010, with a capacity of up to

32GW. This followed the UK Offshore Energy Strategic Environmental Assessment in 2009 (the SEA).<sup>79</sup>

9.23 Due to the need for new energy capacity (52% of 2025 power supply is expected to come from newly constructed sources) national policy has a presumption in favour of consenting energy NSIPs, which applies unless more specific and relevant policies in the NPSs clearly indicate that consent should be refused<sup>80</sup>. Of course these must be in compliance with any relevant legal requirements such as the Habitats Directive. As the Government acknowledges within EN-1, project-level HRA may result in the refusal of consent for particular applications<sup>81</sup> and due to insufficient offshore data being available when the SEA for Round 3 was being carried out many important marine bird (and other wildlife) areas are only being identified once applicants are carrying out their marine surveys for their environmental impact and Habitat Regulations assessments.

9.24 Therefore, the key public interest objectives emerging from the Government's legal and policy framework are:

9.24.1 **EU:** source 15% of UK energy consumption from renewable sources by 2020, under the EU Renewable Energy Directive (2009)<sup>82</sup>;

9.24.2 **EU:** target of at least 27% of the EU's energy consumption to be produced from renewable sources by 2030<sup>83</sup> – UK contribution to be set by Government in 2016 through the 5<sup>th</sup> Carbon Budget;

9.24.3 **UK:** 80% greenhouse gas emission target under CC Act 2008<sup>84</sup>.

9.24.4 **UK:** Government 2025 target of 33GW of renewable energy capacity<sup>85</sup>.

### ***Alternative solutions in National Policy Statements***

9.25 As mentioned above, the other future large scale renewable energy technologies within the scope of EN-1 are onshore windfarms, biomass and waste<sup>86</sup>. Wave, tidal and solar are also

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<sup>79</sup> See <http://www.thecrownstate.co.uk/energy-and-infrastructure/offshore-wind-energy/working-with-us/leasing-rounds/round-3/>. Accessed 11 July 2015.

<sup>80</sup> EN-1, paragraph 4.1.2.

<sup>81</sup> EN-1, paragraph 1.7.13.

<sup>82</sup> Article 3(1) and Annex I, *National overall targets for the share of energy from renewable sources in gross final consumption of energy in 2020*.

<sup>83</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A policy framework for climate and energy in the period from 2020 to 2030* COM/2014/015 Final.

<sup>84</sup> Section 1(1), Climate Change Act 2008 (as amended).

<sup>85</sup> EN-1, paragraph 3.3.22.

mentioned but at the time of drafting (2011) these sources were seen to be intermittent and incapable of being relied upon to meet demand<sup>87</sup>. In preparing the NPSs only a very narrow range of technology-agnostic alternative approaches were considered (EN-1's alternatives were securing low cost energy, reducing greenhouse gas emissions, and reducing other environmental impacts of schemes<sup>88</sup>). Although the Government acknowledges that energy efficiency improvements will be vital it does not consider them as an alternative means of helping to meet the anticipated increase in demand by 2025.

9.26 EN-1 makes it clear that development should aim to avoid significant harm to biodiversity, including through the consideration of reasonable alternatives. It sets out a number of principles for dealing with alternatives<sup>89</sup>:

9.26.1 The consideration of alternatives should be carried out in a proportionate manner;

9.26.2 The Examiners should be guided by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity in the same timescale as the proposed development;

9.26.3 Where legislation imposes a specific target the Examiners should not reject an application on one site simply because fewer adverse impacts would result from developing similar infrastructure on another site, and the examiners are required to consider whether all the sites may be needed for future proposals (the RSPB consider this point in detail below);

9.26.4 Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the Examiners consider they are both important and relevant to the decision;

9.26.5 If a hypothetical alternative proposal would not accord with the policies in the relevant NPS that alternative proposal is unlikely to be important and relevant to the IPC's decision;

9.26.6 Alternative proposals which are not commercially viable, or proposals for an unsuitable site can be excluded on the basis that they are not important and relevant to the IPC's decision; and

9.26.7 Alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the IPC's decision.

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<sup>86</sup> EN-1, paragraph 1.4.5. EN-3 only considers these sources (EN-3, paragraph 1.8.1).

<sup>87</sup> EN-1, page 19, paragraph 3.3.11.

<sup>88</sup> EN-1, paragraph 1.7.5.

<sup>89</sup> EN-1, paragraph 4.4.2.

9.27 Before moving on, it should be noted that the tests above are a statement of national policy and appear to be focused on EIA requirements and do not specifically cover the alternative solutions test as set out in reg. 62 of the Habitat Regulations. This is important: the RSPB respectfully suggests that if there is a choice for the Examiners between approving a scheme for which an adverse effect upon the integrity of a European site **cannot** be excluded in the knowledge that there are relevant schemes for which an adverse effect **can** be excluded they must reject the damaging scheme. In addition, the fact that a site may be needed at a subsequent time is an issue which can be returned to by decision makers at that future stage when the imperative *need* for damaging the site can be more clearly established.

***The Planning Inspectorate’s Guidance for dealing with alternative solutions***

9.28 The Planning Inspectorate’s advice on this issue is set out in Advice Note 10: *Habitat Regulations Assessment relevant to nationally significant infrastructure projects* (version 6, June 2015). This brief section is repeated verbatim for ease of reference:

**Stage 3: Assessment of alternatives**

4.33 The applicant's assessment should identify and assess alternatives that have been considered. Details should be provided in the applicant’s HRA Report.

4.34 Alternative solutions can include a proposal of a different scale, a different location, and an option of not having the scheme at all – the ‘do nothing’ approach.

9.29 We consider the first of these two requirements below. We return to the second set of requirements under the heading “The RSPB’s approach to alternative solutions to the Hornsea Project Two” below.

***The alternative solutions considered by the Applicant***

9.30 Despite, as set out above, arguing in its Planning Statement that future electricity demands are such that this scheme must be consented, the Applicant has confined its consideration of alternatives to those required by the EIA legislation i.e. project-level alternatives available to it as the applicant and not considered the broader requirements of the Habitat Regulations’ alternative solutions test.

9.31 In addition, the Applicant’s Environmental Statement has limited the consideration of alternatives to two different turbine sizes, with two different layouts per turbine size within the same overall scheme footprint, delivering the same 1.8 GW in total<sup>90</sup>. With the exception

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<sup>90</sup> Set out in Figure 3.5 and Table 3.3, ES Volume 1, Chapter 4 *Site Selection and Consideration of Alternatives* (January

of paragraph 2.2.14 of its Planning Statement (see para 9.1 above), the Applicant has not considered the Habitat Regulations' alternative solutions test in detail. It is thought this is due to its HRA conclusion that there will be no adverse effects on the integrity of the European sites and their species due to Hornsea Project Two (HRA, Part 1, paragraph 5.8.350, page 167), either on its own or in combination with other schemes, even though paragraph 2.2.14 of its Planning Statement clearly anticipates the potential need for consideration of the alternative solutions and IROPI tests.

### **The RSPB's approach to alternative solutions to Hornsea Project Two**

9.32 In accordance with EN-1 the RSPB has attempted to assess possible alternative solutions in a proportionate manner, focussing on schemes where there is a realistic prospect of delivering similar capacity in a similar timescale to meet Government targets and policy objectives and have concentrated on those that are relevant to the Government's overarching renewable energy targets for 2025. At this stage, we have excluded schemes where their promoters have concluded they are currently commercially unviable (for example Atlantic Array<sup>91</sup>, Celtic Array Round 3<sup>92</sup> or Islay<sup>93</sup> offshore wind farm schemes). All the projects that we consider have sufficiently detailed information already prepared, or are sufficiently far advanced in pre-planning, to justify consideration as alternative solutions and therefore can be included as part of the alternative solutions assessment.

### ***Installed renewable energy capacity since 2011***

9.33 When it was published in 2011 EN-1 set a clear target of 33 GW for new renewable energy capacity, to be delivered by 2025. In order to identify post-2011 contributions to renewable energy sources the RSPB has identified changes in renewable energy capacity reported by DECC since the first quarter of 2011, as set out in Table 9.1 below. Given the lead-in times on preparing the NPS all 2011 contributions are included. The figures are up-to-date to the end of the first quarter of 2015. In this time the following additional capacity has been added.

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2015).  
<sup>91</sup> Potentially 1.2 GW.  
<sup>92</sup> Potentially 2.2 GW.  
<sup>93</sup> Potentially 0.69 GW.

**Table 9.1: Changes in installed renewable energy capacity between 2011 and March 2015**

Sources: First Quarter (Q1) of 2011 data from: DECC (2012) *Energy Trends* (June 2012); Q1 2015 data from: DECC (2015) *Energy Trends* (June 2015))

	Q1 2011 figure <sup>94</sup> (GW)	Q1 2015 figure (GW) <sup>95</sup>	Increase Q1 2011 to Q1 2015 (GW)
<b>DECC's Total</b>	9.563 <sup>96</sup>	26.448	16.885
<i>Onshore Wind</i>	4.142	8.580	4.438
<i>Offshore Wind</i>	1.427	4.749	3.322
<i>Solar</i>	0.137	6.823	6.686
<i>Plant Biomass</i>	0.327	2.270	1.943
<i>Other</i> <sup>97</sup>	3.532	4.026	0.494

9.34 Therefore, as of the first quarter of 2015, DECC's figures show that since the first quarter of 2011, there has been an increase of 16.885 GW of installed renewable energy capacity, or over half the 33GW target. Since the 2015 offshore wind figures were compiled, several other offshore wind schemes (Gwynt y Mor<sup>98</sup>, Humber Gateway<sup>99</sup> and Westermost Rough<sup>100</sup>) have come fully on stream. This would increase the offshore wind contribution from 4.749 GW to 5.120 GW, an additional 0.371 GW.

9.35 Adding in this extra capacity means that since the first quarter of 2011, 17.256 GW of new renewable energy capacity has come on stream. This leaves 15.744 GW of new renewable energy to be delivered in order to meet the 33 GW target for 2025 set out in EN-1.

9.36 In considering PINS' guidance on alternatives (Advice Note 10, paragraph 4.34, page 11) we have included schemes of different scales and different locations, but due to the ready availability of information for offshore renewable NSIPs have focused on these. As set out

<sup>94</sup> Taken from DECC's *Energy Trends* (June 2012), Table 6.1 *Renewable electricity capacity and generation*, column headed "2011 1<sup>st</sup> quarter" (p47) and rows under the heading "Cumulative Installed Capacity".

<sup>95</sup> Taken from DECC's *Energy Trends* (June 2015), Table 6.1 *Renewable electricity capacity and generation*, column headed "2015 1<sup>st</sup> quarter" (p47) and rows under the heading "Cumulative Installed Capacity". It should be noted that these are provisional figures.

<sup>96</sup> This figure is taken directly from DECC's *Energy Trends* (June 2012), Table 6.1 *Renewable electricity capacity and generation*, column headed "2011 1<sup>st</sup> quarter" and row "Total" under "Cumulative Installed Capacity". If the figures in the rows below are added this actually comes to 9,565 MW. As there is no explanation for the difference, the total figure given in the table has been kept: this feeds through in to the figure for the total increase 2011 to 2015 which is 2MW higher than indicated by the different sectors. The total figure for 2015 does match the sum of the different sectors.

<sup>97</sup> This includes shoreline wave/tidal, small and large scale hydro, landfill gas, sewage sludge digestion, energy from waste, animal biomass (non-anaerobic digestion), and anaerobic digestion.

<sup>98</sup> Officially opened in June 2015: <http://www.bbc.co.uk/news/uk-wales-33168638>; also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>.

<sup>99</sup> <http://www.grimsbytelegraph.co.uk/power-hit-Humber-Gateway/story-26656844-detail/story.html> (9 June 2015).

<sup>100</sup> Officially inaugurated on 1 July 2015: <http://renews.biz/91063/westermost-rough-has-lift-off/>. Also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>.

above in Section 3 all other types of renewable energy capable of contributing within similar timescales are relevant to the consideration of alternative solutions. Updated data on renewable energy capacity and the energy supply pipeline from these other sources should be available to the Secretary of State at the time of her consideration of the alternative solutions question. This will enable the Secretary of State to update the figures that we present below. We return to the implications of this at paragraph 9.49 below.

9.37 Due to the renewable energy target for 2025 set by the Government we have not considered a ‘do nothing’ approach as required by the EIA requirements, but instead have considered the prospects of meeting the 2025 target of 33 GW of new renewable energy if the Hornsea Two scheme is not consented. We have later considered the influence of available levels of Government funding on the contribution of offshore wind to meeting the 2025 target.

**Table9. 2: Capacity of offshore wind farms, operational, under construction or consented and funded**

Main source: The Crown Estate (2015) *UK offshore wind – key facts 2015-16* (April 2015). See Annex 6 for a fuller version including sources for each wind farm.

<i>Scheme categories</i>	<b>Capacity (GW)</b>
<b>Operational</b>	5.120
<b>Under construction</b>	0.710
<b>Consented and funded</b>	5.105
<b>TOTAL</b>	<b>10.935</b>

Note: Data is taken from *UK offshore wind – key facts 2015-16* (The Crown Estate, April 2015) table: *UK offshore wind project pipeline – April 2015* (The Crown Estate, 2015), and the *Digest of UK Energy Statistics, Table 5.10 Power Stations in the United Kingdom* (DECC, 2014). This information under the *operational* heading has been updated to reflect schemes that have come fully online since April 2015.

9.38 Including the schemes that are under construction (0.71 GW) reduces the amount of renewable energy required by 2025 to 15.034 GW. It is important to note that there is another 5.105 GW worth of consented and funded schemes that have yet to start construction. In the absence of evidence to the contrary, it is reasonable to assume that all of those schemes will go ahead<sup>101</sup>. Taking these schemes into account reduces the amount of renewable energy to be secured by 2025 to 9.929 GW. It is worth repeating at this point that this target is to be met from **all** renewable sources, not just offshore wind.

<sup>101</sup> Recent information about these schemes is presented in Annex 6.

- 9.39 The RSPB notes that in the Committee on Climate Change’s 2015 Report to Parliament, *Meeting Carbon Budgets – Progress in reducing the UK’s emissions*, it is suggested that there are a further 2 GW of onshore wind, 2.1 GW of biomass and 0.8 GW of solar power “in the pipeline”.<sup>102</sup> No details are provided on the individual schemes, but this could represent a further 4.9 GW of capacity which is likely to be delivered. This would reduce the remaining figure to be supplied by 2025 to 5.029 GW.
- 9.40 A summary is provided in Table 9.3Table 9.3 below.

**Table 9.3: Summary of progress towards installation of 33 GW renewable energy capacity by 2025**

Sources: for detailed references, please see paras 9.34, 9.35, 9.38 and Table 9.2 above.

	<b>Contribution to 2025 renewable energy target (GW)</b>	<b>Amount of capacity still required to meet 2025 renewable energy target of 33 GW</b>
Renewable energy capacity installed between Q1 2011 and Q1 2015	16.885	16.115
Offshore wind schemes on-stream since Q1 2015	0.371	15.744
Offshore wind schemes under construction	0.710	15.034
Offshore wind schemes consented and funded	5.105	9.929
Climate Change Committee “pipeline” renewable energy schemes (onshore wind, solar, biomass)	4.900	5.029

***Alternative solutions to Hornsea Project Two***

- 9.41 Based on the analysis above, the amount of energy capacity required to be installed from all renewable sources to meet the Government’s 2025 target of 33 GW is 9.929 GW if consented and funded schemes are included. If the Committee on Climate Change “pipeline” figures are also included, then this reduces further to 5.029 GW. It is against the backdrop of these two figures that we consider the issue of alternative solutions to Hornsea Project Two in meeting the public interest objectives described above (see para 9.24).
- 9.42 The RSPB has considered additional alternative schemes under a number of headings, set out in Table 9.4 below). The headings are as follows:

<sup>102</sup> *Meeting Carbon Budgets – Progress in reducing the UK’s emissions, 2015 Report to Parliament*, (Committee on Climate Change, June 2015), Table 1.1 Overview of renewable deployment in 2014. The pipeline schemes are ones which have been awarded a CFD or are under construction (p53).

- I. *Consented but unfunded offshore wind farms;*  
Those wind farm schemes which have received consent, but which have not yet secured funding via a Contract for Difference (CFD)<sup>103</sup>. The total capacity of these schemes is 7.402 GW.<sup>104</sup>
- II. *Offshore wind farm schemes that are currently going through the planning process.*  
There are four schemes which are currently being considered. The total capacity of these schemes (as applied for) is 3.40 GW.<sup>105</sup>
- III. *Offshore wind farm schemes expected to be submitted in the next 12 months*  
Schemes listed on the Planning Inspectorate's website. The total capacity of these schemes (as listed on the Planning Inspectorate's website) is 4.8 GW.<sup>106</sup>
- IV. *Alternative offshore renewable energy sources*  
Although there are others the only alternative energy solution we have included is the recently consented Swansea Tidal Lagoon (0.320 GW). This offers 1/6<sup>th</sup> of the energy proposed for Hornsea 2 and should be taken into consideration.
- V. *Energy efficiency measures*  
The RSPB has not attempted to quantify any levels of energy efficiency that it considers should be achieved. However, we note that since the adoption of EN-1 which forecast an energy rise from 85 to 113 GW in 2025, the actual energy consumption rates in the UK have actually fallen by 4% (13 TWh) to 304 TWh<sup>107</sup>. The Committee for Climate Change noted "Relatively high temperature drove a quarter of this fall and there is evidence to suggest improved energy efficiency (and/or changes in consumer behaviour) and changes in industrial energy use accounted for most of the remainder, with a small contribution from increased embedded generation (i.e. rooftop solar)."

9.43 Before deciding to consent the Hornsea Project Two the Secretary of State would need to satisfy herself that there is no scope for further energy efficiency improvements to offset the need for this scheme.

9.44 We have excluded 0.3 GW of the Rampion Southern Array, which the developer has announced that they will not be proceeding with.

9.45 On this basis, we have set out the energy capacity of potential alternative solutions in categories I-IV in Table 9.4 below, as explained above, focusing on offshore renewable energy NSIPs due to this information being more easily available.

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<sup>103</sup> See "The Government's funding decisions and delivery of Government policy" below for more details on CFDs.

<sup>104</sup> See Annex 6 for full details.

<sup>105</sup>

**See**

Table 9.4 below for details. Navitus Bay is listed at the 0.970 GW as applied for, although an alternative scheme would bring this down to 0.630 GW and the overall total down to 3.03 GW.

<sup>106</sup>

**See**

Table 9.4 below for details.

<sup>107</sup> Committee on Climate Change, *Meeting Carbon Budgets – Progress in reducing the UK's emissions, 2015 Report to Parliament* (June 2015), Chapter 1: *Progress decarbonising the power sector*, page 47. Final consumption of electricity has fallen from 318.009 TWh in 2011 (*Digest of UK Energy Statistics 2012* (DECC, 2012), Table 5.2 *Electricity supply and consumption*, page 136), to a provisional figure for 2014 of 304.921 TWh (*Energy Trends* (DECC, June 2015), Table 5.2 *Supply and consumption of electricity*, page 42).

**Table 9.4: Energy capacity of alternative solutions from the offshore marine renewable sector**

Source: The Crown Estate (2015) *Energy and infrastructure key facts 2015-16*, table: UK offshore wind project pipeline – April 2015.

<b>Scheme categories</b>	<b>Capacity (GW)</b>
<b>I - Consented but unfunded</b>	
Aberdeen Demonstration	0.066
Dogger Creyke Beck A	1.200
Dogger Creyke Beck B	1.200
East Anglia One (unfunded part)	0.486
Inch Cape*	0.784
MacColl (Moray Firth)	0.372
Seagreen Alpha (Firth of Forth)*	0.525
Seagreen Bravo (Firth of Forth)*	0.525
Stevenson (Moray Firth)	0.372
Telford (Moray Firth)	0.372
Triton Knoll	1.200
<i>Subtotal</i>	<i>7.102</i>
<b>II – Currently going through the planning process</b>	
Hywind 2 (Buchan Deep)	0.030
Navitus Bay	0.970
Dogger Teesside A	1.200
Dogger Teesside B	1.200
<i>Subtotal</i>	<i>3.400</i>
<b>III – Expected to be submitted within the next 12 months<sup>108</sup></b>	
2-B Demo <sup>109</sup>	0.014
Dogger Teesside C (expected Q1 2016)	1.200
Dogger Teesside D (expected Q1 2016)	1.200
East Anglia Three (expected Q3 2015)	1.200
East Anglia Four (expected Q2 2016)	1.200
<i>Subtotal</i>	<i>4.814</i>
<b>IV - Alternative offshore renewable energy sources</b>	
Swansea Tidal Lagoon <sup>110</sup>	0.320
<i>Subtotal</i>	<i>0.320</i>
<b>Total</b>	<b>15.636</b>

9.46 The RSPB wishes to highlight that the decision to grant consent for the schemes marked with an asterisk “\*” has been judicially reviewed by the RSPB. However as the ExA is aware judicial review is focused on the process undertaken by the decision maker and rarely considers the merits of applications. Therefore, even if the RSPB were successful in its

<sup>108</sup> Information for Dogger Teesside C&D and East Anglia Three and Four was taken from the National Infrastructure Planning website on 7 July 2015.

<sup>109</sup> A lease for the two experimental twin-blade turbines was signed with The Crown Estate on 19 August 2014, with deployment anticipated in 2016 (<http://renews.biz/72614/2-b-offshore-demo-wins-crown-lease/>).

<sup>110</sup> The RSPB is aware that this is funded from a different CFD pot to offshore wind, but considers that as this is an entirely domestic funding issue and therefore the funding pot should be overlooked when considering the requirements of the Habitats Regulations.

judicial review the recourse is for the applications to be re-determined. This may be possible with the timescale being considered and therefore we have included these schemes within the above table. However we do set out below the possible capacity figures without these schemes.

- 9.47 Taken at face value, this suggests that there is up to 15.636 GW of alternative offshore renewable energy supply available to meet the current shortfall in meeting the 2025 target of between 5.029 GW and to 9.929 GW (see para 9.41 above).
- 9.48 Given the stage in the planning process, Category I provides greatest certainty in being capable of delivering capacity in a similar timescale to Hornsea Project Two. Category I can deliver up to 7.102 GW. Category II schemes are in the planning process with decisions due shortly on the NSIP schemes: Category II provides up to 3.4 GW. The total of 10.502 GW exceeds the maximum shortfall of 9.929 GW and comfortably exceeds the shortfall if the Committee on Climate Change's "pipeline" projects are taken in to account.
- 9.49 If Category III and IV projects are factored in, as we believe they should be, then the available offshore renewable energy alternative solutions could comfortably exceed the 2025 target of 33 GW and make a significant contribution to requirements beyond 2025. This strongly suggests to the RSPB that there is a wide range of alternative solutions available for consideration by the Secretary of State just from within the offshore renewables sector and that Hornsea Project Two does not need to be consented now to meet the 2025 renewable energy target of 33 GW.
- 9.50 It is important to note that other than the "pipeline" figures referred to by the Committee on Climate Change (set out in Table 9.3 above), the RSPB's calculations do not include any contribution from onshore renewables, beyond those included in Table 9.1 above, which only counts those sources generating electricity at the end of Q1 2015. Our calculations proceed on the extremely unlikely premise that the 4.9 GW of "pipeline" schemes represents the entire remaining contribution towards onshore renewables until 2025.<sup>111</sup> The reality is that significantly more capacity is likely to be available: in the four years since the

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<sup>111</sup> The Committee on Climate Change notes that for onshore wind alone there are a further 5.2 GW of onshore wind schemes with planning permission and a further 7.3 GW seeking approval. *Meeting Carbon Budgets – Progress in reducing the UK's emissions* (June 2015), Chapter 1: *Progress decarbonising the power sector*, page 53.

adoption of EN-1 more than half the capacity required to meet the 33 GW target for 2025 has been installed.

**Implications of the RSPB’s judicial reviews**

9.51 As mentioned above the RSPB has taken judicial review proceedings against the Scottish Ministers’ decision to grant consent for the four Firth of Forth offshore wind farms. Only one of these projects is funded and their capacities are as follows:

- Neart na Gaoithe (0.448 GW - funded)
- Inch Cape (0.784 GW - unfunded)
- Seagreen Alpha (0.525 GW - unfunded); and
- Seagreen Bravo (0.525 GW - unfunded)

9.52 However even if these projects are excluded completely from the relevant categories the total impact would be a maximum reduction of 2.282 GW. The revised figures and the amount of the changes are set out in Table 9.5 and Table 9.6 below.

**Table 9.5: Summary of alternative solutions from the offshore marine renewable sector without the Firth of Forth schemes**

Note: Only category I is affected by the judicial reviews.

<i>Scheme categories</i>	<b>Capacity (GW)</b>
<b>I - Consented but unfunded</b>	5.268 <i>(was 7.102)</i>
<b>II – Currently going through the planning process</b>	3.400
<b>III – Expected to be submitted within the next 12 months<sup>112</sup></b>	4.814
<b>IV - Alternative offshore renewable energy sources</b>	0.320
<b>Total</b>	<b>13.802</b>

Note: Category I excludes Inch Cape (0.784 GW), Seagreen Alpha (0.525 GW) and Seagreen Bravo (0.525 GW), unfunded schemes totalling 1.834 GW.

9.53 Based on this, in Table 9.6, we have produced an adjusted summary of progress towards installation of the 2025 target of 33 GW of renewable energy capacity.

**Table 9.6: Revised summary of progress towards installation of 33 GW renewable energy capacity by 2025**

Sources: for detailed references, please see paras 9.34, 9.35, 9.38, 9.50 and Table 9.2 above.

<sup>112</sup> Information for Dogger Teesside C&D and East Anglia Three and Four was taken from the National Infrastructure Planning website on 7 July 2015.

	<b>Contribution to 2025 renewable energy target (GW)</b>	<b>Amount of capacity still required to meet 2025 renewable energy target of 33 GW</b>
Renewable energy capacity installed between Q1 2011 and Q1 2015	16.885	16.115
Offshore wind schemes on-stream since Q1 2015	0.371	15.744
Offshore wind schemes under construction	0.710	15.034
Offshore wind schemes consented and funded	4.657 <i>(was 5.105)</i>	10.377 <i>(was 9.929)</i>
Climate Change Committee “pipeline” renewable energy schemes (onshore wind, solar, biomass)	4.900	5.477 <i>(was 5.029)</i>

Note: The “Consented and funded” category now excludes Neart na Gaoithe (0.448 GW) on the basis of a successful judicial review and the scheme not being re-determined.

9.54 As the table above shows revisiting the figures set out in paragraphs 9.34, 9.35, 9.38 and Table 9.2 above, without the Firth of Forth schemes (if the applicant decided not to get the schemes re-determined), would be as follows: There would be up to 13.802 GW of alternative offshore renewable energy supply available to meet a shortfall in meeting the 2025 target of between 5.477 GW and 10.377 GW (see Tables 5 and 6 above).

9.55 Category I (Table 9.5) can deliver up to 5.268 GW while Category II still delivers up to 3.4 GW. The total of 8.668 GW is 1.709 GW short of meeting the maximum shortfall of 10.377 GW, but “still comfortably exceeds the shortfall if the Committee on Climate Change’s “pipeline” projects are taken into account.

9.56 Inclusion of Category III and IV schemes still means that the 2025 target of 33 GW could be comfortably exceeded.

### ***The Government’s funding decisions and delivery of Government policy***

9.57 Granting consent for an offshore wind farm is not the last way in which the Government influences whether that scheme will be built. The funding that the Government offers to support the delivery of energy infrastructure which is not currently economically viable at current electricity market prices is key: without this support a scheme will not go ahead despite being granted consent. Through this price support the Government determines and controls the source and amount of new renewable energy supply that will be built.

9.58 In the context of the offshore wind sector, this has historically been through a combination of funding mechanisms including the Renewables Obligation Certificate (ROC) and the Final

Investment Decision Enabling for Renewables (FIDER process) which took place in 2014. FIDER funded five offshore wind projects, including Hornsea Project 1<sup>113</sup>. The Renewables Obligation will close to all new projects on 31 March 2017.<sup>114</sup>

9.59 From 2014 onwards, offshore wind is funded through the Contracts for Difference (CFD) mechanism. This is a competitive process in which renewable energy generators bid for 15 year contracts in an auction process, which guarantees the generator a fixed price for the energy produced known as the 'strike price'. If the wholesale cost of electricity is less than the agreed strike price, the Government pays the generator the difference; if it is higher, the generator pays the difference back to the Government. The rationale behind this process is that when bidding, the generators will submit the lowest possible strike price that they are willing to accept, therefore pushing down costs. By doing this the Government aims to bring competition into the low carbon energy market, and deliver the maximum amount of energy using a limited pot of money. The mechanism is funded through the Levy Control Framework (LCF) which levies an additional cost onto consumers' energy bills.

9.60 There are different 'pots' of money within the LCF; offshore wind is funded through Pot 2 (less established technologies). Projects must have received planning consent to qualify for entry in to the CFD auction process.

9.61 So far there has been one allocation 'round' for CFDs for projects commissioning from 2016/17 onwards. This was announced on 26 February 2015<sup>115</sup>. While there will have been several consented schemes bidding in this confidential auction process, only two offshore wind projects totalling 1.162 GW gained funding: EA1 in East Anglia (0.714 GW) and Nearth na Gaoithe in the outer Firth of Forth (0.448 GW). It is worth noting that the limited funding available meant EA1 only received sufficient funding for part of its 1.2 GW scheme. It is the RSPB's understanding that the next CFD round is currently expected to commence in October 2015, with a formal notification of the start of the process expected in July<sup>116</sup>.

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<sup>113</sup> The offshore wind funded via the FIDER mechanism were Beatrice (0.664 GW), Burbo Bank Extension (0.258 GW), Dudgeon (0.402 GW), Hornsea 1 (1.200 GW) and Walney (0.660 GW), a total of 3.184 GW. FIDER also funded 3 biomass-based schemes, Drax Unit #1 conversion (0.645 GW), Lynemouth (0.420 GW) and Teesside (0.299 GW), a total of 1.364 GW. In total 4.548 GW was funded, 70.01% offshore wind, 29.99% biomass.

<sup>114</sup> Note that Clause 60 of the Energy Bill which received its first reading in the House of Lords on 9 July 2015, proposes to close the Renewables Obligation for onshore wind on 31 March 2016. See: <http://www.publications.parliament.uk/pa/bills/lbill/2015-2016/0056/16056.pdf>, accessed 11 July 2015.

<sup>115</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/407059/Contracts\\_for\\_Difference\\_-\\_Auction\\_Results\\_-\\_Official\\_Statistics.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407059/Contracts_for_Difference_-_Auction_Results_-_Official_Statistics.pdf).

<sup>116</sup> [https://lowcarboncontracts.uk/system/files/round\\_2\\_operational\\_plan\\_v2.pdf](https://lowcarboncontracts.uk/system/files/round_2_operational_plan_v2.pdf).

Unless the rules are changed Hornsea Project Two will not be in a position to bid in the second round (expected to invite applications this autumn) as it will not have its consent in place.

9.62 It is therefore clear that the availability of Government funding is acting as a major and real constraint for the delivery of offshore wind farm schemes: there is a surplus of consented and planned offshore wind projects in the supply pipeline in comparison to the amount of Government funding that appears to be available (as shown above in Table 9.4). The Committee on Climate Change recently recommended that the Government should set out the intention to contract 1-2 GW per year of offshore wind, which provides a clear indication of the amount of capacity funding which is needed on an annual basis<sup>117</sup>. The Category I schemes would therefore represent approximately 3-7 years of delivery, the Category II schemes a further 2-3 years, and the Category III schemes a further 2-5 years, taking delivery beyond the 2025 target.<sup>118</sup>

9.63 The RSPB continues to be supportive of the overall Government policy objective in respect of large scale offshore wind but it is clear that the pot of money available for offshore wind is de facto constraining that policy to a more limited objective. Therefore, any consideration of the public interest objectives for offshore wind needs to take account of the practical influence on that policy of Government funding decisions. This properly rests with the Secretary of State who oversees all relevant elements. If Government funding decisions act to constrain the contribution of the offshore wind sector to meeting stated Government renewable energy supply targets (both for 2025 and beyond), then it is clear that there will be a significant number of alternative solutions competing for the pot of money the Government has chosen to allocate offshore wind to meet its contribution to the UK's renewable energy requirements.

### **Other Natura 2000 features (marine mammals, habitats)**

9.64 As set out previously (para 9.10), where it is not possible to rule out an adverse effect on the integrity of an SPA or SAC and their species, the competent authority can go on to consider

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<sup>117</sup> Committee on Climate Change, *Meeting Carbon Budgets – Progress in reducing the UK's emissions, 2015 Report to Parliament* (June 2015), *Overview, Table 6, Summary of recommendations – central Government*, recommendation 4 (page 40).

<sup>118</sup> The larger range for the first figure reflects the range from 5.268 to 7.102 GW depending on the outcome of the judicial reviews.

whether there are less damaging alternative solutions that meet the public interest objectives of the plan or project.

- 9.65 The purpose of the alternative solutions section above is explicitly to demonstrate that there are other schemes that could produce the energy proposed to be supplied by Hornsea Project Two which would need to be considered to determine if they have less harmful effects upon the ornithological features of affected SPAs. It explicitly does not address the implications of Hornsea Project Two for SAC features, nor does it address the implications for SAC features of those schemes the RSPB has identified as potential less damaging alternative solutions as these matters are outside the RSPB's area of expertise. The RSPB also does not comment upon the risk of harm to European Protected Species (e.g. harbour porpoise)<sup>119</sup>. These are matters for other parties to the Examination, as well as the Examining Authority and the Secretary of State.
- 9.66 However, the RSPB is aware from discussions with the Wildlife Trusts that some of those schemes that the RSPB has identified as potential alternative solutions to Hornsea Project Two may not be acceptable due to their impacts upon marine mammals, either as SAC features or as European Protected Species, during the construction or operational phases for example, the Dogger Bank SAC. The RSPB also notes the implications of the current consideration being given to the designation of one or more SACs to protect Harbour Porpoise.<sup>120</sup> As such, the potential alternative solutions that we identify will also need to be evaluated for their impacts upon these candidate SACs and their features by the Secretary of State.
- 9.67 The RSPB understands from the Wildlife Trusts that by a careful choice of construction methods and choice of turbine foundations it may be possible to reduce the impacts of those other schemes upon marine mammals and upon the habitat of the Dogger Bank SAC. The Wildlife Trusts are far better placed to advise on these matters and the RSPB defers to them on this issue. However, it is our view, following discussion with the Wildlife Trusts that appropriate safeguards could be put in place to make the potential alternative solutions we identify above acceptable in terms of their impacts on SAC features and European Protected Species. We would urge the Examining Authority and the Secretary of State to consider these safeguards alongside our proposed alternative solutions.

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<sup>119</sup> Listed in Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended).

<sup>120</sup> Set out in Natural England's Relevant Representation (paragraphs 4.2.2 and 4.2.3).

## 10. Onshore – Ecology and Nature Conservation

### Intertidal Ornithology

- 10.1 As detailed in the HRA, Part 1, paragraph 2.2.13 (page 6), the proposed cable landfall site lies within the Humber Estuary Special Protection Area (the Humber SPA), Special Area of Conservation (SAC) and Ramsar site<sup>121</sup>. The RSPB stated in its relevant representation that it had concerns over the impacts of the Project, both alone and in combination with other projects, on the Humber Estuary SPA and its designation species.
- 10.2 Having established that the proposed cabling works will involve no permanent land-take from the Humber Estuary and its associated nature conservation designations (HRA, Part 1, Table 5.1), the RSPB's principal concern in relation to the Humber Estuary SPA and its species is the potential disturbance and displacement impacts resulting from the construction phase for the cabling. The RSPB also agrees with Natural England's concerns over potential operational phase impacts set out in paragraphs 5.5.2.1 and 5.5.2.2 of its Relevant Representation.
- 10.3 As recorded in the HRA, Part 1, Table 5.1, a construction window of April to September inclusive was identified by the Applicant from an early stage as appropriate to mitigate for potential impacts on Humber Estuary SPA birds to avoid an impact on wintering birds (ES Vol. 3, Chapter 4, Table 4.1, pg 4-2). In considering this proposal, the RSPB is concerned with this period due to the potential impact on migratory and wintering SPA species. We note (HRA, Part 1, Table 5.1, page 28) that the intertidal works to install the cables could involve up to four phases over a 6 year period for the Hornsea 2 project alone. We consider this to be far from a transient impact and are concerned with the potential longer term impacts of such ongoing disturbance. The RSPB question why this needs to take up to six years when the Hornsea 1 construction work (for four ducts and cables rather than Hornsea 2's eight) is expected to last only two years. We question why twice the work for Hornsea 2 cannot be completed in a maximum of four years instead of the six proposed. We return to this issue under the consideration of in-combination impacts below.

### In-combination Impacts

- 10.4 Following clarification during the Hornsea 1 examination, the RSPB agreed that the proposed cable landfall construction works associated with Project 1 alone will lead to some

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<sup>121</sup> Listed under the Convention on wetlands of international importance, Ramsar 1971.

disturbance but that the effects of this alone will not be unacceptable and therefore do not constitute an adverse effect on the integrity of the Humber Estuary SPA. However, as noted in paragraph 0 above, we are concerned about the cumulative impacts on the intertidal area of the cable work for the Hornsea 1 and Hornsea 2 schemes. This is particularly important as the owners of the Hornsea 1 scheme made it clear in their relevant representation that they are now entirely separate from the Hornsea 2 promoters, and that this has profound implications for the ability to work cooperatively to minimise the environmental impacts.<sup>122</sup> The only substantial high tide wader roosts in this part of the estuary are in the vicinity of the cable landfall. Disturbance in this area may cause temporary disturbance of this roost, but there is concern that disturbance over several years may cause abandonment of these roosts and the associated feeding areas.

10.5 The HRA and ES have considered three possible scenarios for cable laying:

- Scenario One – Project 1 constructed before Project 2.
- Scenario Two – Project 2 constructed before Project 1.
- Scenario Three – Project 1 and Project 2 constructed at the same time.

The HRA states that cable laying for Project 1 is anticipated to be undertaken in two phases in successive years (HRA, Part 1, paragraph 5.9.123), and notes that when taken together with Project 2 that the construction works could take up to 7 years (HRA, Part 1, paragraph 5.9.127) in total.

10.6 In Scenario Three the cabling work for Projects 1 and 2 will take place at the same time (HRA, Part 1, paragraph 5.9.126). The RSPB notes that there is a “staggered” approach where the drilling of cable ducts for one scheme can be undertaken at the same time as cable laying for the other scheme. The RSPB requests that the Hornsea 2 developer liaises closely with the Hornsea 1 developer to identify whether this is the least disturbing permutation for Scenario Three, and if so, to ensure that this approach is adopted in preference to Scenarios One or Two.

10.7 The RSPB notes that the potential impacts from cable works arising from Hornsea Project 3 have not been assessed (HRA, Part 1, paragraph 5.9.119). Given the potential duration of works on the intertidal zone already highlighted above, further extensions of the disturbance

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<sup>122</sup> Representation No. 18, Julian Boswell on behalf of Heron Wind Limited, Njord Limited and Vi Aura Limited.

due to cable laying works for Projects 3 and 4 should be considered now. Failure to do so will represent a missed opportunity to minimise the harm of the total quantum of cable laying and will increase the risks that Projects 3 and 4 may encounter difficulties due to disturbance caused during the laying of the cables for Projects 1 and 2.

- 10.8 The RSPB ask that detailed monitoring of the cable laying impacts of Projects 1 and 2 is undertaken and that lessons learnt from that are used to make any necessary changes to the cable laying regime for Project Three in order to reduce its impacts on the intertidal area.

**Development Consent Order and Deemed Marine Licence**

- 10.9 Further comments on the draft Development Consent Order and deemed Marine Licence are set out below, however it is convenient to set out here particular points which arise in relation to onshore concerns. The RSPB considers it necessary for such details to be added to the Ecological Management Plan required under Schedule A, Part 3, Paragraph 7 of the draft DCO, to be approved by the Local Planning Authority in consultation with Natural England.

- 10.10 The RSPB considers it necessary to amend Part 2 Paragraph 10(2)(b) of the Deemed Marine Licences A2 and B2 (set out in Schedules I and K to the draft DCO) so that it either incorporates the detailed construction methods and timing, as set out in the intertidal clarification note referenced above, or as such details are added to the Ecological Management Plan and it forms part of the Marine Licence requirements.

- 10.11 The RSPB are concerned about the reference to a 7.7m tide at Grimsby that is used to control operations over the intertidal zone. This is set out in section 20(4) of the Deemed Licence under the Marine and Coastal Access Act 2009 – Deemed Marine Licences A2 “Transmission Assets” and B2 “Transmission Assets” (in Schedules I and K to the draft DCO).

- 10.12 The provision currently limits works “within one kilometre seaward of the seawall during the period of time commencing two hours before a high tide greater than 7.7 metres (as measured at Grimsby) between 1 April and 31 May (inclusive) and 1 August to 30 September (inclusive)”. The RSPB is concerned about tides that are greater than 6.5m when measured against Ordnance Datum at Tetney. Grimsby has a 1.2m sill, and if it is not included in the 7.7m measurement at Grimsby we are concerned that there will be few, if any, high tides at Tetney at which works associated with cable laying would stop. We ask that the text of the

DCO is amended to read either “as measured at Grimsby including the 1.2m outer sill”, or by changing the measurement to a 6.5m high tide (above Ordnance Datum). This amendment would ensure that work at Tetney would stop when the tide reached 6.5m at that location, and would address our concerns on this point.

## **11. Draft Development Consent Order (DCO) and Deemed Marine Licence (DML), Version 2**

11.1 As with Hornsea Project One the RSPB is likely to only have limited comments in relation to the draft DCO and DML. Unfortunately due to only recently spotting that a second version of the DCO and DML has been submitted by the Applicant, the RSPB was unable to review in detail prior to the submission deadline for these Written Representations.

11.2 However, the RSPB will ensure that it reviews that second version as soon as possible and passes on issues of concern or suggested redrafting to the Applicant.

## **Annex I – Qualifications and Experience of the RSPB’s Experts**

### **Dr. Aly McCluskie**

Dr. Aly McCluskie is a Conservation Scientist with the RSPB, based at the RSPB’s Scottish Headquarters in Edinburgh. He holds a BSC(Hons) and a PhD in otter marine ecology both from the University of Glasgow. He has worked in consultancy (Natural Research Ltd, 5 years) and for the RSPB (7 years) as well as working freelance, largely examining the potential ornithological impacts of renewable energy developments. His main role within the RSPB is providing scientific support to caseworkers, with particular regard to the impacts of marine developments. He holds an honorary lectureship at the University of Glasgow, has sat on several scientific steering groups, including the current avoidance rate review, has presented papers to a variety of international conferences, and has co-authored peer-reviewed scientific papers and reports.

## Annex II – The Flamborough and Bempton Cliffs SPA and the Flamborough and Filey Coast potential SPA

### 1. Flamborough and Bempton Cliffs SPA

#### **Designation**

- 1.1 Flamborough Head projects into the North Sea from the Yorkshire Coast rising to 135m on the Bempton Cliffs. It was designated under Article 4(2) of the Birds Directive as an SPA in 1993 due to the presence of 83,370 pairs of black-legged kittiwake (*Rissa tridactyla*), representing 4% of the Eastern Atlantic breeding population at the time of survey (1987).
- 1.2 In 2001, the UK SPA Review found the site also qualified under Article 4(2) as a site regularly supporting at least 20,000 seabirds. At the time of designation, the site regularly supported 305,784 individual seabirds including: puffin (*Fratercula arctica*), razorbill (*Alca torda*), guillemot (*Uria aalge*), herring Gull (*Larus argentatus*), Gannet (*Morus bassanus*), and Kittiwake.

#### **Conservation Objectives**

- 1.3 On 29 May 2012, Natural England published revised Conservation Objectives for the SPA, and subsequently revised them on 30 June 2014<sup>123</sup>. These are:

*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (“the Qualifying Features” listed below), and subject to natural change;*

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:**

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The populations of the qualifying features, and,*
- *The distribution of the qualifying features within the site.*

*This document should be read in conjunction with the accompanying Supplementary Advice document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.*

**Qualifying Features:**

*A188 Rissa tridactyla; Black-legged kittiwake (Breeding)*

### 2. Flamborough and Filey Coast pSPA

- 2.1 In January 2014, Natural England opened a formal consultation on proposals to extend the existing SPA and rename it as the Flamborough and Filey Coast SPA. The proposals comprise changes to the designation boundary and review of the qualifying species. Further details are provided in the following sections.

#### **Designation Proposals**

- 2.2 The pSPA proposals comprise three key boundary changes:

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<sup>123</sup> Available here: <http://publications.naturalengland.org.uk/publication/5400434877399040> (accessed 12 July 2015).

- 2.2.1 A proposed terrestrial extension running from the cliffs at Filey Brigg north-west to Cunstone Nab, which is being considered to incorporate important breeding areas for seabird that currently fall outside the existing SPA.
  - 2.2.2 Marine extensions out to 2km from the seabird colonies which are proposed, due to the importance of these waters to breeding seabirds.
  - 2.2.3 Modification of the landward boundary to ensure that the features of the pSPA remain protected into the future.
- 2.3 Natural England has also conducted a review of the seabird populations using contemporary data. This concluded that the pSPA, including the proposed seaward and landward extensions qualifies under Article 4(2) of the Birds Directive because:
- 2.3.1 The site regularly supports more than 1% of the biogeographical population of four regularly occurring migratory species (black-legged kittiwake *Rissa tridactyla*, northern gannet *Morus bassanus*, common guillemot *Uria aalge* and razorbill *Alca torda*). Therefore the site qualifies for SPA designation in accordance to the SPA selection guidelines.
  - 2.3.2 The site regularly supports an assemblage of more than 20,000 breeding seabirds. Therefore the site qualifies for SPA designation in accordance to the SPA selection guidelines.
  - 2.3.3 Several species components of the pSPA assemblage qualify for a generic seaward extension of the SPA (northern fulmar *Fulmarus glacialis* and northern gannet *Morus bassanus* for a generic 2km seaward extension; common guillemot *Uria aalge* and razorbill *Alca torda* for a generic 1 km seaward extension).
- 2.4 Natural England’s summary of the ornithological interest of the pSPA is therefore as follows with the key species are set out in more detail in Table 1 below<sup>124</sup>.
- 2.5 The application of SPA selection guidelines (JNCC 1999) to current data for this site confirm that it qualifies by regularly supporting internationally important numbers of breeding black-legged kittiwakes, northern gannet, common guillemot and razorbill and an assemblage of European importance of over 20,000 breeding seabirds. Black-legged kittiwake, northern gannet, common guillemot and razorbill are all main components of the assemblage and present in internationally important numbers. However, northern fulmar is also present in sufficient numbers to warrant being listed as main component species of the assemblage, since numbers exceed 2,000 individuals (10% of the minimum qualifying assemblage of 20,000 individuals). In addition, Atlantic puffin, herring gull, European shag *Phalacrocorax aristotelis* and great cormorant *Phalacrocorax carbo* are also part of the breeding seabird assemblage.

**Table 1: Summary of Ornithological Interest of the Flamborough and Filey Coast pSPA**

Species	Count (period)	% of subspecies or population (pairs)	Interest Type
<b>Original classification</b>			
Black-legged kittiwake <i>Rissa tridactyla</i>	83,700 pairs (1987)	4% Western Europe	Migratory
<b>Revised proposal</b>			
Black legged kittiwake <i>Rissa tridactyla</i>	44,520 pairs 89,041 breeding adults (2008-2011)	2% North Atlantic	Migratory

<sup>124</sup> Natural England’s *Proposed extension to Flamborough Head and Bempton Cliffs Special Protection Area and renaming as Flamborough and Filey Coast Special Protection Area*, Departmental Brief, January 2014 at page 4.

Northern gannet <i>Morus bassanus</i>	8,469 pairs 16,938 breeding adults (2008-2012)	2.6% North Atlantic	Migratory
Common guillemot <i>Uria aalge</i>	41,607 pairs 83,214 breeding adults (2008-2011)	15.6% ( <i>Uria aalge albionis</i> )	Migratory
Razorbill <i>Alca torda</i>	10,570 pairs 21,140 breeding adults (2008-2011)	2.3% ( <i>Alca torda islandica</i> )	Migratory
	<b>Count period</b>	<b>Average number of individuals</b>	
Seabird assemblage	2008-2012	215,750	

### ***Black-legged Kittiwake Population Declines***

- 2.6 Since this site achieved SPA status, the UK kittiwake population has experienced severe declines and has fallen by 55%<sup>125</sup> (between 1986 and 2011). This has been reflected within the SPA with a reduction in numbers from the 83,370 breeding pairs upon which classification of the site was based in 1993 (supported by counts of 80,180 pairs in 1979 and 85,395 pairs in 1987) to an average of 44,520 breeding pairs between 2008 and 2011, a fact that is not mentioned in Natural England's Relevant Representation.
- 2.7 In 2001, the UK SPA Review's site account for the SPA reiterated the 83,370 breeding pairs of kittiwake, and also identified an assemblage feature comprising 305,784 individual seabirds including: puffin *Fratercula arctica*, razorbill *Alca torda*, guillemot *Uria aalge*, herring gull *Larus argentatus*, gannet *Morus bassanus*, kittiwake *Rissa tridactyla*. Since that time, the numbers of some of the species included within the assemblage features have also declined (e.g. herring gull fell by 24% and recordings of puffin at the SPA indicate reductions in that population: Seabird Colony Register 1987 recorded 7,000 puffins whereas Seabird Colony Register 2000 recorded only 2,615 puffins).
- 2.8 In the context of such steep and national declines, and the requirements of the Birds and Habitats Directives (as summarised below), the RSPB has expressed concern about the consideration of contemporary data alone in relation to both kittiwake and the assemblage feature, for it would lead to the designation of a site at population levels that have declined from previous levels. This decline must also be taken into account when considering the effect of this Project, for it emphasises the sensitivity of the SPA and pSPA to adverse impacts from development outside these areas. The data above clearly illustrate the ongoing population declines currently being experienced by kittiwake in particular, and the implications of these for not only nature conservation site designation, but also impact assessment for plans and projects.

<sup>125</sup> State of the UK's Birds 2012, [http://www.rspb.org.uk/Images/SUKB\\_2012\\_tcm9-328339.pdf](http://www.rspb.org.uk/Images/SUKB_2012_tcm9-328339.pdf).

## Annex III – The SPA Species of Concern

### 1. Gannet

#### **Population and distribution**

The Gannet breeds on both sides of the Atlantic Ocean between approximately Norway in the north and the equator in the south<sup>126</sup>. Most recent estimates of the European population range between 300,000 and 310,000 breeding pairs<sup>127</sup>, with European colonies accounting for 75 –94% of the species' range<sup>126</sup>. The most recent estimate of the breeding population of gannets in Britain was 218,546 nesting pairs<sup>128</sup> representing 59% of the world population<sup>129</sup>.

#### **Breeding on the Flamborough and Filey Coast**

The SPA is the only gannetry in England and in 2015 supported 12,494 occupied nests<sup>130</sup> (HRA, Part 2, paragraph H.22, page 356), concentrated in approximately 5km stretch of cliff<sup>131</sup>. Within this area is the RSPB's Bempton Cliffs Reserve. This SPA population accounts for approximately 3.3% of the North Atlantic biogeographic population<sup>132</sup>. These latest data reflect the ongoing increases in the gannet breeding population at the SPA and the welcome proposals to designate the Flamborough and Filey Coast SPA in part for breeding gannet.

The steady rate of increase in this area, since its colonisation in the 1960s, has become more rapid since 2000. The potential for further growth is considerable in view of the large number of non-breeding immature birds associated with the colony; 1,470 in 2009, and 798 in 2012<sup>133</sup>. This contrasts with the situation across Britain and Ireland as a whole, where the rate of population growth dropped to 1.33% per year during 1995-2005, from the previously recorded 2% per year, consistent with the expectation that the rate of increase would plateau<sup>134</sup>.

2010 to 2012 were good breeding seasons at the SPA, with breeding productivity per active occupied nest of 0.82 in 2010, 0.83 in 2011, and 0.85 in 2012, compared with 0.86 in 2009<sup>133</sup>.

Hornsea Project Two defined the breeding season for gannets as April to August (ES, Chapter 5, Table 5.17, *Seasons for species taken forward to displacement impact assessment*, p5-63). Taking the example of the SPA, adult gannets return to the colony from January onwards, with the majority of adults back by March. The earliest egg laying date is at the end of March, most egg laying occurring in April. The fledging peak is in August, decreasing through September.

Defining the breeding season is not an exact science as there is overlap, with some birds returning to the colony whilst others remain on wintering grounds. The period from the start of April until the

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<sup>126</sup> BirdLife International, 2014. *IUCN Red List for birds*. Downloaded from <http://www.birdlife.org> on 4 February 2014

<sup>127</sup> Bufield, I. & Van Bommel, F. 2004. *Birds in Europe: Population Estimates, Trends and Conservation Status*. BirdLife International, Cambridge, UK.

<sup>128</sup> Baker, H., Stroud, D., Aebischer, N.J., Cranswick, P.A., Gregory, R.D., McSorley, C.A., Noble, D.G., Rehfisch, M.M. 2006. *Population estimates of birds in Great Britain and the United Kingdom*. British Birds 99:25-44.

<sup>129</sup> Mitchell, P.I., Newton, S.F., Ratcliffe, N., Dunn, T.E., 2004. *Seabird Populations of Britain and Ireland*. Poyser, London

<sup>130</sup> Apparently Occupied Nests (AON) is a standard census unit used to estimate the number of pairs of colonially nesting bird species, which includes most seabirds. AON is one way to estimate the number of breeding pairs.

<sup>131</sup> There were also approximately 2,500 non-breeders on potential nest sites.

<sup>132</sup> A biogeographic population is defined by JNCC as a group of birds which breed in a particular location (or group of locations), breed freely within the group and rarely breed or exchange individuals with other groups.

<sup>133</sup> Langston, R., Teuten, E. & Butler, A., 2013. *Foraging ranges of northern gannets *Morus bassanus* in relation to proposed offshore wind farms in the North Sea: 2010-2012*. RSPB Report to DECC, December 2013.

<sup>134</sup> WWT Consulting, 2012. *SOSS-04 Gannet Population Viability Analysis. Demographic data, population model and outputs*. Wildfowl and Wetlands Trust (consulting) Ltd, Slimbridge.

end of September coincides with the main breeding activity of egg-laying, incubation, and chick-rearing. Prior to that time, birds commute between feeding and nesting sites on a more irregular basis, whilst defending their nest location.

### ***Migration and non-breeding season***

The British gannet population is partially migratory, with significant variation in migratory strategy depending on age and breeding colony. Migration is particularly strong among first year birds, but there is substantial variation in migratory patterns with birds of all plumage states (ages) occurring in all parts of the range throughout the year, showing a degree of dispersive movement away from breeding colonies<sup>135</sup>. Most adults depart the breeding colony at the SPA in late September/early October. A period of dispersal within the North Sea follows before onward migration to wintering grounds, ultimately to the south of the UK.

Ringed data show that juveniles mostly winter in areas from the Bay of Biscay to the subtropical and tropical waters off West Africa<sup>134,135,136</sup>. It was previously believed that distance travelled from the breeding colony reduced with age so that, by adulthood (5 years and older), most birds from East coast colonies remained in the North Sea<sup>134,135</sup>. However, the recent tracking studies from Bempton Cliffs have shown a more complicated picture.

Adult gannets, at FHBC SPA, were fitted with battery-powered, Platform Terminal Transmitters (PTTs), which transmit data via the Argos satellite, at FHBC in 2010 (n=14 birds), 2011 (n=13) and 2012 (n=15).

Breeding gannets are central place foragers<sup>137</sup>. Consequently, their foraging ranges are likely to be most constrained when provisioning growing chicks, although they can still cover large distances during this period<sup>133</sup> (HRA Part 1, paragraph 5.8.58, p107). As central-place foragers during the breeding season, gannets (and other seabirds) have to return to their nest – the central place – regularly and so interception of frequent foraging trips by offshore wind turbines may present more of a collision hazard than for migrating birds on passage, especially if the turbines coincide with foraging areas where plunge-diving gannets will occur at rotor-swept height. Conversely, if the birds display a high degree of avoidance of wind turbines when making frequent foraging trips during the breeding season, there is a concern that gannets may be effectively displaced from suitable foraging areas. Whilst gannets have greater foraging flexibility than many other seabirds, there are potential implications for breeding productivity if their feeding areas are constrained. FHBC has had high levels of breeding productivity in recent years and, as described above, is the only gannet colony in England. The UK has a special responsibility for gannets as it hosts over 50% of the world's breeding northern gannets.

The adult gannets fitted with PTTs at FHBC SPA showed considerable use of the Hornsea Round 3 zone, including the proposal area for Project Two (Annex IV, Figure 1), both for foraging and flying through to reach other foraging areas, during the chick-rearing season<sup>133</sup> (ES, Chapter 5, paragraph 5.6.250, page 5-84).

Satellite tags were used because of the logistical difficulties associated with the Bempton colony, thereby enabling data capture without need for further entry into the gannet colony. Data from

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<sup>135</sup> Wernham, C., Toms, M., Marchant, J., Clark, J., Siriwardena, G. and Baillie, S. [Eds], 2002. *The Migration Atlas: Movements of the Birds of Britain and Ireland*. T & AD Poyser, London.

<sup>136</sup> Snow, D.W., and Perrins, C.M., 1998. *The Birds of the Western Palearctic, Concise Edition*. Oxford University Press, Oxford.

<sup>137</sup> Gremillet, D., Pichegru, L., Siorat, F., & Georges, J.-Y. 2006. *Conservation implications of the apparent mismatch between population dynamics and foraging effort in French northern gannets from the English Channel*. Marine Ecological Progress Series 319: 15-25.

satellite tags do not readily permit the distinction of foraging from other behaviours. However, trip endpoints represent a conservative but standardised indication of foraging locations, and were distributed throughout the area of active use. All tagged birds were recorded in the Hornsea Round 3 zone. One tag failed or was lost within a few days of deployment in 2012, and there were intermittency problems with the five GPS tags fitted, leading to exclusion of these data from analysis. Of the 36 individuals fitted with continuously recording tags, or tags set to record at longer time intervals (in an attempt to extend the recording period by preserving battery life), 24 were recorded within the Hornsea Project Two area.

These tracking data cannot be used to prove a negative, i.e. that birds do not use certain locations, but they do provide an indication of areas they definitely do use. The area of active use identified showed marked similarity over the three years, although in 2012 the core area, represented by the 50% density contour (relating to satellite tracking locations of gannets, (Annex IV, Figure 2), extended further into the proposed Hornsea Project Two. Distance to colony was the over-riding factor influencing the distribution of gannet locations, with the highest density closest to the colony, where outgoing and returning birds mix with those active around colony. Activity closer to the colony includes “maintenance” behaviours such as bathing, preening, resting, and communicating, as well as some feeding. Densities diminish with increased distance offshore, but include foraging flights and feeding behaviour. Plunge-diving to feed is one of the behaviours that increases collision risk, especially where there are feeding aggregations.

During the breeding season, the main colony from which gannets were found to interact with the Hornsea Round 3 zone was Flamborough Head and Bempton Cliffs SPA. However, Hornsea Project Two lies within the documented maximum foraging range for gannets<sup>138</sup>, from the Forth Islands SPA (ES, Chapter 5, paragraph 5.7.62, page 5-133), so it cannot be ruled out that gannets from Bass Rock could occur within the Hornsea Project One area, but this seems unlikely for actively breeding birds. It is also important to consider that, as the Bempton colony grows in size, it might be expected that foraging ranges will increase, owing to increased intraspecific competition at the colony<sup>133, 150</sup>.

Immature birds associate with the breeding colonies during the breeding season increasingly after their first year, particularly at age 3-4yrs. Although not as tied to the colony as adult birds, they are still central place foragers, returning regularly<sup>139</sup>. Recent studies also indicate sexual segregation in foraging behaviour at sea by breeding adult gannets. There are observed consistent differences in their isotopic signatures indicating dietary segregation, including a likely higher proportion of fishery discards (thus boat following) in the diets of breeding males, which also foraged closer inshore than females<sup>140</sup>. Further studies have confirmed the greater association with fisheries vessels by males than females<sup>141</sup>. There are different implications of accounting for boat following than assumption of equivalent effect across all birds irrespective of sex (or age etc). No such sexual segregation was apparent during the non-breeding season, nor among non-breeding, immature (2-4yrs) gannets.

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<sup>138</sup> Thaxter, C. B., B. Lascelles, K. Sugar, A. S. C. P. Cook, S. Roos, M. Bolton, R. H. W. Langston, and N. H. K. Burton. 2012. *Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas*. Biological Conservation 156: 53–61.

<sup>139</sup> Votier, S. C., Grecian, W. J., Patrick, S., & Newton, J. 2010. *Inter-colony movements, at sea behaviour and foraging in an immature seabird: results from GPS-PTT tracking, radio-tracking and stable isotope analysis*. Mar Biol DOI 10.1007/s00227-010-1563-9.

<sup>140</sup> Stauss, C., S. Bearhop, T. W. Bodey, S. Garthe, C. Gunn, W. J. Grecian, R. Inger, M. E. Knight, J. Newton, S. C. Patrick, R. A. Phillips, J. J. Waggitt, & S. C. Votier. 2012. *Sex-specific foraging behavior in northern gannets *Morus bassanus*: incidence and implications*. Mar Ecol Prog Ser 457: 151-162.

<sup>141</sup> Votier, S. C., Bicknell, A., Cox, S. L., Scales, K. L. & Patrick, S. C. 2013. *A bird's eye view of discard reforms: bird-borne cameras reveal seabird/fishery interactions*. PLoS ONE 8(3) e57376, DOI: 10.1371/journal.pone.0057376.

The available evidence supports the allocation of all adult gannets, and most immature gannets (age 3-4yrs), recorded in the Hornsea Project Two area during the breeding season, to FHBC, which raises considerable concern for this colony if Hornsea Project Two is consented.

Post-breeding locations were obtained for 18 of the satellite tracked gannets from the SPA<sup>133</sup>, albeit only very limited data were obtained from four birds in 2010. The results from 2011 and 2012 still indicated overlap with the Hornsea Round 3 zone, including Project Two, but showed dispersal to other parts of the North Sea before migration, as far south as west Africa (Annex IV, Figure 3 presents results for 2011) supporting previous studies of gannet movements from colonies at Bass Rock<sup>134, 142</sup>, or cessation of recording. All adult gannets had left the SPA by early October, including satellite tracked individuals, and the latest date for which data were received from any tag was 24 November 2012, for a bird that migrated to Western Sahara. It has been suggested that these shifts in migratory patterns reflect changes in North Sea fishing practices, including reduced discards, while fishing fleets off West Africa have grown with discards remaining high<sup>134</sup>.

While tracking data described above show a general southerly movement for British breeding gannets, numbers of wintering adult gannets in the North Sea remain comparable to those nesting on the British East coast<sup>134</sup> due to inward movements from more Northerly colonies. However, the origins of these birds is variable, with ringing data demonstrating the presence of Norwegian breeding gannets in the North Sea during winter<sup>135</sup> and tracking of Icelandic birds showing Autumn passage through the North Sea on route to African waters<sup>134</sup>.

There is therefore a need to distinguish breeding season versus non-breeding/ winter season in assessing the potential cumulative effects of multiple offshore wind farms, in UK waters and beyond. From October especially, there is considerable overlap of gannets from different breeding colonies<sup>143</sup>. Post-breeding, dispersal of gannets from the Bass Rock (Forth Islands SPA), was recorded to the north and south, from gannets fitted with geolocation data loggers in 2002 and 2003. Of 20 tracked birds that wintered south of the UK, eight travelled north from the Bass Rock, around the north of Scotland and south down the west coast of Britain and Ireland, whilst 12 headed south and through the English Channel<sup>142</sup>. A further geolocation study in 2008 resulted in seven of the 21 recovered loggers indicating this northward migration route and 14 took the southward route<sup>134, 144</sup>, along the east coast of the UK. Just one of the satellite tracked post-breeding gannets from FHBC was recorded taking the northerly route via the north of Scotland (Annex IV, Figure 3) before heading south via the west of Britain<sup>145</sup>. On the northward migration in spring, results from the same Bass Rock studies<sup>142, 144, 146</sup>, indicated that three of the 20 geolocators fitted in 2002 and 2003 returned via the English Channel and six via the west coast and around the north of Scotland<sup>142</sup>, compared with five and 16 of the 21 geolocation loggers fitted in 2008<sup>144, 146</sup>, respectively. This diverse pattern of migration increases the potential for interaction with multiple wind farms.

Arguably, potential impacts on migratory gannets may be of lesser concern than risk to breeding gannets because the birds are no longer constrained by central place foraging (see below for further explanation), and so generally more widely dispersed at lower density. There are also indications of

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<sup>142</sup> Kubetzki, U., Garthe, S., Fifield, D., Mendel, B., & Furness, R. W. 2009. *Individual migratory schedules and wintering areas of northern gannets*. Marine Ecological Progress Series 391: 257-265.

<sup>143</sup> Fort, J., Pettex, E., Tremblay, Y., Lorentsen, S.-H., Garthe, S., Votier, S., Baptiste Pons, J., Siorat, F., Furness, R. W., Grecian, W. J., Bearhop, S., Montevecchi, W. A. & Gremillet, D. 2012. *Meta-population evidence of oriented chain migration in northern gannets (Morus bassanus)*. Frontiers in Ecology and the Environment 10:237-242.

<sup>144</sup> Garthe, S., Kubetzki, U., Furness, R.W., Huppopp, O., Fifield, D., Montevecchi, W.A. & Votier, S.C. 2010. *Zugstrategien und Winterökologie von Basstolpeln im Nord-Atlantik*. Vogelwarte 48:367. Cited in WWT Consulting et al. 2012

<sup>145</sup> Langston, R. H. W. & Teuten, E. 2012. *Foraging ranges of northern gannets Morus bassanus in relation to proposed offshore wind farms in the North Sea*: 2011. RSPB report to DECC, DECC URN: 12D/315, London.

<sup>146</sup> Meraz Hernando, J.F., 2011. *Seabird ecology in relation to fisheries*. PhD thesis, University of Glasgow.

a high degree of flight avoidance by migratory gannets around the Egmond aan Zee<sup>147</sup> and Horns Rev<sup>148</sup> offshore wind farms, although in the case of Horns Rev, no gannets were recorded in the wind farm area prior to or post-construction. These well designed and executed studies relate to inshore wind farms and the results may not be applicable to breeding gannets.

### **Foraging**

Gannets range widely over continental shelf areas (ES, Chapter 5, paragraph 5.6.150, page 5-73), taking chiefly fish between 2.5 and 30.5cm<sup>136</sup>, but with foraging concentrated over areas of high marine productivity<sup>135</sup>. It is known that gannets fly and plunge dive from between 10 and 50m, or even higher: elevations within the rotor swept height of offshore turbines<sup>147, 149</sup>. Gannets' gregarious breeding habits are reflected in their foraging, where plunge-diving birds exhibit a marked attraction to others<sup>136</sup>. However, tracking studies of gannets at multiple breeding colonies around the UK in 2010-2011 indicate strong spatial segregation of foraging areas with little if any overlap between areas used by adjacent colonies<sup>150</sup>.

## **2. Kittiwake**

### **Population and distribution**

The black-legged kittiwake is a widespread breeding species, nesting through the northern Pacific and Atlantic Oceans<sup>126</sup>. It is a colonial breeding seabird and occurs discontinuously along the shores of north-west Europe, from the coasts of Portugal and Galicia (north-west Spain) in the south, through Brittany (France), Ireland and Britain, Iceland and along Scandinavian coasts to the Kola Peninsula. It is predominantly a coastal species, but with some inland and island colonies. In the UK, Kittiwakes occur on most coasts, although there are few colonies on the south and east coasts of England.

The European breeding population is estimated to be over 2.1 million pairs<sup>127</sup>. With the breeding population in Great Britain estimated to be 366,832 pairs<sup>128</sup>, representing on its own about 17% of the North Atlantic biogeographic population<sup>151</sup>. The number of black-legged kittiwakes breeding in England is estimated to be 76,281 pairs<sup>129</sup>.

### **Breeding on the Flamborough and Filey Coast**

This SPA represents the only English SPA supporting black-legged kittiwake numbers of international importance, but is a typical breeding colony in terms of its habitat of sheer cliffs<sup>152</sup>.

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<sup>147</sup> Krijgsveld, K. L., Fijn, R. C., Japink, M., van Horssen, P. W., Heunks, C., Collier, M., Poot, M. J. M., Beuker, D. & Dirksen, S. 2011. Effect studies offshore wind farm Egmond aan Zee: Final report on fluxes, flight altitudes, and behaviour of flying birds. NoordzeeWind report nr WEZ\_R\_231\_T1\_20111114\_flux&flight. Bureau Waardenburg report nr 10-219 to Noordzeewind, Culemborg, The Netherlands. Final report November 2011. [http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ\\_R\\_231\\_T1\\_20111114\\_2\\_fluxflight.pdf](http://www.noordzeewind.nl/wpcontent/uploads/2012/03/OWEZ_R_231_T1_20111114_2_fluxflight.pdf), last accessed 25 June 2012.

<sup>148</sup> Petersen, I. K., Christensen, T. K., Kahlert, J., Desholm, M. & Fox, A. D. 2006. *Final results of bird studies at the offshore wind farms of Nysted and Horns Rev, Denmark*. NERI report commissioned by DONG energy and Vattenfall A/S. National Environmental Research Institute, Ministry of the Environment, Denmark.

<sup>149</sup> Nelson, J. B. 1978. *The Gannet*. T & A D Poyser, Berkhamsted.

<sup>150</sup> Wakefield, E. D., Bodey, T. W., Bearhop, S., Blackburn, J., Colhoun, K., Davies, R., Dwyer, R. G., Green, J., Gremillet, D., Jackson, A. L., Jessopp, M. J., Kane, A., Langston, R. H. W., Lescroel, A., Murray, S., Le Nuz, M., Patrick, S. C., Peron, C., Soanes, L., Wanless, S., Votier, S. C., Hamer K. C. 2013. *Space Partitioning Without Territoriality in Gannets*. *Science* 341: 68-70.

<sup>151</sup> AEWA, 2012. *African-Eurasian Waterbird Agreement 2012: Report on the Conservation Status of Migratory Waterbirds in the Agreement Area*. Fifth Edition. AEWA, Bonn.

<sup>152</sup> Natural England, 2014. *Proposed extension to Flamborough Head and Bempton Cliffs Special Protection Area and renaming as Flamborough and Filey Coast potential Special Protection Area (pSPA)*. Departmental Brief. Natural England, January 2014.

Between 2008 and 2011 the SPA, including the proposed extension, supported an average of 44,520 pairs of black-legged kittiwakes, which represents 2% of the North Atlantic biogeographic population<sup>151</sup>, but also a substantial decline from historical population levels. At the time of designation the SPA's kittiwake population was 83,370 pairs. Black-legged kittiwakes nest throughout the extended area that the pSPA covers, with the main concentrations around Bempton Cliffs and Breil Newk. The intertidal chalk platforms are also used as roosting sites at low water by juvenile kittiwakes in particular.

Hornsea Project Two defines the breeding season for kittiwake as May to July (ES, Chapter 5, Ornithological Technical Report Part 1, para 6.1.263, p82), in contrast with NE's definition (RR, paragraph 55) of March to August. There is considerable overlap between seasons, especially bearing in mind that failed breeders may be joining non-breeders any time during the months that successful breeders are still based at the colony. Most adult kittiwakes are back at the colony by March, with the first birds returning in February, so February is both breeding and non-breeding season, depending on individuals. Most chicks have fledged by mid to late July.

### **Migration and non-breeding season**

The kittiwake is sometimes reported as a non-migratory species or one that disperses as opposed to migrating. However, during the wintering season birds of the Atlantic subspecies *tridactyla* vacate the breeding grounds and become truly oceanic<sup>135</sup> but, as gannets do, initially post-breeding adults disperse from the colony before embarking on long-distance migration.

There is extensive sharing of wintering areas among Atlantic populations, with the majority of adults from all parts of the European breeding range (except the western British Isles) migrating across the Atlantic. Ringing and geolocation studies have shown that shelf areas in Western Europe and around the Labrador Sea are important for wintering adult kittiwakes but that a very large part of the Atlantic population winters in offshore areas west of the Mid-Atlantic Ridge<sup>135 153 154 155 156 157</sup>.

### **Foraging**

When not attending the nesting platform, kittiwakes loaf on the sea below the cliffs and forage up to 120 km offshore (ES Vol 2, Ch 5, paragraph 5.5.120, p5-41) (mean foraging range of  $24.8 \pm 12.1$  km, with highest confidence of assessment)<sup>158</sup>, although the FAME data indicate kittiwakes regularly forage considerably further, up to 231km (Annex IV, Figure 4)<sup>159</sup>. They generally feed on small shoaling fish, particularly sand eels, but also herrings and sprats. During the breeding season

<sup>153</sup> Frederiksen, M., Moe, B., Daunt, F., Phillips, R.A., Barrett, R.T., Bogdanova, M.I., Boulinier, T., Chardine, J.W., Chastel, O., Chivers, L.S., Christensen-Dalsgaard, S., Clement-Chastel, C., Colhoun, K., Freeman, R., Gaston, A.J., Gonzalez-Solis, J., Goutte, A., Gremillet, D., Guilford, T., Jensen, G.H., Krasnov, Y., Lorentsen, S.-H.R.A., Mallory, M.L., Newell, M., Olsen, B., Shaw, D., Steen, H., Strom, H., Systad, G.H., Thorarinsson, T.L., Anker-Nilssen, T., 2012. *Multicolony tracking reveals the winter distribution of a pelagic seabird on an ocean basin scale*. Diversity and Distributions 18: 530-542.

<sup>154</sup> Bogdanova, M.I., Daunt, F., Newell, M., Phillips, R.A., Harris, M.P. & Wanless, S., 2011. *Seasonal interactions in the blacklegged kittiwake, Rissa tridactyla: links between breeding performance and winter distribution*. Proceedings of the Royal Society B: Biological Sciences, 278, 2412–2418.

<sup>155</sup> Gonzalez-Solis, J., Croxall, J.P., Oro, D. & Ruiz, X., 2007. *Trans-equatorial migration and mixing in the wintering areas of a pelagic seabird*. Frontiers in Ecology and the Environment, 5, 297–301.

<sup>156</sup> Bonlokke, J., Madsen, J.J., Thorup, K., Pedersen, K.T., Bjerrum, M. & Rahbek, C., 2006. *Dansk trækfugleatlas (The Danish Bird Migration Atlas)*, Rhodos, Humlebak, Denmark.

<sup>157</sup> Bakken, V., Runde, O. & Tjorve, E., 2003. *Norsk ringmerkingsatlas (Norwegian Bird Ringing Atlas), Vol. 1*. Stavanger Museum, Stavanger, Norway.

<sup>158</sup> Thaxter, C. B., B. Lascelles, K. Sugar, A. S. C. P. Cook, S. Roos, M. Bolton, R. H. W. Langston, and N. H. K. Burton. 2012. *Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas*. Biological Conservation 156: 53–61.

<sup>159</sup> Future of the Atlantic Marine Environment (FAME), a collaborative project involving the RSPB, <http://www.rspb.org.uk/ourwork/projects/details/255106-future-of-the-atlantic-marine-environment-fame->, [www.fameproject.eu/en/](http://www.fameproject.eu/en/).

kittiwakes can also forage on intertidal crustaceans and molluscs. They are regarded as mainly surface feeders, but can also plunge-dive to approximately 1 m<sup>160</sup>.

High densities can be present in areas of high productivity, such as cold water upwellings, fronts between water masses and sandbanks (e.g. Flamborough Front). Foraging birds are often associated with flocks of common guillemot and razorbill, which when pursuing prey underwater can drive fish to the surface where kittiwakes can access them.

Tracks from GPS data loggers deployed, by the RSPB, on kittiwake at the SPA in 2010-2014, illustrate foraging trips across the Hornsea Zone, including the proposal area for Hornsea Project Two (Annex IV, Figure 4). There was considerable overlap in areas used in different years by kittiwakes from the SPA. Birds tracked from Filey (within the pSPA), in 2014, covered a larger area of sea than was recorded for the kittiwakes from the SPA in 2010-2012. It is not known whether this difference persists in other years. These tracking data cannot be used to prove a negative, i.e. that birds do not use certain locations, but they provide an indication of areas they definitely do use. The sinuous sections of tracks from the GPS data collected indicate foraging behaviour being conducted on these longer journeys.

The available evidence supports the precautionary allocation of all adult kittiwakes recorded in Hornsea Project Two area during the breeding season to the SPA/ pSPA. But the Applicant's HRA Report considers allocating just 19.34% of the SPA/pSPA population (HRA Report, Part 1, para 5.8.178, page 129).

### 3. Guillemot

#### ***Population and distribution***

The Common Guillemot has a circumpolar distribution, occurring in the low-arctic and boreal waters of the north Atlantic and north Pacific<sup>126</sup>. It is a widespread but patchily distributed breeder in coastal areas of western and northern Europe, which accounts for less than half of its global breeding range. Nesting is confined to areas safe from mammalian predators such as sheer cliffs and offshore islands. Its European breeding population is very large, with estimates between 2 million and 2.7 million pairs<sup>127</sup>.

The breeding population of common guillemots in Great Britain is estimated to be 1,322,354 individuals<sup>128</sup>, representing about 31% of the North Atlantic population<sup>129</sup>. Breeding colonies are distributed widely around the coast of Britain, with the exception of the southeast from Sussex to Lincolnshire.

#### ***Breeding on the Flamborough and Filey Coast***

Between 2008 and 2011 the Flamborough and Filey Coast pSPA supported an average of 62,100 common guillemots (counted as "individuals on land") representing around 41,607 pairs (correction factor 0.67<sup>161</sup>) equating to 83,214 breeding adults. This constitutes 15.6% of biogeographic population of the southern subspecies *Uria aalge albionis*<sup>151</sup>. Nesting birds are distributed throughout the pSPA with the exception of the coastal cliffs south of Flamborough Head.

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<sup>160</sup> Hatch, S.A., Robertson, G.J. & Baird, P.H., 2009. *Black-legged Kittiwake (Rissa tridactyla)*. *The Birds of North America Online*. Cornell Lab of Ornithology, Ithaca, NY. Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/092doi:10.2173/bna.92>. Accessed 17 February 2014.

<sup>161</sup> Harris, M.P., 1989. *Variation in the correction factor used for converting counts of individual guillemots into breeding pairs*. *Ibis*, Vol.131, 85-93.

### **Migration and non-breeding season**

Guillemots undergo post-breeding dispersal with chicks and so is not a truly migratory species, with many adults remaining in the seas surrounding their breeding colonies through the year<sup>135</sup>. As a result, outside the breeding season, Guillemots occur widely in the seas off northwest Europe. Small numbers of guillemots from Scandinavian and Faeroese colonies also reach northern Britain and the North Sea, reflecting a general southward movement of most northerly breeding birds<sup>162</sup>.

### **Foraging**

Common guillemot feeds on a variety of small marine fish, especially sandeels and sprats (ES Vol 2, Ch 5, 5.6.165) using pursuit diving, primarily during the day. It has been recorded diving to maximum depths of 170 to 230m. During the breeding season, surveys recorded the highest densities of birds in the 51 to 100 m depth zone, although birds were still abundant in water less than 50 m and 101 - 200 m deep<sup>163</sup>. The maximum reported foraging range for guillemot during the breeding period is 135 km (ES Vol 2, Ch 5, 5.5.155), with a mean of 37.8km<sup>164</sup>; however, FAME data indicate that guillemots can regularly forage further than this although further analysis of these data is required (RSPB, unpublished data)<sup>159</sup>.

## **4. Razorbill**

### **Population and distribution**

Razorbills and common guillemots frequently nest together, and therefore share very similar breeding distributions. Nesting is confined to sheer cliffs and offshore islands on northern Atlantic coasts, in eastern North America as far south as Maine (USA), and in western Europe from northwestern Russia to northern France<sup>126</sup>, with the latter accounting for >75% of its global range<sup>127</sup>. Estimates of the European breeding population range widely, between 430,000 pairs and 770,000 pairs<sup>127</sup>. The breeding population of razorbills in Great Britain is estimated to be 164,492 individuals<sup>128</sup>, representing about 21% of the NW Europe population<sup>129</sup>.

### **Breeding on the Flamborough and Filey Coast**

During 2008 and 2011 the Flamborough and Filey Coast pSPA supported an average of 15,776 razorbills (counted as "individuals on land") representing around 10,570 pairs (correction factor 0.67<sup>161</sup>) equating to 21,140 breeding adults. This constitutes 2.3% of the biogeographic population of the subspecies *Alca torda islandica*<sup>151</sup>. Numbers have increased greatly since 1969 when 1,724 individuals were present at Flamborough Head.

### **Migration and non-breeding season**

After the breeding season and post-breeding moult, Razorbills disperse away from breeding colonies with their chicks. In western Atlantic populations, there is an apparent tendency to move south and west towards warmer waters, but the relevance of this trend on North Sea populations is unclear. There are no clearly defined migration routes for razorbill and movements may vary with annual weather conditions and food supplies. Birds from Faeroese colonies have been recorded moving into the North Sea, where the highest densities occur off North West Scotland.

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<sup>162</sup> Stone, C.J., Webb, A., Barton, C., Ratcliffe, N., Reed, T.C., Tasker, M.L., Camphuysen, C.J. & Pienkowski, M.W., 1995. *An atlas of seabird distribution in north-west European waters*. Joint Nature Conservation Committee, Peterborough, UK.

<sup>163</sup> Wanless, S., Harris, M.P. and Morris, J.A., 1990. *A comparison of feeding areas used by individual common murre (Uria aalge) razorbills (Alca torda) and an Atlantic puffin (Fratercula arctica) during the breeding season*. Colonial Waterbirds 13: 16-24.

<sup>164</sup> Thaxter, C. B., B. Lascelles, K. Sugar, A. S. C. P. Cook, S. Roos, M. Bolton, R. H. W. Langston, and N. H. K. Burton. 2012. *Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas*. Biological Conservation 156: 53-61.

### ***Foraging***

Razorbills forage in marine, coastal and continental-shelf waters, where sea-surface temperatures are less than 15°C. In the North Sea, Razorbills feed in shallow waters on dense schools of fish concentrated at a hydrographic front between thermally mixed coastal waters and thermally stratified offshore waters. Razorbills appear particularly selective in choice of feeding habitat compared to other Auks. The maximum reported foraging range for razorbill during the breeding period is 95 km (ES Vol 2, Ch 5, 5.5.163), and the mean foraging range 23.7 km<sup>164</sup>. However, as with guillemot, recent tracking studies of razorbills from several breeding colonies, using GPS data loggers as part of the FAME programme<sup>159</sup>, have found that razorbills regularly travel considerably greater distances than previously documented. This research provides further support for FHBC as the most likely origin of razorbills observed at Hornsea Project Two during the breeding season.

Razorbills catch their prey, mainly sandeels, mostly by surface-diving; a bird dips its head into the water sometimes several times, while swimming around, apparently to spot prey before diving. Razorbills will also land in fish shoals and dive immediately. Razorbills rarely form dense flocks and forage in a more dispersed pattern than some other auks such as Common Guillemots. Like many species of seabirds, Razorbills also participate in small, short-lived, multi-species foraging assemblages. Typically, small social feeding flocks of auks (mainly guillemots or razorbills) drive a dense ball of fish towards the surface in a concerted effort and exploit this resource from below.

## Annex IV

**Figure 1:** Highlighted flight end points providing a conservative sample of foraging destinations of adult gannets from Bempton Cliffs during chick-rearing in, from left, 2010, 2011, 2012. Different colours signify different individual birds (Langston *et al.* 2013).

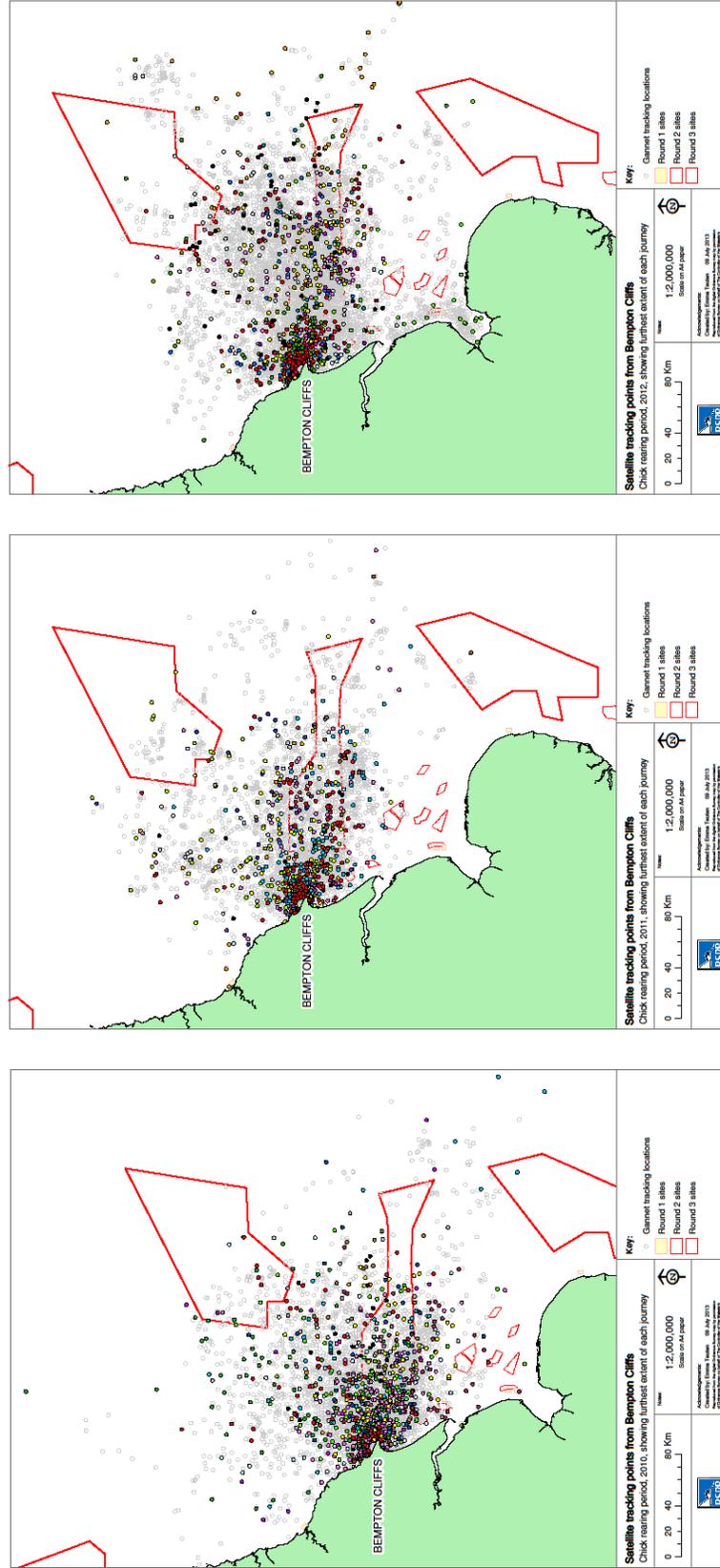
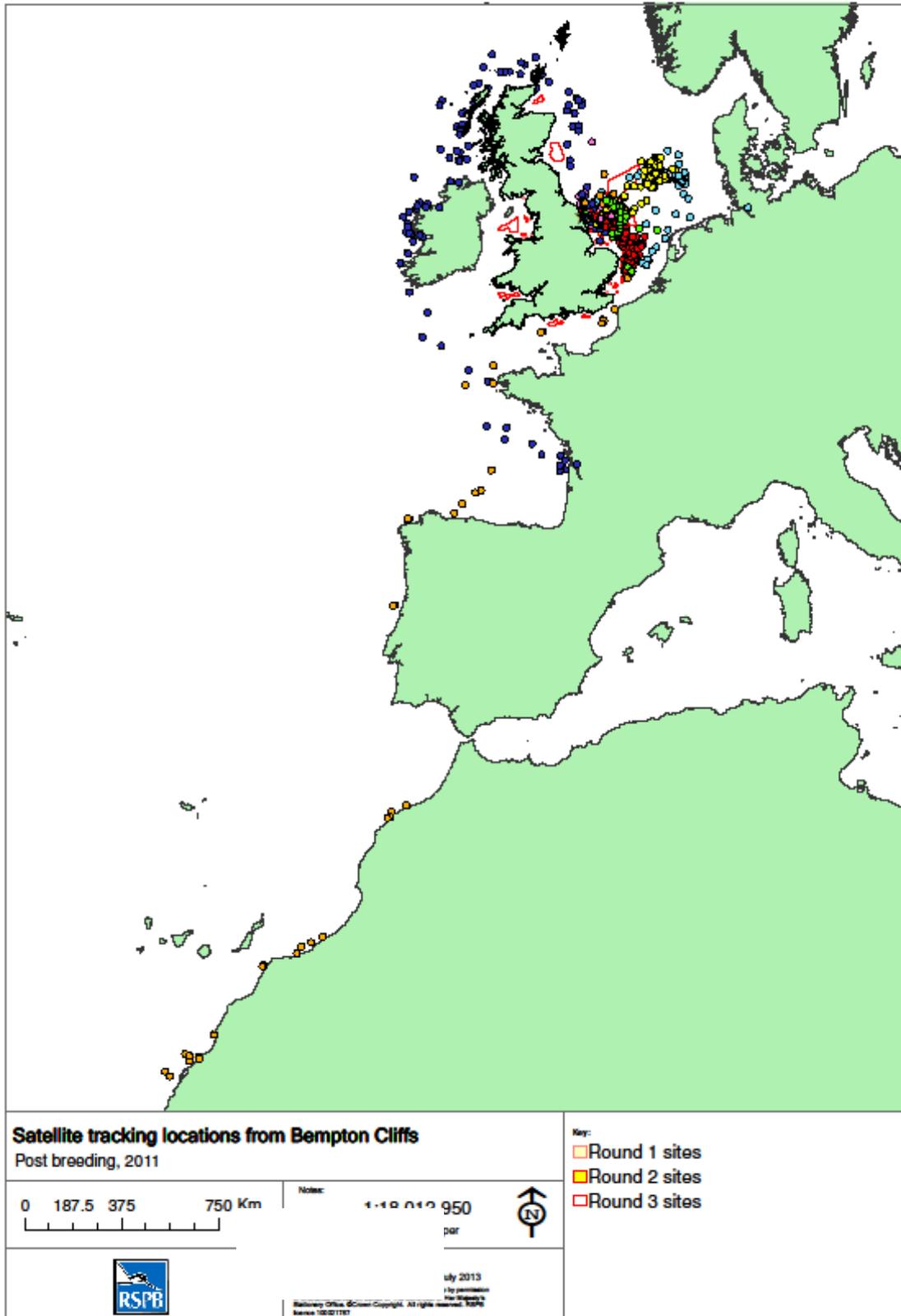




Figure 3: Post-breeding locations in 2011 of seven individually tagged gannets from FHBC



# Foraging Tracks - Kittiwake

## East Yorkshire - 2010 - 2014

● location of breeding site of tracked birds

- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2010 tracking data
- 2011 tracking data
- 2012 tracking data
- 2013 tracking data
- 2014 tracking data

### Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Filey (n=36 birds, 2013-14) & Flamborough Head (n=108 birds, 2010-14)

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

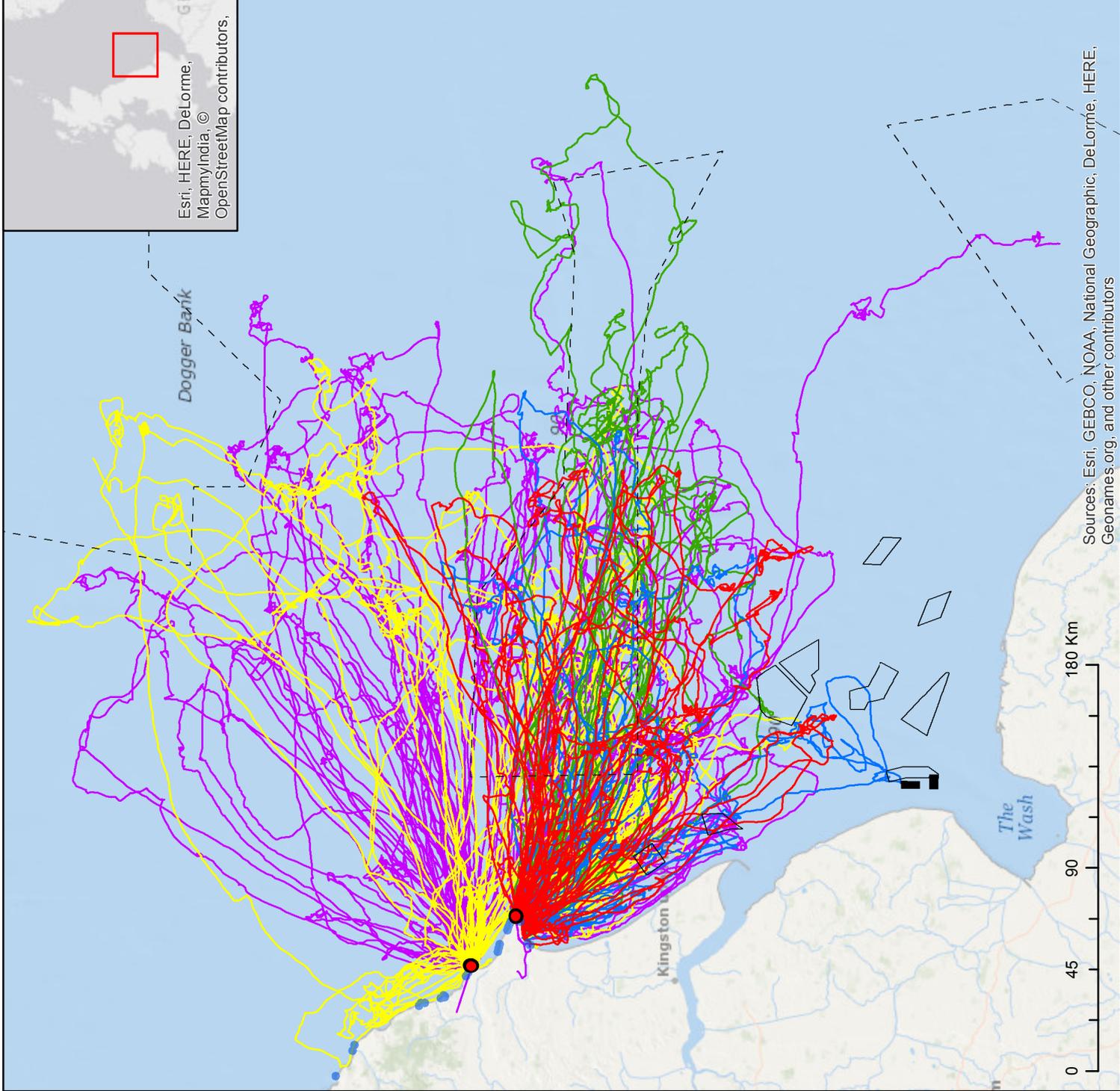
These maps represent some of the best information currently available on the marine areas used by seabirds during the breeding season, and the connectivity between marine area usage and the location of breeding colonies. However, it is important to emphasise the limitations of the information represented here. Tracking tags were typically deployed for a few days on each bird, and the duration of the tracking period was generally just 3-4 weeks, and so the map illustrates the movement of a small number of birds, for short periods of time. The limits of the area accessed are therefore likely to under-estimate the extent of the area used by the colony as a whole during the course of the entire breeding season. The extent of this under-estimation is unknown. Furthermore, the data were collected from a limited number of years and do not indicate how widely foraging areas might differ over longer time scales. Note that the map does not indicate the area where birds foraged. The locations of further colonies are illustrated with coloured symbols. Birds from these colonies may use entirely different areas for foraging.

Dr Ellie Owen and Mark Bolton March 2015

### Acknowledgements:

Field workers: David Aitken, Guy Anderson, Mark Bolton, Liz Mackley, Alice Macmillan & Ellie Owen

Map created by: Tessa Cole, 14/07/2015



Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

# Foraging Tracks - Kittiwake

East Yorkshire - 2010

- location of breeding site of tracked birds
- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2010 tracking data

## Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Flamborough Head (n=25 birds) during 2010.

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

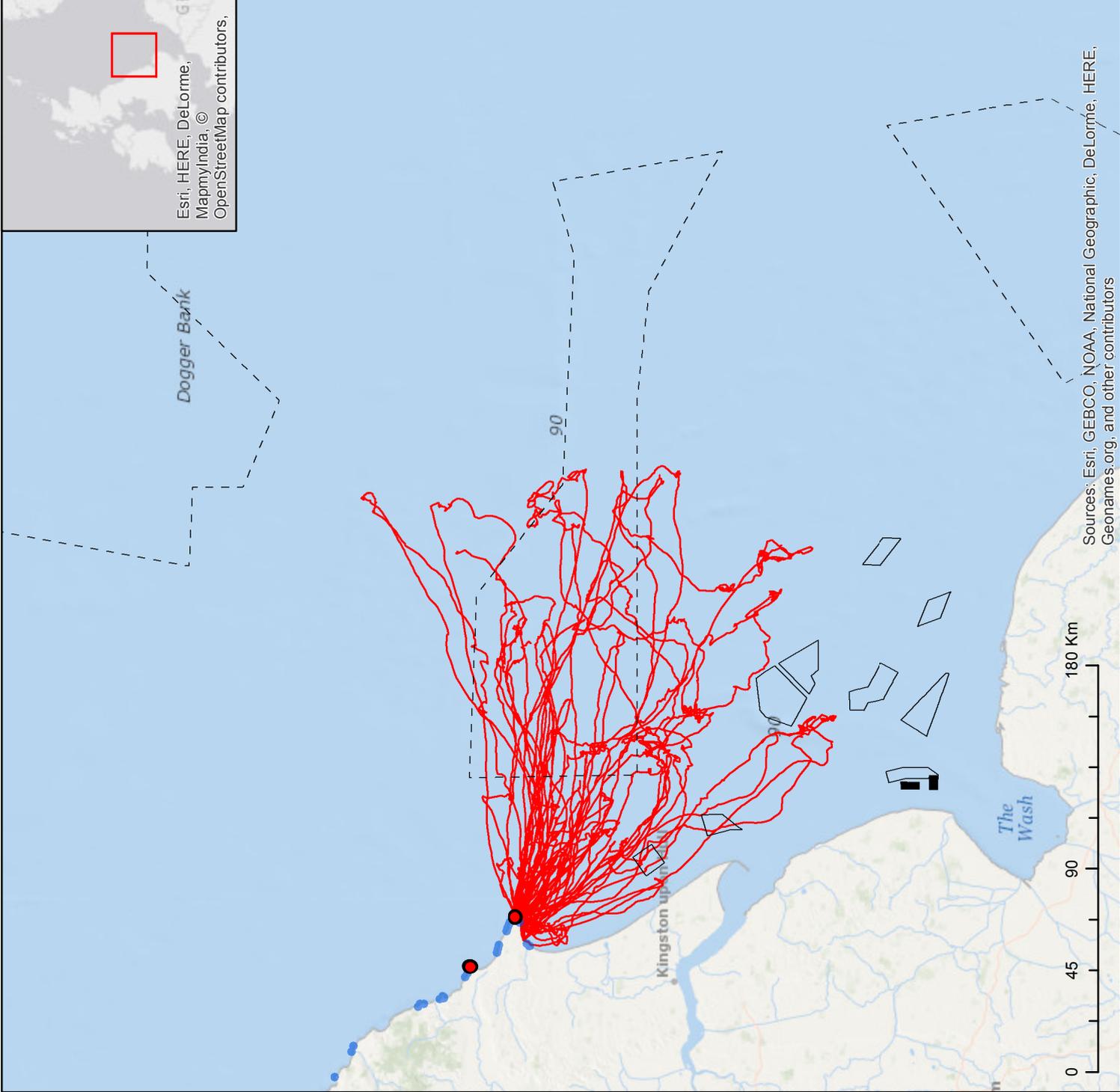
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Drs Ellie Owen and Mark Bolton March 2015

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Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

# Foraging Tracks - Kittiwake

East Yorkshire - 2011

- location of breeding site of tracked birds
- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2011 tracking data

### Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Flamborough Head (n=17 birds) during 2011.

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

These maps represent some of the best information currently available on the marine areas used by seabirds during the breeding season, and the connectivity between marine area usage and the location of breeding colonies. However, it is important to emphasise the limitations of the information represented here. Tracking tags were typically deployed for a few days on each bird, and the duration of the tracking period was generally just 3-4 weeks, and so the map illustrates the movement of a small number of birds, for short periods of time. The limits of the area accessed are therefore likely to under-estimate the extent of the area used by the colony as a whole during the course of the entire breeding season. The extent of this under-estimation is unknown. Furthermore, the data were collected from a limited number of years and do not indicate how widely foraging areas might differ over longer time scales. Note that the map does not indicate the area where birds foraged. The locations of further colonies are illustrated with coloured symbols. Birds from these colonies may use entirely different areas for foraging.

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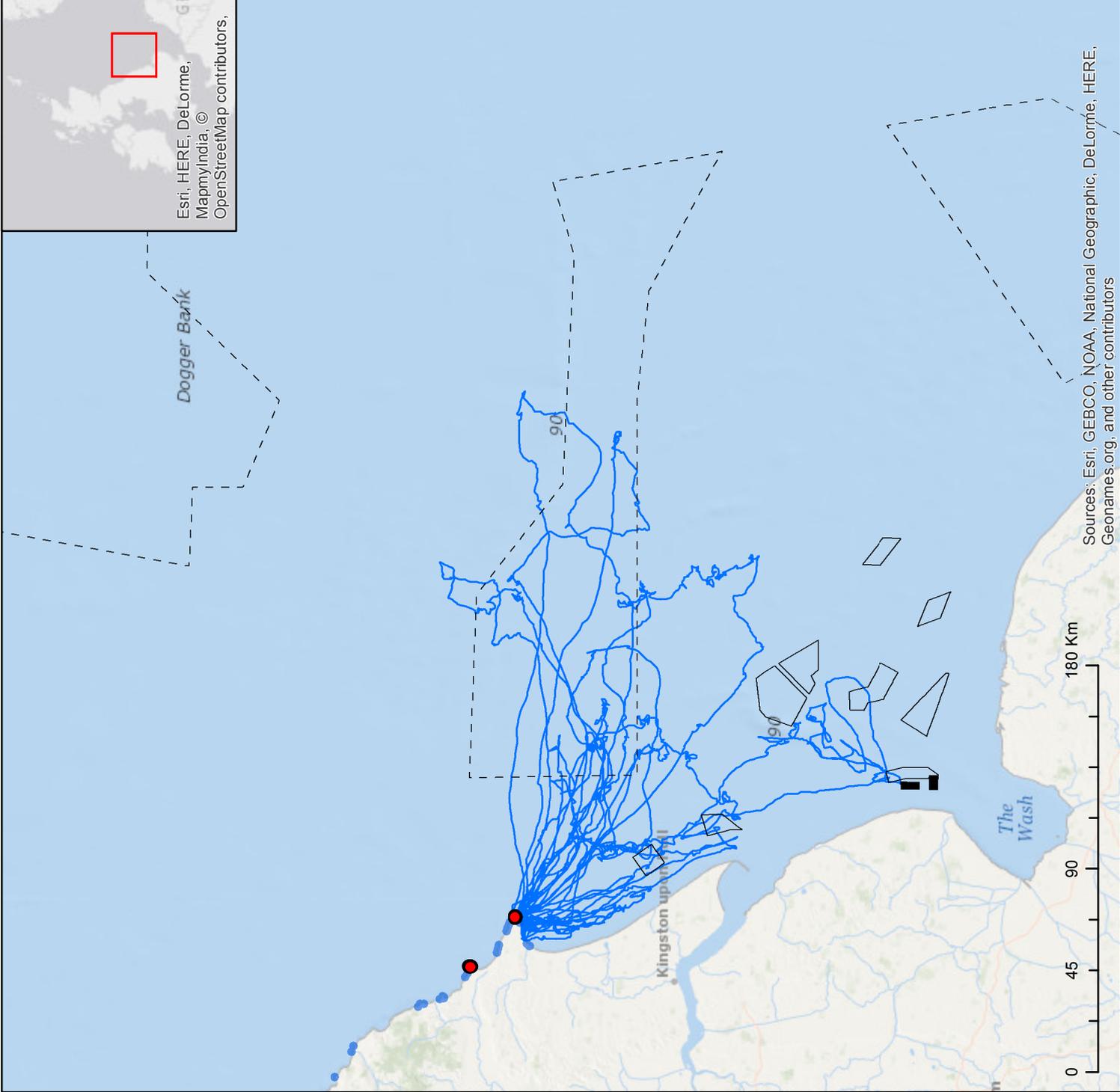
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# Foraging Tracks - Kittiwake

East Yorkshire - 2012

- location of breeding site of tracked birds
- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2012 tracking data

## Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Flamborough Head (n=9 birds) during 2012.

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

These maps represent some of the best information currently available on the marine areas used by seabirds during the breeding season, and the connectivity between marine area usage and the location of breeding colonies. However, it is important to emphasise the limitations of the information represented here. Tracking tags were typically deployed for a few days on each bird, and the duration of the tracking period was generally just 3-4 weeks, and so the map illustrates the movement of a small number of birds, for short periods of time. The limits of the area accessed are therefore likely to under-estimate the extent of the area used by the colony as a whole during the course of the entire breeding season. The extent of this under-estimation is unknown. Furthermore, the data were collected from a limited number of years and do not indicate how widely foraging areas might differ over longer time scales. Note that the map does not indicate the area where birds foraged. The locations of further colonies are illustrated with coloured symbols. Birds from these colonies may use entirely different areas for foraging.

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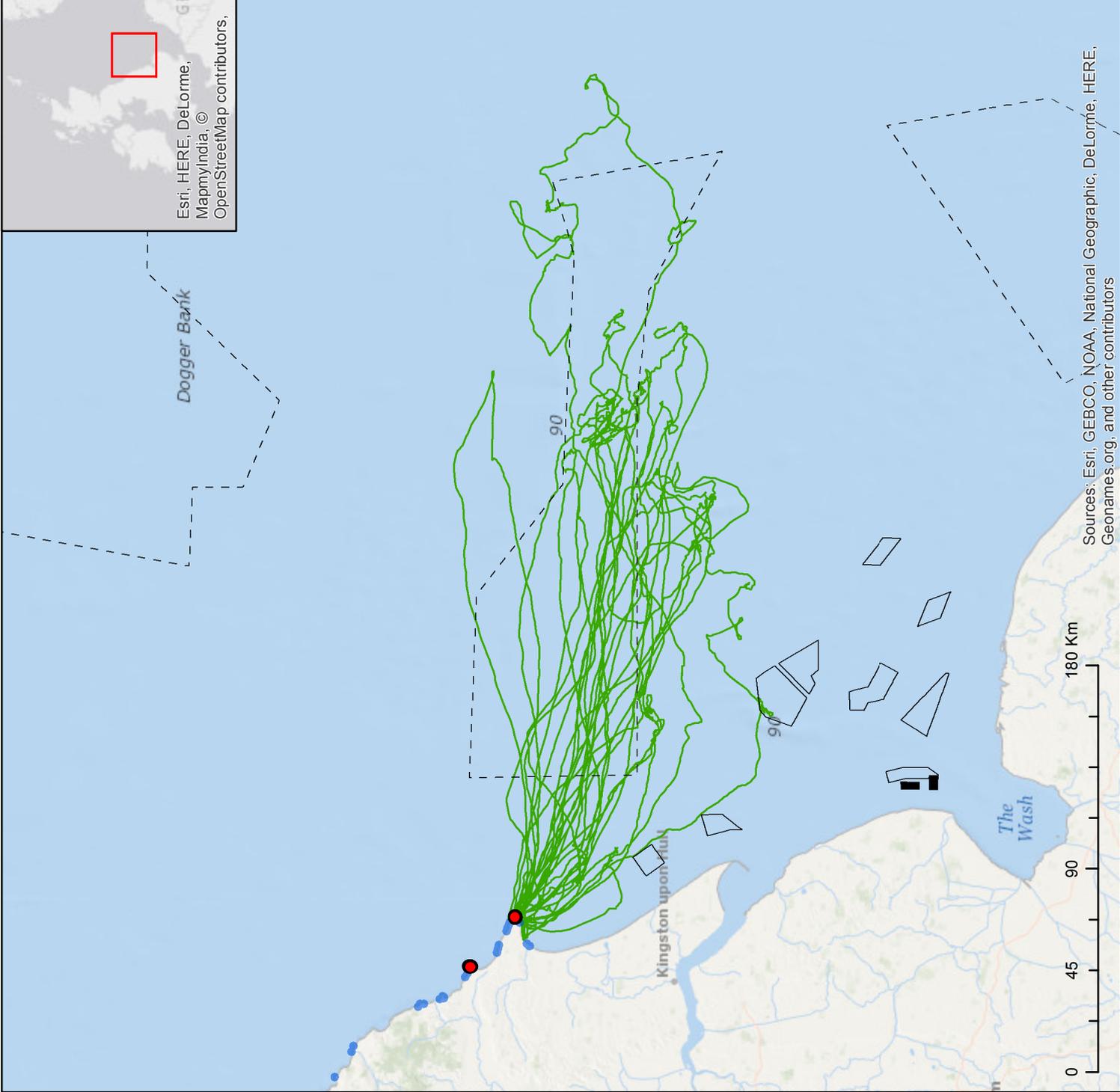
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# Foraging Tracks - Kittiwake

East Yorkshire - 2013

- location of breeding site of tracked birds
- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2013 tracking data

### Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Filey (n=20 birds) and Flamborough Head (n=21 birds) during 2013.

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

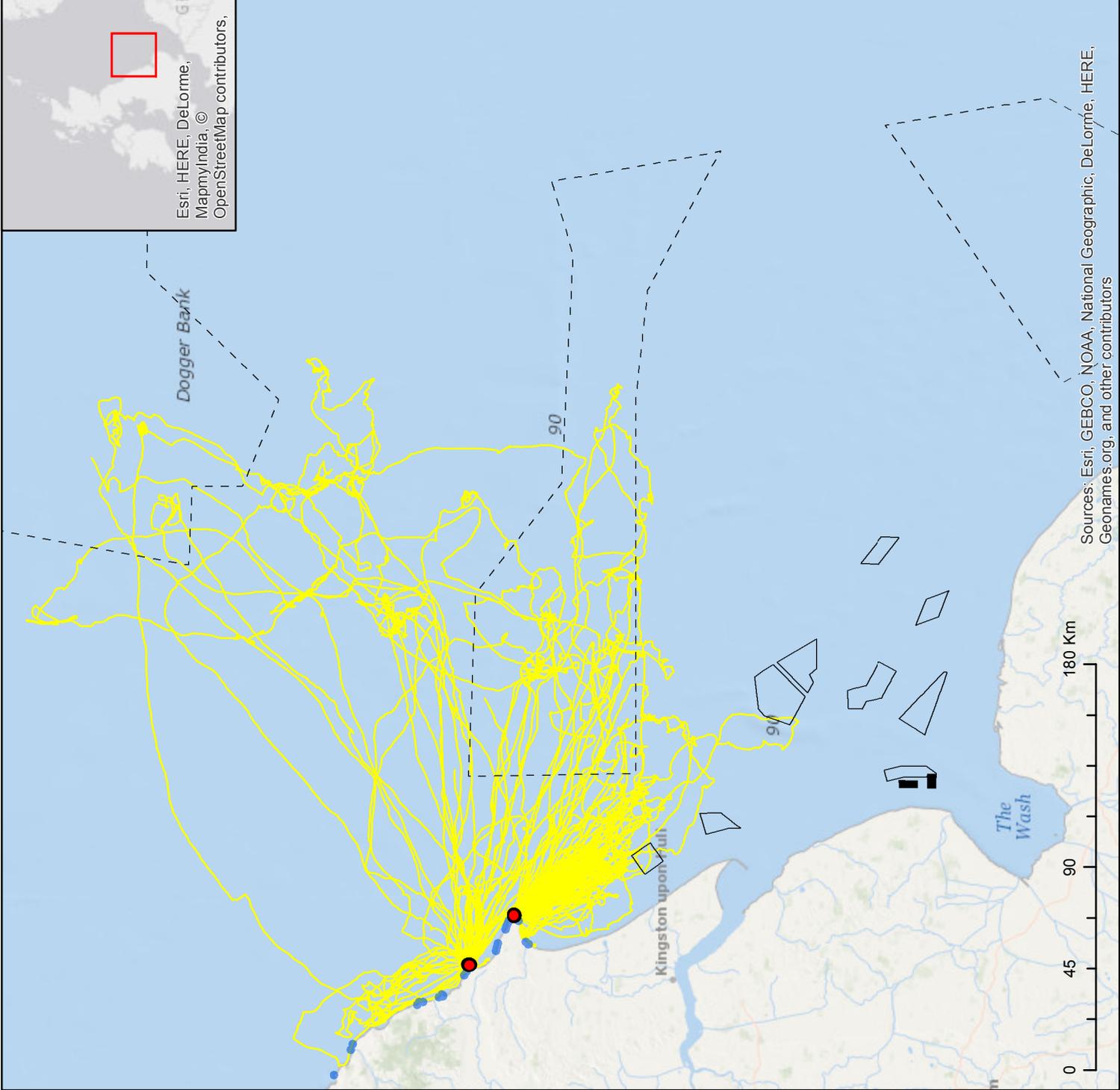
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# Foraging Tracks - Kittiwake

East Yorkshire - 2014

- location of breeding site of tracked birds
- Kittiwake colonies
- Round 1 windfarms
- Round 2 windfarms
- Round 3 windfarms
- 2014 tracking data

## Notes:

High resolution GPS tags were deployed on kittiwakes breeding at Filey (n=16 birds) and Flamborough Head (n=17 birds) during 2014.

The map shows all the trips recorded from all birds tracked in that year. Some individual birds make more than one trip away from the nest during the time that they are tracked.

These maps represent some of the best information currently available on the marine areas used by seabirds during the breeding season, and the connectivity between marine area usage and the location of breeding colonies. However, it is important to emphasise the limitations of the information represented here. Tracking tags were typically deployed for a few days on each bird, and the duration of the tracking period was generally just 3-4 weeks, and so the map illustrates the movement of a small number of birds, for short periods of time. The limits of the area accessed are therefore likely to under-estimate the extent of the area used by the colony as a whole during the course of the entire breeding season. The extent of this under-estimation is unknown. Furthermore, the data were collected from a limited number of years and do not indicate how widely foraging areas might differ over longer time scales. Note that the map does not indicate the area where birds foraged. The locations of further colonies are illustrated with coloured symbols. Birds from these colonies may use entirely different areas for foraging.

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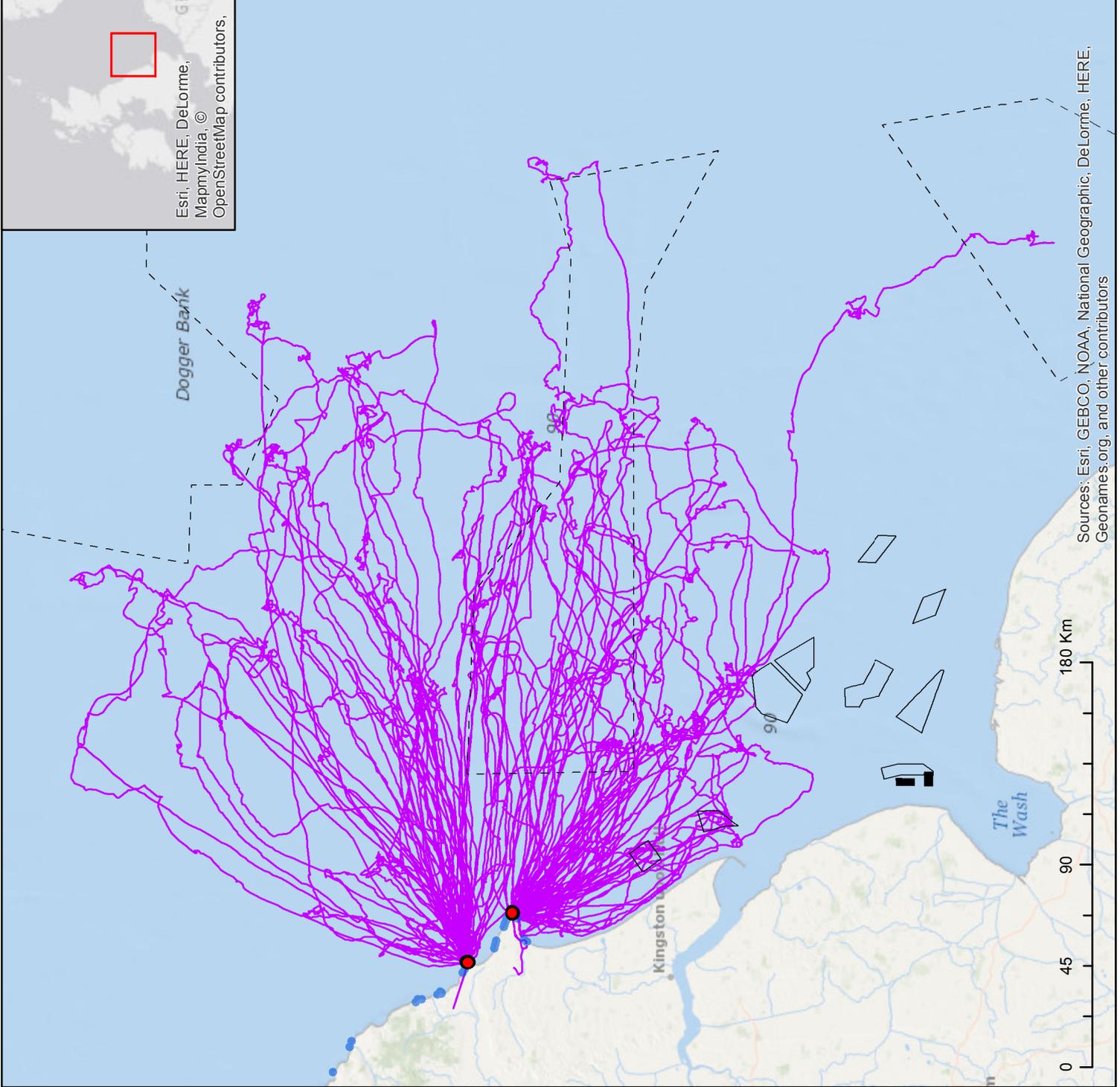
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## **Annex V**

### **From the RSPB's Hornsea Project One Written Representations - A critique of the methods used to assess the effect of additional mortality on bird population size in the Hornsea Two Habitats Regulation Assessment (HRA) Report and associated documents**

#### **Scope of this critique**

This annex evaluates the methods used in the HRA (PINS Document 12.6) and associated documents to assess the effects of additional mortality caused by collisions and displacement. It does not address the accuracy of the estimates made in the HRA of the numbers or proportions of birds expected to be killed as a result of the proposed development. That is an important issue which is dealt with elsewhere in these Written Representations.

It is generally accepted that an informative assessment of the impact of an intervention, such as a built development, harvesting or pollution, upon an animal population should involve the evaluation of a counterfactual: a comparison of the expected outcome for the population of interest with and without the intervention. The two principal methods available for this are (1) simulation modelling of population processes and population size (often known as Population Viability Analysis (PVA)) and (2) comparison of additional numbers killed because of the intervention with the Potential Biological Removal (PBR). This critique will assess the applicability of these methods to the HRA Report, pitfalls involved in their interpretation and the way in which the calculations are performed.

#### **Population Viability Analysis**

##### ***Principles of PVA***

##### *Simulation models of populations*

PVA includes a wide variety of population modelling and estimation methods. In the context of the HRA Report, the relevant methods require simulating the size and age structure of an animal population at annual intervals by means of a demographic model.

The demographic model requires initial numbers of animals in a starting year in each of several age classes, estimates of the probability that an individual of a given age will survive and remain within the population from one year to the next, and estimates of age-specific fecundity (the average number of young produced per individual of a given age). Age-specific fecundity is the product of two components: (1) the probability that an individual of a given age will attempt to breed, and (2) given that breeding is attempted, the mean number of young surviving to independence per breeding individual. The survival and fecundity rates are referred to as demographic rates. Demographic rates may vary among individuals of a given age class or show trends or fluctuations from year to year. These changes in demographic rates over time may be influenced by external variables, such as weather, or by the size of the population.

The influence of population size on demographic rates is referred to as density dependence. Density dependence may be negative if the effect tends to make the rate of population growth more negative than it would otherwise be when population size is large. Examples of mechanisms of negative density dependence are competition for limited resources, such as food, shelter or nest sites, and increased death rates when predation or disease is more prevalent at high than low population size. Density dependence can also be positive, for example animals may be less able to find mates when population size is low or the rate of predation may be increased at low population size because there are more predators per prey animal or because the prey animals are more vulnerable because they are less likely to be able to form large aggregations to deter or swamp predators. These effects tend to make population growth rate more positive at high than at low population size.

A useful analogy is with the calculations involved in making projections of the future size of a bank balance (representing the population size) based upon estimates of income (representing additions to the population through reproduction) and expenditure (representing death). Tax allowances whereby no taxes are levied when the balance is small, but they are levied when a threshold is exceeded, or instances where rates of tax on income increase progressively as the balance increases are analogous to negative density dependence.

*Comparison of the effects of interventions on population size and trend with and without density dependence*

It is easy to see intuitively that if demographic rates stay the same over time then the annual rate of change of the population as a proportional increase or decrease per year will settle down to a constant value after initial changes because of the age structure in the starting year. If the demographic rates are initially constant and such that the population is stable (no change in numbers from year to year) then additional deaths or an imposed reduction in prevailing per capita fecundity rates later on will cause the population to decline at a constant proportional rate until extinction occurs. Adopting the financial analogy, if books used to balance perfectly but annual expenditure is increased without any change in income, the balance will, perhaps quite soon, reduce to zero.

In practice, decline as far as extinction of a real animal population might not occur because of negative density dependence. As the population declines, competition for resources might become less fierce or disease less prevalent leading to increases in survival or age-specific fecundity. Fecundity could increase either because breeding animals are more successful or because those that would otherwise not find a vacant nest site or breeding territory are able to do so and can therefore join the breeding population at a younger age than would otherwise be the case. As population size decreases and demographic rates improve, the average rate of population growth might return to 1 (that is, no year on year change). The population size would then stabilise at a new, lower level. However, if the strength of density dependence (the slope of a graph relating a demographic rate to population size) is insufficient then the effect of density dependence might not be enough to prevent extinction. In that case, the rate of decline would be slow, but the population would still eventually go extinct.

*Relevance to the HRA*

The relevance of this hypothetical discussion to the HRA is that PVA population simulations have the potential to be used to estimate population size and population trend at some future time, given estimates of starting conditions, initial demographic rates and how they will change in relation to intervention, population size and other factors. This is exactly what is needed to evaluate the impact of an intervention on the conservation status of an animal population at a designated site because the counterfactual – what would happen with and without the intervention - can be estimated. The discussion above also reveals that an animal population that is initially stable will inevitably go extinct if an intervention reduces survival or fecundity, even by a small amount, unless there is sufficiently large a compensatory improvement in one or more demographic rates because of density dependence. For this reason, the strength of density dependence assumed in PVA models is a key determinant of whether the model projects extinction or reduction of population size to a new lower stable equilibrium size in response to an intervention. The stronger the density dependence, the less likely the population is to be driven to extinction by the intervention and, if the outcome is a new lower stable level, the smaller the reduction in that level relative to the initial population.

*Does PVA predict that additional mortality always reduces population size?*

Even though density dependence can permit a population to persist despite an intervention that has negative effects on demographic rates, the resulting population size will usually be lower, and potentially much lower, than the initial population size. It is not impossible that additional mortality could occur and the population size not decline. For example, imagine that a stable animal population exists in which there is no harvesting by hunting during the breeding season, but such harvesting occurs at the beginning of the non-breeding season. If density dependence of survival rates late in the non-breeding season is sufficiently strong then the additional losses caused by hunting might be completely compensated for by improved survival late in the non-breeding season - perhaps because of reduced competition for food. As a result, survival over the whole non-breeding season could be the same as it would have been if hunting had not occurred and the size of the breeding population therefore remains constant from year to year. This perfect or complete density dependence can occur, but the density dependence must be strong for it to do so.

***PVA population simulations in practice***

The foregoing sections established that projections from a well-conducted PVA population simulation could provide the type of quantitative information on future population size and trend required for an informative Appropriate Assessment of the effects of an intervention.

There might be difficulties in gathering all the information required to perform an accurate and realistic simulation. The method requires estimates of starting values of population size, age distribution and demographic rates. However, these may be available for the population involved from recent studies. Although less satisfactory, it is possible to use estimates of some model parameters from other studies of the same species done elsewhere.

The relationship between demographic rates in animal populations and population size can be difficult to measure accurately for a range of technical reasons. There are two principal methods available: (1) measure demographic rates on the same population over many years or for different populations over a shorter period and obtain mathematical functions relating demographic rates to population size or density per unit area using statistical methods; or (2) build a detailed simulation model of the process by which population size influences a demographic rate by detailed observations of individual animals. For the comparative demography approach (method 1) studies of long duration are required in which many things other than population size might change and obscure or spuriously enhance the effect of population size on demographic rates. Similarly, if multiple populations are compared, although the problem of poorly understood changes over time might be reduced, there may be unmeasured differences among study areas in factors which influence demographic rates. Method 2 is also demanding in terms of the amount of information needed to obtain reliable and generalisable results. Both methods have the potential drawback that the circumstances that apply in the future might be outside the range of those observed when building the models of density dependence. For example, future population size might decline below levels that have been observed in the field studies. This will make estimates of how demographic rates will respond to further changes in population size suspect. Despite these difficulties, accurate quantitative descriptions of the density dependence of demographic rates have been obtained for some animal populations, including seabirds.

Even though it may not be feasible to measure density dependence for a particular population of interest, it may still be informative to conduct PVA modelling. This can be done by making informed assumptions about density dependence. Ecological knowledge derived from other studies of the demographic rates of the same or similar species can be used to identify the demographic rates most likely to be density dependent, the strength of the density dependence and its form (that is, the shape of the function relating the rate to population size). It would be unwise to adopt a single

one of these surrogates in making population projections, but it is informative to use a range of scenarios based upon observations of surrogate populations to produce a set of projections under a range of assumptions about density dependence. This could be done using results from published studies of density dependence in the same or other species by adopting values for the strength of density dependence in the low, middle and high ends of range of variation seen in the published studies. This set of projections should include a scenario with no density dependence. This procedure cannot provide a definitive prediction of how the population will respond to the intervention, but it provides the worst case (no density dependence) and a series of other projections whose plausibility can be debated. As with any tool to assess future population levels of any bird species, PVA is not perfect. However it remains a useful method to assess how the population may change over time as a result of an intervention such as the proposed Project and it ought to be used to inform any decision on whether the Project should be allowed to proceed.

### ***PVA population simulations in the HRA***

PVA population simulation models were conducted for the HRA for the Flamborough and Filey Coast pSPA populations of gannet, kittiwake, guillemot, razorbill and puffin (Appendix G of HRA). These models used initial estimates of mean annual survival of a number of age classes. These survival rates were not derived wholly from the population of interest, but the values used were appropriate and the population model was run retrospectively to “tune” the values used to give a good fit to recent population changes. Age specific fecundity was derived by assuming a fixed age of first breeding obtained from another population and per capita production of young measured at the SPA for various time periods. Density independent and density dependent formulations were included in the models. The population models were run with and without additional mortality caused by the project and with various levels of additional mortality and fecundity. The models indicated a range of outcomes, depending upon the assumptions made.

While the inclusion of these models in the HRA is welcome, they have not been used to inform the assessment, rather to provide background context to PBR. PBR is consistently presented preferentially to PVA.

## **Potential Biological Removal**

### ***Principles of PBR***

#### ***The Demographic Invariants Method***

PBR is an application of the Demographic Invariants Method (DIM) to the detection of overharvesting of exploited animal populations and unsustainable additional mortality of other kinds. PBR identifies levels of additional death in a population which, if exceeded, would be almost certain to cause it to decline to extinction. It is important to understand the basic purpose of the PBR method. It attempts to identify the level of additional mortality that will lead to the extinction or substantial reduction of the population, but it does not explicitly estimate how population size will change over a period of time as a result of an intervention. This is explained further below. PBR can be valuable when applied to animal conservation because it can be performed using very few data. The required data are the minimum current population size, mean age at first breeding and mean annual adult survival. Values for all of these parameters should be those observed under optimal environmental conditions when population size is increasing at the maximum possible rate (Niel & Lebreton 2005). PBR calculations use mean age at first breeding and mean adult survival to calculate the maximum annual growth rate of the population  $\lambda_{max}$ . This is done by solving the equation

$$\lambda_{max} = \exp(1/(\alpha + (s/(\lambda_{max} - s))))$$

for  $\lambda_{max}$ , where  $\alpha$  is mean age at first breeding in years and  $s$  is mean annual adult survival (Niel & Lebreton 2005). The maximum annual growth rate of the population  $\lambda_{max}$  is a number that exceeds 1

because the population is, by definition, increasing under optimal conditions. The realised rate of population growth would be 1 if the population was stable. Populations usually do not achieve the maximum annual growth rate because they are usually not experiencing optimal conditions. Implicit in the use of PBR is that demographic rates are enhanced when population size is reduced by additional mortality. This reduction in population size allows the population growth rate to increase towards the maximum rate because of density dependence (see PVA section).

Intuitively it can be seen that  $\lambda_{\max} - 1$  provides an upper limit to maximum per capita rate at which young individuals could join the population and hence the largest per capita death rate, in excess of that which would normally apply, that a population could sustain without declining to extinction, or at best to a low level. For example, if the maximum annual growth rate of the population  $\lambda_{\max}$  was 1.2 (i.e. 20% increase in population per year) then it might be feasible for the population to incur a maximum additional mortality rate of  $\lambda_{\max} - 1 = 0.2$  (20% additional death rate per year).

Wade (1998) and Niel and Lebreton (2005) proposed that overharvesting or unsustainable additional mortality could be detected by comparing the number of animals killed by an additional source of mortality with the potential excess growth  $P$  where

$$P = N \beta (\lambda_{\max} - 1),$$

$N$  is the estimated population size and  $\beta$  is a factor required to account for the effect of density on population size (i.e. density dependence, as described in the preceding section on PVA) and several other reasons listed by Niel & Lebreton (2005; p. 832). If the actual level of additional mortality continues to exceed  $P$ , then the population is likely to decline to extinction. In practice, the maximum value of  $\beta$  considered acceptable is  $\beta = 0.5$  (Wade 1998; Niel & Lebreton 2005). In most cases where the DIM procedure has been applied to additional mortality caused by renewable energy projects, an alternative expression, based upon Dillingham & Fletcher (2008),

$$PBR = 0.5 N_{\min} f (\lambda_{\max} - 1)$$

in which PBR is equivalent to the potential excess growth,  $N_{\min}$  is a value of estimated population size lower than the most probable value and  $f$  is the recovery factor. Note that this expression is the same as that for  $P$ , except for the use of  $N_{\min}$  instead of  $N$  and the substitution of  $f = 2 \beta$ .  $N_{\min}$  is a lower confidence bound of the estimated population size, adopted for precautionary reasons when population size is not known precisely. Wade (1998) proposed the use of the lower bound of the 60% confidence interval.

#### *The appropriate use of PBR in practical applications*

The PBR method is intended to identify levels of additional mortality that are almost certainly not sustainable by the population of interest. It is important to understand what the term sustainable means in this context. The management goal set by the US Marine Mammal Protection Act, that underpins the original PBR calculations, is to prevent populations from 'depletion', in which a population is considered depleted if it falls below its maximum net productivity level (Wade 1998). Hence, a population incurring additional mortality caused by an intervention such as a wind energy project which is below the level defined by an appropriately calculated PBR could still decline substantially below the population size that would have occurred without the project. PBR calculations do not provide an estimate of how large the difference between the population with and without the intervention is expected to be. In practice, a level of additional mortality above that indicated by an appropriately calculated PBR suggests that the population is likely to decline to extinction, or at best to a low level, unless the mortality rate is reduced.

### ***The use of PBR calculations in the HRA***

PBR calculations have been carried out for gannet and kittiwake (collision and displacement), guillemot, razorbill and puffin (displacement), in relation to Hornsea Project Two in the HRA. It is concluded in the HRA that additional mortality expected to be caused by the project is less than the calculated PBR values and that the effect of the project on the populations of interest will therefore be acceptable.

### ***The use of PBR is incorrect in principle for two reasons***

#### *The first reason*

As described above, appropriately conducted PBR calculations provide a means to identify levels of additional mortality caused by an intervention that would almost certainly result in the decline of the population of interest to extinction or, at best to low levels. By contrast, the objectives of SPA protection of a site usually require the maintenance of populations of those species for which the site was designated close to the population levels at designation, or in some cases to restore populations.

In the case of the Flamborough Head & Bempton Cliffs SPA, the site conservation objective most pertinent to the qualifying bird species, in the context of Hornsea Project Two, is “by monitoring or restoring ... the populations of the qualifying features”. This is a very different objective to that implicit in the use of PBR, which is to reduce the risk of extinction or population reduction to a low level. The avoidance of extinction or population reduction to a low level are not sufficient as objectives for sites specially selected and designated to protect the populations they hold. Hence, the use of PBR as a test of the expected impact of the Project on the integrity of the SPA is inappropriate. An adequate test requires that the expected population size of species of interest is projected with and without the anticipated effects of the Project. PBR does not, and is not designed to, specify the expected difference between the size of the population of the species of interest with and without the project. This principle is not recognised in the HRA, where the effect of additional mortality less than the PBR level is frequently assessed as “sustainable” without definition or specification of what “sustainable” means. The intended implication in the HRA is that the PBR indicates a level of additional mortality that can be sustained without any appreciable reduction in the population of interest, but this is not the case. Hence, its use in this HRA is incorrect.

It is highly likely that additional mortality considerably lower than the PBR level would result in a reduction in the size of the population of interest compared with what it would have been without the mortality. Within certain limits, this reduction would take place so that population size in the presence of a fixed per capita level of additional mortality would reach a stable equilibrium size lower than that without the additional mortality. How much lower this new population level would be is determined by the level of the additional mortality and features of the density dependence of demographic rates. At higher levels of additional mortality, density dependent compensation is inadequate to allow population size to attain a lower equilibrium level and the population declines to extinction. The level of additional mortality at which this more severe outcome occurs is also determined by features of the density dependence of demographic rates. The relevant features of density dependence for both outcomes are the particular demographic rates and age classes upon which it operates and its strength and form. Such features are only well-known for the most intensively studied bird populations. They are certainly not adequately known for any of the populations under consideration in the HRA assessment. Population extinction is unlikely to occur with levels of mortality lower than those indicated by an appropriately conducted PBR, but a reduction in population size is highly likely and it is not possible to predict how large that reduction will be with the type of data usually available or available in this case.

*The second reason*

The application of the PBR method in this HRA is incorrect in principle because it fails to recognise an important asymmetry in the logic underlying PBR. The PBR approach is intended to identify levels of additional mortality that are almost certainly not sustainable by the population of interest because they exceed the levels the population could sustain, *even if conditions were such that it could otherwise increase at the maximum possible rate*. In the HRA, it is suggested PBR can be used to identify levels of additional mortality that are almost certainly sustainable by the population of interest. This is the exact opposite of what PBR is designed for and logically capable of doing. The reason for the asymmetry in logic is that it cannot be known, with the limited information available, whether or not the conditions affecting the population currently or in future are such that it would increase at the maximum possible rate, given that the additional mortality was absent. Neither is it possible using PBR to assess the degree to which conditions that apply currently or in future approach those that would allow the population to *increase at the maximum possible rate*. This last problem makes the use of low values of the recovery factor  $f$  as a safety measure unsatisfactory because they are based upon guesswork.

The HRA and other assessments that rely upon PBR to identify “sustainable” levels of additional mortality fail to recognise this asymmetry in the applicability of the PBR approach, even though it is clearly stated in the authoritative study of the Demographic Invariants Method by Niel and Lebreton (2005). Niel and Lebreton (2005; p. 833) write “Because DIM considers maximum rates, its use must be limited to the detection of overharvested populations. It could be applied to predict whether an additional source of mortality is unsustainable, but it cannot be used the other way around (i.e. to predict that it is sustainable).” Rarely have scientists delivered a cautionary message about their method as clearly as this. However, the need for caution has not been recognised in the approach adopted by the applicant.

**PBR is incorrectly implemented in the HRA**

***The PBR calculations do not include all sources of additional mortality***

The PBR approach evaluates whether the effects of all sources of additional mortality in combination exceed the levels the population could sustain, even if conditions were such that it could otherwise increase at the maximum possible rate. Although the HRA assesses the in-combination effects of additional mortality caused by renewable energy projects other than Hornsea Two, it does not properly evaluate whether there are other sources of additional mortality. The capacity of seabird populations to compensate for additional mortality caused by wind energy developments is likely to be compromised by other frequent sources of additional mortality, such as drowning in fishing gear, overexploitation of fish stocks and anthropogenic climate change affecting food supplies. In other applications of the PBR approach to the assessment of the impact of additional mortality, it has been emphasized that it is essential to have accurate estimates of all sources of additional mortality affecting the whole population under consideration if comparison of additional losses with PBR is to be valid (Zydalis et al. 2009). Whilst these additional losses may be difficult to measure precisely, without estimates the possibility remains that the increment in additional mortality caused by the Hornsea Two project might be sufficient to increase the total of all additional deaths so that it exceeds the PBR. Hence, even if the arguments presented above that the PBR approach is not appropriate for the purposes of the HRA are rejected, the approach is likely to overestimate the margin of safety between the expected levels of additional mortality and the levels estimated from PBR as preventing the populations from being “sustainable”. This further illustrates why it is inappropriate to rely upon the use of PBR in this case.

***The PBR calculations do not recognise the lack of adequate empirical support for the selection of the recovery factor***

PBR requires the use of a recovery factor  $f$  which is set based upon opinion rather than being determined by theoretical or empirical constraints. Whilst suggestions have been put forward for suitable recovery factors for populations of different status (Dillingham & Fletcher 2008), and a maximum default recovery rate of 0.5 has been recommended these values are simply matters of opinion and appropriate recovery factors are really unknown. A higher value of the recovery factor increases the PBR. High values of recovery factor are claimed to be justified based on the premise that the capacity for increased recruitment to offset any additional mortality incurred is likely to be greater in populations that are increasing in size than in those where numbers are stable or declining. According to Wade (1998), the recovery factor should not be higher than 0.1-0.2 if the aim is to maintain the population at 90-95% of the starting population size (i.e. a decline no greater than 5-10%), or in the case of a declining population, the recovery factor should be no higher than 0.1-0.3 if to avoid delaying the recovery time by more than 10-20%. The results from Wade's simulations are dependent on features of the assumptions about the form and strength of density dependence which are unknown for the seabirds under consideration in this case. It is necessary to understand that the PBR values are dependent upon a factor which is based simply upon opinion and simulation results that are sensitive to untested assumptions.

***PBR has not been adequately validated by empirical studies***

The PBR method has not been validated for birds or mammals. Proper validation would require that comparisons of reliably measured trends in population size with PBR calculations indicated that populations subject to additional mortality less than the PBR were not declining whereas those with additional mortality were declining. In practice, because any PBR calculation involves an uncertain choice of the recovery factor (see above) such an analysis would indicate which values of the recovery factor produce the most robust results. Such a validation test has not been done. When used for setting marine mammal bycatch or hunting bag limits, PBR is predicated on a feedback loop to modify "harvesting" rates iteratively, if necessary. This offers opportunities to validate the initial PBR calculation and, if it fails the test, to modify the recovery factor as part of adaptive management. This opportunity is not present for wind energy developments. Once wind turbines are erected, there will be limited scope for modifying take if it is found not to be sustainable.

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## Annex 6: Wind farms operational, under construction or consented and funded

<i>Scheme categories</i>	<b>Capacity (GW)</b>
<b>A – Operational</b>	
Barrow	0.090
Beatrice*	0.010
Blyth	0.004
Burbo Bank I	0.090
Greater Gabbard	0.504
Gunfleet Sands Demonstration	0.012
Gunfleet Sands 1	0.108
Gunfleet Sands 2	0.065
Gunfleet Sands 3*	0.065
Gwynt y Mor <sup>165</sup>	0.576
Humber Gateway <sup>166</sup>	0.219
Inner Dowsing	0.097
Kentish Flats	0.090
Lincs	0.270
London Array 1	0.630
Lynn	0.097
Methil Demonstration (Fife Energy Park)	0.007
North Hoyle	0.060
Ormonde	0.150
Rhyl Flats	0.090
Robin Rigg (East & West)	0.180
Scroby Sands	0.060
Sheringham Shoal	0.317
Teesside	0.062
Thanet	0.300
Walney 1	0.184
Walney 2	0.184
West of Duddon Sands	0.389
Westermost Rough <sup>167</sup>	0.210
<i>Subtotal</i>	<b>5.120</b>

<sup>165</sup> Officially opened in June 2015: <http://www.bbc.co.uk/news/uk-wales-33168638>; also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>

<sup>166</sup> <http://www.grimsbytelegraph.co.uk/power-hit-Humber-Gateway/story-26656844-detail/story.html> (9 June 2015)

<sup>167</sup> Officially inaugurated on 1 July 2015: <http://renews.biz/91063/westermost-rough-has-lift-off/>. Also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>.

<b>B – Under construction</b>	
Burbo Bank Extension	0.258
Dudgeon	0.402
Kentish Flats Extension	0.050
<i>Subtotal</i>	<i>0.710</i>
<b>C – Consented and funded</b>	
Beatrice <sup>168</sup>	0.664
Blyth Demonstration <sup>169</sup>	0.099
EA 1 <sup>170</sup>	0.714
Gallop <sup>171</sup>	0.340
Hornsea 1 (Heron wind + Njord) <sup>172</sup>	1.200
Neart na Gaoithe <sup>173,174</sup>	0.448
Race Bank <sup>175</sup>	0.580
Rampion (Southern Array) <sup>176</sup>	0.400
Walney Extension <sup>177</sup>	0.660
<i>Subtotal</i>	<i>5.105</i>
<b>Total</b>	<b>10.935</b>

Sources:

Unless stated otherwise, the source for the information above is *UK offshore wind – key facts 2015-16* (The Crown Estate, April 2015).

\* Listed in Table 5.10 Power Stations in the United Kingdom, *Digest of United Kingdom Energy Statistics 2014* (DECC, 2014)

<sup>168</sup> Hi Def Surveying won a contract from SSE Renewables to provide survey work in 2015 (<http://renews.biz/90182/hidef-woos-beatrice/>) (15 June 2015)

<sup>169</sup> EDF Energy Renewables was scheduled to carry out site investigation works in June 2015. (<http://www.newspostleader.co.uk/news/local/work-continues-on-350m-wind-farm-1-7313366/>) (17 June 2015)

<sup>170</sup> Iderdrola has selected Siemens to supply turbines for EA1: <http://renews.biz/89668/siemens-lands-east-anglia-giant/> (5 June 2015)

<sup>171</sup> RWE Innogy UK “is continuing to make significant progress with a revised business case and design for the scheme: <http://www.gallopwindfarm.com/> (June 2015)

<sup>172</sup> Hornsea 1 has awarded the contract to construct turbine blades to Siemens’ Green Port Hull scheme: <http://www.hulldailyemail.co.uk/Siemens-Hull-factory-wins-UK-s-biggest-wind-farm/story-26642010-detail/story.html> (5 June 2015)

<sup>173</sup> As mentioned above Neart na Gaoithe is one of the Scottish windfarms decisions that is currently subject to a Judicial Review by the RSPB.

<sup>174</sup> Neart na Gaoithe placed an order for Siemens’ new offshore transmission module (<http://www.rechargenews.com/wind/1396924/neart-na-gaoithe-offshore-wind-debut-for-siemens-otm>) (13 April 2015)

<sup>175</sup> Siemens have one the contract to supply turbines for this scheme: <http://www.power-technology.com/news/newssiemens-wins-turbine-supply-contract-for-race-bank-offshore-wind-project-in-uk-4616040#> (6 July 2015)

<sup>176</sup> Babcock International has won a contract to build an offshore substation for the Rampion scheme (<http://renews.biz/89907/babcock-scotland-win-at-rampion/>) (9 June 2015)

<sup>177</sup> Siemens have been chosen as preferred supplier for the Walney scheme: <http://www.4coffshore.com/windfarms/siemens-7mw-turbine-favored-for-walney-ext-nid1513.html> (12 March 2015)

**Appendix E - Hornsea Two – SMartWind - Appendix J – Response to the  
RSPB 's Written Representation**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**





# Hornsea Offshore Wind Farm

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Project Two

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## The Applicant's Response to RSPB's Written Representation

**Appendix J to the Response submitted for Deadline II**

**Application Reference: EN010053**

10 August 2015

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[smartwind.co.uk](http://smartwind.co.uk)

## **Appendix J - The Applicant's response to RSPB's Written Representation**

The Applicant notes that within RSPB's written representation they have raised a number of concerns. RSPB state their primary concern is the location of the windfarm in relation to the Flamborough and Filey Coast pSPA (formerly the Flamborough and Bempton Cliffs SPA). They have also stated they are concerned about the robustness of the assessment due to the following issues, and due to these deficiencies they cannot rule out adverse effects on the pSPA:

- Collision Risk modelling (the assessment to gannet, kittiwake, lesser black-backed gulls, including the use of the extended band model and the avoidance rates adopted);
- Disturbance and displacement (for guillemot, razorbill and puffin, including the extent of buffer zones adopted);
- PBR (the continued use of PBR as a means of assessing the overall impact of the project and the associated reliance on PVA analysis).

RSPB have also raised concerns about onshore impacts on the Humber Estuary SPA in relation to cable installation.

The Applicant has responded to each of the points raised by RSPB in turn.

### *1. Protected Sites and Species*

The Applicant notes that RSPB have presented the citations and conservation objectives for the Flamborough and Bempton Cliffs SPA and the revised citation and proposed conservation objectives for the Flamborough and Filey Coast pSPA. It is the Applicant's understanding that Natural England and JNCC consulted on the proposed extension to the Flamborough and Bempton Cliffs SPA in January 2014 and it is the Applicant's understanding that at present the conservation objectives for the site are not yet finalised.

### *2. Legalisation and Policy Background*

The Applicant does not propose to comment in depth on the various legislative and policy references within Section 3 of the RSPB's written representation. However, in relation to the commentary regarding alternative solutions to the Project raised in the RSPB written representation, the Applicant wishes to re-iterate its position that it does consider there to be any potential for the Project to have an adverse effect on the integrity of the Flamborough and Filey Coast pSPA (either alone, or cumulatively with other projects). Accordingly, the Applicant does not consider the question of alternative solutions to be a relevant one as this question would only emerge in the event that the Secretary of State does not accept the Applicant's primary position stated above.

The Applicant would make a very general point, however, that it considers the question of alternatives to be a false premise in the context of the Project.

The concept of alternatives must be seen and gauged against the purpose and nature of the individual project subject to the assessment. In the case of the Project, as noted in Section 8 of the Statement of Reasons, the Project is principally designed to deliver renewable energy generating capacity for the UK to address the need for such in accordance with the UK's legal obligations.

Regulation 3 of The Promotion of the Use of Energy from Renewable Sources Regulations 2011 (2011/243) places a duty on the Secretary of State to ensure that at least 15% of energy consumption in the UK is from renewable sources by 2020. Crucially, this key target is unconstrained. It is not a fixed percentage or a cap and, accordingly, the Applicant would submit that there can be no ruling out of projects meeting an unconstrained need on the basis of alternative solutions.

The central objective of the current UK Government energy policy is to ensure the security of energy supply whilst responding to the challenge of climate change by reducing carbon emissions. To meet these objectives, it is recognised that more energy infrastructure is needed with an increased emphasis on energy generation from renewable and low carbon sources. The need for this infrastructure is fully recognised in many areas of Government policy and the need to reduce carbon emissions is further enshrined in European law and international obligations, which has been transposed into a range of UK legislation. The Project will accord with these policies and help compliance with the relevant legislation and so will assist the Government in meeting its energy policy obligations.

### *3. Collision Risk Modelling*

The RSPB has raised four central issues with the Applicant's CRM work which comprise:

- Flight height data collection (and survey methodology);
- Use of the extended band model;
- Avoidance rates; and
- Uncertainty around collision risk outputs.

The Applicant has addressed each of these issues in turn in the subsequent paragraphs.

#### *Flight height data collection (and survey methodology)*

Within their written representation RSPB have queried the methodology used to derive density data for birds in flight. General Linear Modelling (GLM) was applied in order to provide upper and lower confidence limits for output densities for birds in flight. The output mean values are considered equivalent to those given in the established (more basic) technique for calculating densities. A comparison of this methodology vs the standard methodology has been undertaken and no significant differences in the outputs were found, it has been agreed with Natural England that the use of the GLM method is appropriate in calculating the density of birds in flight, see paragraph 7 of Table 4.1 in the SoCG with Natural England (Appendix ZZ of the Applicant's response to Deadline I). Therefore the Applicant does not consider there

to be any residual uncertainty regarding the methodology use to derive the density of birds in flight.

RSPB have stated within their response that they are in agreement with Natural England stating that there has been inadequate survey effort undertaken so it is impossible to make a complete assessment. The Applicant would like to highlight to the Ex. A that Natural England have not stated that there is insufficient survey effort to complete an assessment rather they have stated that there was poor survey coverage in December of both survey years and this could affect the assessment of certain species during the non-breeding season. The Applicant has worked with Natural England to address this issue by providing further clarification in Appendix K and L of the Applicant's submission at Deadline I. It has been agreed with Natural England that there is sufficient information to carry out an assessment, see updated SoCG with Natural England in Appendix R of the Response. Therefore the Applicant considers the survey data is suitable for assessment purposes and any uncertainty in the underlying data is considered within the assessment.

RSPB have also questioned the methodology used to determine birds at Potential Collision Height (PCH) during boat-based surveys and the flight heights of birds recorded across a range of tidal heights. Therefore it is considered appropriate to calculate PCH values assuming that all flight heights are relative to Mean Sea Level (MSL). This approach is standard across all offshore wind farm projects. To ensure that PCH values can be calculated in relation to turbine parameters, the tidal height at which bird flight height and turbine parameters are measured need to be consistent. As such in Table C2 of Annex 7.5.5.1 of the Ornithology ES Chapter (Doc Ref 7.2.5) turbine parameters are presented in relation to MSL. If the approach advocated by the RSPB were used, PCH values would be overestimated unless data for bird flight heights was corrected to ensure these data were relative to Highest Astronomical Tide (HAT). To assume that bird flight height data is collected relative to HAT would be overly precautionary and unrealistic as although HATs are the average highest tidal height, they do not occur annually and would certainly not occur at the frequency of the boat-based surveys undertaken at the Project site.

Site-specific PCH values are only used in Option 1 of Band (2012). This option does not incorporate the tidal offset feature included in the Band model, as suggested for use by the RSPB. The minimum and maximum height of rotors which would be affected by a tidal offset, are incorporated into the calculation of PCH values and therefore this feature is not required. When using the site-specific data the only Option to which the use of a tidal offset would apply is Option 4. The RSPB do not advocate the use of Option 4 and therefore it is unclear to the Applicant as to why the RSPB would recommend the use of this feature within Band (2012). Further to this, although a tidal offset can be used for the remaining Options of Band (2012), there is no difference between the collision risk estimates calculated when using a tidal offset or when the tidal offset is incorporated into turbine parameters. The Applicant therefore, does not consider there to be any uncertainty regarding the methodology used to calculate collision related mortality.

### Use of the extended band model

RSPB have stated that they do not believe that the extended Band model should be used for either gannet or kittiwake to predict collision risk and that only the basic model should be considered.

The Applicant believes the Extended Band model provides a more accurate representation of collision risk and has used what it deems to be the most appropriate versions of the model based on the species recorded at the Project site. The extended Band model uses modelled flight height distributions to account for the more accurate assumption that the collision risk varies across a turbine's rotor swept area. The outputs of option 3 and 4 of the Band model are therefore considered to be more biologically accurate and remove significant levels of over-precaution which are apparent in the basic Band model. In any case the Applicant has continued to present all four options of the Band model in both the assessment and any clarification notes that have been submitted during the examination process, including Option 2 which is Natural England's favoured output.

### Avoidance rates

The RSPB have commented on the application of avoidance rates within the extended model. The RSPB have commented on the Marine Scotland review of avoidance rates and, the Marine Scotland review was unable to calculate species-specific avoidance rates for gannet, kittiwake, lesser black-backed and great black-backed gulls using either the basic or extended model. Where possible the review made recommendations based on the species groups: "all gulls", "large gulls" and "small gulls".

In the basic model, recommendations for kittiwake were based on the small gulls group, for gannet, the all gulls group, and for lesser and great black-backed gulls the large gulls group.

In the extended model, recommendations were made for lesser and great black-backed gulls using the large gulls group.

The Applicant acknowledges the recommendations of the Marine Scotland report, however the Applicant would like to refer the Ex. A to the avoidance rate studies completed for Hornsea Project One which collated and reviewed available empirical data on bird collisions at offshore wind farms both in the UK and overseas to arrive at an estimate for a precautionary avoidance rate for use in the extended Band model. The studies conclude that a 98% avoidance rate (and in some cases 99%) would be precautionary when using the extended Band model, based on evidence of observed collisions.

The Applicant acknowledges the validation and uncertainty within these collision risk models, however, it is the Applicant's view that complete validation of a collision risk model is not feasible in the timeframes of consent. The Applicant has therefore presented outputs from both the basic and extended Band model using a variety of avoidance rates as recommended by Natural England.

### Uncertainty.

The RSPB have also commented on accounting for uncertainty and variability in the collision risk model. The Applicant has completed further collision risk modelling using the confidence limits around the density data and flight height data as recommended by Natural England, see Appendix J of the Applicants response to Deadline I. Natural England have agreed that the Applicant has provided updated collision risk outputs that provide confidence in the assessments presented in the ES and HRA, see paragraph 3.2.5 of the SoCG Appendix R of the Applicant's response to Deadline II.

### *Displacement*

RSPB have raised concerns regarding the population estimates derived from the survey data. As described in Appendix L of the Applicant's response the raw data presented within Appendix C of the Ornithology Technical Report (Doc Ref 7.2.5.2) included birds in all sea states and birds out of transect. The Applicant provided further clarification on this issue in Appendix L of their first response, the note presents full breakdown of the raw (i.e. unprocessed) ornithological baseline data collected through a two year programme of boat-based surveys for Hornsea Project Two

It has been agreed with Natural England that the baseline data provided by the Applicant in their first response is appropriate for the purposes of the offshore ornithology assessment, see SoCG with Natural England in Appendix R of the Applicant's response to Deadline II.

RSPB have stated that the displacement assessment should consider a range of displacement rates and that further justification is required for the mortality rates presented within the assessment. The Applicant completed the assessment of displacement effects as recommended by Natural England and JNCC in their interim displacement advice note (NE and JNCC, 2012) using a matrix based approach. It should also be noted that in Natural England's written representation they advise that a range of displacement rates should be used within the assessment, 30-70% and mortality rates of 1-10%, this approach has been followed by the Applicant in the Application.

The Applicant would also like to highlight to the Ex. A that direct mortality is not considered to be the key, or only, consequence of seabird displacement. Displacement is more likely to impact on productivity (for breeding seabirds). The effect of seabird displacement from an offshore wind farm can be considered most simply as a potential depletion in the food supply available to the birds due to the presence of the wind farm and as such assessing displacement using a mortality figure is seen as highly precautionary.

#### *4. Population Level Effects/Thresholds*

RSPB have commented on the use of PBR within the HRA assessment and reliance on this analysis in determining the likelihood of an adverse effect on integrity. The Applicant has continued to use PBR as this was the methodology originally recommended and advocated by Natural England. PBR has been used in previous

consent decisions (Gallopier, Triton Knoll, Burbo Bank Extension, Walney Extension, Hornsea Project 1 and Dogger Bank Creyke Beck) when determining potential for an adverse effect on integrity. The Secretary of State's (SoS) HRA report for Hornsea Project 1 drew on the PBR values presented by the Applicant when determining the potential for an adverse effect. However, following comments from both Natural England and RSPB the Applicant has used both PBR and PVA analysis in the drawing their conclusions and will also provide an updated PVA report using demographic rates recommended by Natural England to be submitted at Deadline IIA.

RSPB state within their written representation that a more robust metric output for the PVA would be using the Counterfactual of Population Size (CPS). It is the opinion of the Applicant that the CPS cannot be related back to the Conservation Objectives of a SPA. CPS is an estimate of the expected proportion of an unknown, model projected population size and as such we consider it to be fundamentally flawed for the current assessments. This measure is of academic interest, and it is relatively insensitive to model parameters. Hence, a prediction that a particular population may be 15% smaller with the wind farm than without provides no information about whether or not the population is actually likely to be larger or smaller than the current size. In the context of the SPA Conservation Objective 'to maintain or restore the qualifying populations' this measure alone therefore provides no means to determine the likelihood of adverse effects. Therefore, the Applicant does not consider that the counterfactual approach is useful in this context.

The model output favoured by the Applicant is the predicted change in the population growth rate between impacted and unimpacted simulations. This output has a critical advantage over the RSPB's CPS25 as it can be compared against a biologically derived, objective threshold value.

#### *5. In-combination considerations*

The Applicant notes that the RSPB have commented on the use of two tiers for projects within the in-combination assessment and the reduction in collision numbers applied to those projects that have announced reduced capacity since the time of consent. The Applicant will provide an update to the in-combination assessments at Deadline IIA, and the reductions applied to both Triton Knoll and Gallopier wind farms will be removed.

With regard to the tiering applied to the in-combination assessment, this remains unchanged and it has been agreed within Natural England that the use of two tier approach is not of material concern, see SoCG, Appendix R of the Applicant's response to Deadline II.

#### *6. Alternatives*

Please see Section 2 of this response where the Applicant has responded to RSPB's comments on alternatives.

#### *7. Onshore - Ecology and Nature Conservation*

RSPB have stated within their written representation that their principal concern is in relation to the installation period for the export cable across the intertidal area. The

Applicant would like to clarify that the proposed intertidal works may extend for up to 5 years (see paragraph 3.3.90 of Project description) rather than the 6 years stated by RSPB. The Applicant would also like to highlight that construction activities will not take place between 30<sup>th</sup> September and 1<sup>st</sup> April and therefore, will not be continuous.

RSPB have also raised concerns regarding the cumulative effects that might occur as a result of the Project and Hornsea Project One. During the examination of Hornsea Project One the Applicant drafted a DML condition in consultation with the RSPB and Natural England, the principal of which is to restrict construction working around certain high tide periods (see DMLs I and K (A2 and B2) – Condition 20(4)). Following the inclusion of this condition it was agreed there was no potential for an adverse effect on the integrity of the Humber Estuary SPA. In relation to this condition RSPB have also raised concerns about the tide measurement as taken at Grimsby docks, this condition was suggested by Natural England during the examination of Hornsea Project One and as previously stated agreed in consultation with RSPB.

RSPB have stated that the potential effects arising from Hornsea Project Three have not been assessed. The Applicant would like to highlight to the Ex. A that there is currently no publically available information from Hornsea Project Three and therefore this has not been included within the cumulative assessment.

RSPB have requested that detailed construction methods and timings are included within the deemed marine licences A2 and B2 or included within the Ecological Management Plan. The construction methods and timing will be included within the construction method statement and code of construction practice which will be agreed in consultation with Natural England and the MMO.

**Appendix F – Hornsea Two – Final submission on alternative solutions  
under the Habitats Regulations for the Royal Society for the Protection  
of Birds**

**The Royal Society for the Protection of Birds**

**1 April 2019**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development  
Consent for the**

**Hornsea Project Three Offshore Wind Farm**

**Planning Inspectorate Ref: EN010080  
Registration Identification Ref: 20010702**





**Final submission on alternative solutions under the Habitats Regulations  
for  
The Royal Society for the Protection of Birds**

**10 December 2015**

**Planning Act 2008 (as amended)**

**In the matter of:**

**Application by SMartWind for an Order granting Development Consent for the  
Hornsea Offshore Wind Farm – Project Two**

**Planning Inspectorate Ref: EN010053  
Registration Identification Ref: 10031166**



## Introduction

1. The RSPB considers that it is essential that renewable energy, like all other development, is delivered through the least environmentally damaging schemes. Where funding of renewable energy schemes is constrained the RSPB considers that it is particularly important to prioritise investment towards those schemes which will be the least damaging. This covers issues such as the potential impacts of generating energy from biomass through to the likely impacts on internationally important wildlife sites.
2. This document updates the information provided in section 9 of the RSPB's Written Representation, submitted for Deadline 1. A significant number of figures about renewable energy supply were provided, and this document revises them to reflect the most up-to-date information available before the close of the examination.
3. The document also considers the implications of a number of planning decisions and policy announcements that have been made:
  - The Dogger Bank Teesside A&B Offshore wind farm scheme (2.4 GW) was consented on 5 August 2015.
  - At the same time the developer, Forewind, announced that development of Dogger Bank Teesside C&D (2.4 GW) had been discontinued<sup>1</sup>.
  - The Navitus Bay offshore wind farm scheme (up to 0.970 GW) was refused on 11 September 2015. The rejection of this application has important implications for the understanding of how the Government is approaching the issue of alternative solutions, which we will return to below.
  - Updated DECC statistics on new supply to end of Q2 2015
4. In addition the Government have made a number of announcements about future funding of renewable energy schemes which have significantly shifted the context within which decisions on the funding of schemes will be made:
  - 22 July 2015: DECC announced a package of measures to “control the cost of renewable energy”, including biomass and solar photovoltaic subsidies under the Renewables Obligation (RO), and changes to Feed In Tariff accreditation<sup>2</sup>.
  - 27 August 2015: As part of the package announced above, DECC launched a *Consultation on a review of the Feed-in Tariffs scheme*<sup>3</sup>, for schemes below 5MW in size, proposing cuts of 76-87% for solar photovoltaic tariff payments. The Government announced that if it was not able to introduce new cost control measures “the only alternative would be to end generation tariffs for new applicants as soon as legislatively possible, which we expect to be January 2016” (para 4).
  - 18 November 2015: The Secretary of State outlined the priorities for the UK's energy and climate change policy for the coming Parliament including specific reference to offshore wind<sup>4</sup>. The Secretary of State then expanded upon this in a speech at the Institution of Civil

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<sup>1</sup> <http://www.forewind.co.uk/projects/dogger-bank-teesside-c-d.html>

<sup>2</sup> <https://www.gov.uk/government/news/controlling-the-cost-of-renewable-energy>.

<sup>3</sup> <https://econsultation.decc.gov.uk/office-for-renewable-energy-deployment-ored/fit-review-2015>

<sup>4</sup> Written Statement, Wednesday 18 November 2015, Hansard,

Engineers (also on 18 November): the RSPB notes that the speech did not cover renewable technologies other than offshore wind<sup>5</sup>.

5. The implications of these announcements are considered in detail in the section on Government funding below, starting at para 98.
6. In paragraph 2.2.14 of its Planning Statement, the Applicant advances the following contention:

“In the case of renewables, applications should not be rejected simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site. This is because it is possible that all suitable sites for renewable energy infrastructure may be needed for future proposals (NPS EN-1, paragraph 4.4.3).”
7. The Applicant develops upon this in paragraphs 3.2.2 and 3.2.4 citing DECC’s Annual Energy Statement 2012 which suggests that electricity demand is likely to increase by 30% to 50% by 2050, and DECC’s Energy Security Strategy (in 2012) which suggests that capacity will need to grow by between 30 and 100% by 2050.
8. In essence the Applicant is arguing that future electricity demands are such that this scheme must be consented. The RSPB consider that this position is incorrect on a number of grounds, which we detail below.
9. The RSPB has concerns about the Applicant’s position and raised the issue of alternative solutions in its Relevant Representation of 22 April 2015<sup>6</sup>. This section develops those concerns further.
10. These concerns are due to the information set out in our Deadline 7 submission, in our view demonstrating that it is not possible, with the required degree of certainty, to conclude that Hornsea Project Two will not have an adverse effect upon the integrity of the Flamborough Head and Bempton Cliffs SPA or the Flamborough Head and Filey Coast pSPA either on its own or in combination with other offshore wind farm schemes. Consequently, it is important to consider the next decision-making steps set out in the Habitats Regulations.<sup>7</sup>
11. Avoiding damage to the species and habitats of European Sites is a key requirement of the Birds and Habitats Directives and damage should only be justified in exceptional circumstances. As set out in our Written Representations, *Section 3, Legislation and Policy Background*, the Habitats Regulations require a step by step approach to considering plans and projects likely to affect European Sites. If damage cannot be avoided further tests apply, namely the consideration of alternative solutions and imperative reasons of overriding public interest (IROPI) arguments – they are intended to make sure damage permitted to European Sites is both unavoidable,

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<http://www.publications.parliament.uk/pa/cm201516/cmhansrd/cm151118/wmstext/151118m0001.htm>.

<sup>5</sup> <https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>. The speech suggests reliance on “New nuclear, new gas and, if costs come down, new offshore wind”, but does not mention any other renewable technologies.

<sup>6</sup> <http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/hornsea-offshore-wind-farm-zone-4-project-two/?ipcsection=relreps&relrep=30>. The RSPB asked how the issue would be dealt with within the Examination by letter of 1 June 2015 to the Planning Inspectorate - <http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010053/2.%20Post-Submission/Representations/Additional%20Representations/The%20Royal%20Society%20for%20the%20Protection%20of%20Birds.pdf>, and the Planning Inspectorate replied by email of 2 June 2015, advising the RSPB to make these points in its written representations. This the RSPB has duly done.

<sup>7</sup> Throughout this section the term “Habitats Regulations” should be read as including references to both The Conservation of Habitats and Species Regulations 2010 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

necessary, imperative and that there is a genuine overriding public interest in the plan or project proceeding and ecological compensation is provided to ensure the overall coherence of the Natura 2000 network is maintained.

12. Therefore, the alternative solutions and IROPI tests should be about deciding, in the interests of wider society, where the balance lies between the public interest of conserving Europe's biodiversity and the public interest(s) provided by the plan or project but only in the absence of less damaging alternative solutions to the application.
13. In this context the aim of the alternative solutions test is to determine whether there are other ways the public need to be met by the plan or project can be delivered without damaging European Sites.
14. European Commission guidance states that the primary assessment criteria for considering alternative solutions are the conservation and maintenance of SPA and SAC integrity: economic criteria cannot be seen as overruling ecological criteria.<sup>8</sup> At page 42, para 5.3.1, the Commission Guidance states:

“It should be stressed that the reference parameters for such comparisons deal with aspects concerning the conservation and the maintenance of the integrity of the site and of its ecological functions. In this phase, therefore, other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria.

**It rests with the competent national authorities to assess alternative solutions. This assessment should be made against the site's conservation objectives.”**

### ***Identifying alternative solutions***

15. We consider four basic steps are necessary to ensure the alternative solutions test is applied rigorously and fairly:
  - i. **Identify the needs for (or benefits of) the plan or project and decide which are genuine public needs.** These should be objective and not restricted to the need or benefits claimed by the proponent;
  - ii. **Identify all potential and feasible alternative solutions to meet the public needs.**
  - iii. **Assess the impacts of these alternative solutions on Natura 2000 sites and their species/habitats.** This assessment will need to be undertaken by the competent authority. The RSPB recommends the use of a “common currency” approach as advocated by Natural England to ensure that the comparative impacts of the various possible alternative solutions are properly understood.
  - iv. **Decide whether there are less damaging alternative solutions to the plan or project.**
16. The Habitats Directive requires a very wide range of options to be taken into consideration by the competent authority before a conclusion that there are no alternative solutions to a plan or

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<sup>8</sup> *Managing Natura 2000 Sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC* (European Commission, 2000) [http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision\\_of\\_art6\\_en.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf).

project can be reached. In considering the needs or benefits relevant to the Hornsea Project Two the RSPB has reviewed the Government's legal and policy framework on energy.

17. This document then considers the scope of alternative solutions that are permitted within Government Policy and by the Planning Inspectorate's guidance on alternative solutions and what in our view should be considered in determining this application<sup>9</sup>. This document details how the RSPB has approached the issue of alternative solutions, including the schemes that have been considered, its initial conclusions on the issue, and the RSPB's recommended further steps that may need to be taken by the Examining Authority and the Secretary of State before determining the Hornsea Project Two application.
18. Finally, the influence of Government funding decisions is also taken into account because even if the Application is consented it is likely that without Government funding support Hornsea Project Two may not actually be built.
19. Overall, on the basis of publicly available information, the RSPB considers that there are less damaging, alternative solutions to the Hornsea Project Two available, and these need to be considered by the Examining Authority in making its recommendations, and the Secretary of State in reaching a final decision on the Hornsea Two Project.
20. We set out below our detailed comments on these points. However, it needs to be noted that the RSPB has approached this on the basis of our conclusions that it is not possible to conclude that Hornsea Project Two will not have an adverse effect on the integrity of the SPA/pSPA and their bird species. If the Examining Authority and the Secretary of State agree that consideration of alternative solutions needs to be had then of course they will need to consider all relevant European Sites and their features (see also paras 117 to 120 below).

## **The context for considering alternative solutions**

### ***The project context***

21. Hornsea Project Two is a proposal for a 1.8 GW offshore wind farm, which the Applicant indicates is expected to be generating energy by the end of 2022.<sup>10</sup> In addition to the private interest, commercial objectives and benefits, the project is clearly intended to contribute to meeting public interest objectives set out in the Government's legal and policy framework. These public interest objectives are considered in more detail below.
22. The timescale for delivery of the project sets a clear framework for the consideration of the environmental impacts of this scheme, and alternative and potentially less damaging schemes, within the Government's 2025 planning horizon set out in National Policy Statement EN-1, *Overarching National Policy Statement for Energy* ("EN-1") (see below).

### ***Government legal and policy framework on energy***

23. Under the EU Renewable Energy Directive (2009)<sup>11</sup> the UK is required to source 15% of its energy consumption from renewable sources by 2020, including electricity, heat and transport<sup>12</sup>.

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<sup>9</sup> Both in terms of "alternatives" as required for Environmental Impact Assessment and "alternative solutions" as required under the Habitats Directive.

<sup>10</sup> Figure 14 – Indicative Programme for Project Two, *Round 3 Hornsea Zone Offshore Wind Farm – Development Update* (SMartWind, June 2014, issue 5).

<sup>11</sup> Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

<sup>12</sup> Article 3(1) and Annex I, *National overall targets for the share of energy from renewable sources in gross final*

Alongside the National Policy Statements, there are a number of Government plans which outline the UK's delivery of renewable energy capacity against this 15% target. These include the National Renewable Energy Action Plan (NREAP), the UK Renewable Energy Roadmap and the Electricity Market Reform (EMR) Delivery Plan.

24. Beyond 2020, there is an EU wide target for at least 27% of the EU's energy consumption to be produced from renewable sources by 2030<sup>13</sup>: however there is currently little clarity on what the UK's contribution towards this target will be. This will be planned out in the UK's 5<sup>th</sup> Carbon Budget, which will cover the period from 2028-2032. The Committee on Climate Change<sup>14</sup> will publish its advice to Government on this in December 2015 with the Government proposing draft legislation for the fifth budget in 2016.<sup>15</sup> The UK's overall greenhouse gas emission reduction target is an 80% reduction (based on 1990 levels) by 2050, as stipulated in the Climate Change Act (2008)<sup>16</sup>.
25. It is the 15% target from the Renewable Energy Directive 2009 that forms the basis for current published Government policy for securing future renewable energy supplies. This is set out in EN-1 and provides the policy framework within which Hornsea Project Two should be considered. It is important to note at the outset that in our consideration of alternative solutions the RSPB is not challenging Government policy, instead using it as a framework within which to structure its approach.
26. EN-1 sets out the Government's main priorities for energy: a secure and affordable supply, which it expects to be provided via market-based schemes<sup>17</sup>. It also sets out a clear picture of what the Government considers must be delivered by 2025. EN-1 anticipates an increase in demand from 85 GW of electricity in 2011 to 113 GW by 2025. The key element relevant to this project is that EN-1 anticipated that around 33 GW would come from renewable sources.<sup>18</sup> EN-1 goes on to list possible renewable energy sources including on and offshore wind farms, biomass, energy from waste and wave and tidal<sup>19</sup> and it is important to note that EN-1 expresses no views on the relative amounts of energy that these different renewable energy sources should provide. For convenience we set out the key excerpts from EN-1:

3.3.22 If we assume, as is prudent, that total electricity demand is unlikely to remain at approximately current levels (and may have increased) in 2025<sup>33</sup> and that a larger amount of generating capacity will be required to serve even the same level of demand<sup>34</sup> then, based on the UEP high fossil fuel and carbon price scenario, the UK would need at least 113 GW of total electricity generating capacity<sup>35</sup> (compared to around 85 GW now), of which at least 59 GW would be new build. A further breakdown

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*consumption of energy in 2020.*

<sup>13</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A policy framework for climate and energy in the period from 2020 to 2030* COM/2014/015 Final.

<sup>14</sup> The Committee on Climate Change is an independent, statutory body established under Part 2 of the Climate Change Act 2008. Its purpose is to advise the UK Government and Devolved Administrations on emissions targets and report to Parliament on progress made in reducing greenhouse gas emissions and preparing for climate change.

<sup>15</sup> See The Committee on Climate Change <http://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>. Accessed 10 July 2015.

<sup>16</sup> Section 1(1) of the Act: "It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline."

<sup>17</sup> EN-1, paragraph 2.2.19.

<sup>18</sup> EN-1, paragraph 3.3.22 states "around 33GW of the new capacity by 2025 would need to come from renewable sources to meet renewable energy commitments as set out in Section 3.4".

<sup>19</sup> EN-1 pages 26-27, paragraph 3.4.3

of this figure to illustrate the scale of the challenge facing us in terms of new electricity generating infrastructure provision by technology type would be as follows:

- around 33 GW of the new capacity by 2025 would need to come from renewable sources to meet renewable energy commitments as set out in Section 3.4;
- it would be for industry to determine the exact mix of the remaining 26 GW of required new electricity capacity, acting within the strategic framework set by the Government;
- of these figures of 33 GW and 26 GW respectively, around 2 GW of renewables and 8 GW of non-renewable technologies are already under construction<sup>36</sup>. This leaves a balance of 18 GW to come from new non-renewable capacity; and
- the Government would like a significant proportion of this balance to be filled by new low carbon generation and believes that, in principle, new nuclear power should be free to contribute as much as possible towards meeting the need for around 18 GW of new non-renewable capacity by 2025.

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<sup>33</sup> See paragraph 3.3.14 on likely increases in electricity demand.

<sup>34</sup> See paragraph 3.3.11 on intermittency of renewable electricity generation.

<sup>35</sup> Annex J to the UEP shows total generation capacity.

<sup>36</sup> UEP 40 using National Grid figures April 2010. The Government is aware that there are also a number of energy projects (approximately 9 GW in total as of April 2010) that have obtained planning permission, but have not as yet started to be built. As we cannot be certain that these projects will become operational, the Government considers that it would not be prudent to consider these numbers for the purposes of determining the planning policy in this NPS. Such numbers evolve over time and are regularly updated by National Grid in their Seven Year Statement.

3.3.26 Reducing demand for electricity is a key element of the Government's strategy for meeting its energy and climate change objectives. The 2050 Pathways Analysis shows that total UK energy demand from all sectors (heating, transport, agriculture, industry and electricity demand) will need to fall significantly per head of population by 2050 and in the most extreme scenarios, total energy demand could be almost 50% lower than 2007 levels by 2050. The analysis highlights the importance of energy efficiency and the potential that this can have to help achieve our carbon emission reduction targets.

3.4.1 The UK has committed to sourcing 15% of its total energy (across the sectors of transport, electricity and heat) from renewable sources by 2020<sup>40</sup> and new projects need to continue to come forward urgently to ensure that we meet this target. Projections<sup>41</sup> suggest that by 2020 about 30% or more of our electricity generation – both centralised and small-scale – could come from renewable sources, compared to 6.7% in 2009<sup>42</sup>. The Committee on Climate Change in Phase 1 of its advice to Government in September 2010 agreed that the UK 2020 target was appropriate, and should not be increased. Phase 2 was published in May 2011 and provided recommendations on the post 2020 ambition for renewables in the UK, and possible pathways to maximise their contribution to the 2050 carbon reduction targets.

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<sup>40</sup> DECC (2009): The UK Renewable Energy Strategy (p.30). (The original URL in the footnote no longer works.)

<sup>41</sup> It is important to recognise that we may reach our renewable energy goals in different ways, depending on how the drivers to investment, supply chain and non-financial barriers evolve. As a result, the lead scenario presented in the Renewable Energy Strategy should not be seen as a sector or technology target.

<sup>42</sup> DUKES 2010 (p.184)

27. In light of the 15% target and Government policy, nine Round 3 offshore wind farm zones, including Hornsea, were released by the Crown Estate in 2010, with a capacity of up to 32GW.

This followed the UK Offshore Energy Strategic Environmental Assessment in 2009 (the SEA).<sup>20</sup>

28. Due to the need for new energy capacity (52% of 2025 power supply is expected to come from newly constructed sources) national policy has a presumption in favour of consenting energy NSIPs, which applies unless more specific and relevant policies in the NPSs clearly indicate that consent should be refused<sup>21</sup>. Of course these must be in compliance with any relevant legal requirements such as the Habitats Directive. As the Government acknowledges within EN-1, project-level HRA may result in the refusal of consent for particular applications<sup>22</sup> and due to insufficient offshore data being available when the SEA for Round 3 was being carried out many important marine bird (and other wildlife) areas are only being identified once applicants are carrying out their marine surveys for their environmental impact and Habitat Regulations assessments.
29. Therefore, the key public interest objectives emerging from the Government's legal and policy framework are:
- i. **EU:** source 15% of UK energy consumption from renewable sources by 2020, under the EU Renewable Energy Directive (2009)<sup>23</sup>;
  - ii. **EU:** target of at least 27% of the EU's energy consumption to be produced from renewable sources by 2030<sup>24</sup> – UK contribution to be set by Government in 2016 through the 5<sup>th</sup> Carbon Budget;
  - iii. **UK:** 80% greenhouse gas emission target under CC Act 2008<sup>25</sup>.
  - iv. **UK:** Government 2025 target of 33GW of renewable energy capacity<sup>26</sup>.
30. The RSPB fully supports the UK Government meeting and exceeding its 15% target. However, it is essential that delivery avoids adverse effects on biodiversity in line with the requirements of the Birds and Habitats Directives.

### ***Alternative solutions in National Policy Statements***

31. As mentioned above, the other future large scale renewable energy technologies within the scope of EN-1 are onshore wind farms, biomass and waste<sup>27</sup>. Wave, tidal and solar are also mentioned but at the time of drafting (2011) these sources were seen to be intermittent and incapable of being relied upon to meet demand<sup>28</sup>. In preparing the NPSs only a very narrow range of technology-agnostic alternative approaches were considered (EN-1's alternatives were securing low cost energy, reducing greenhouse gas emissions, and reducing other environmental impacts of schemes<sup>29</sup>). Although the Government acknowledges that energy efficiency

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<sup>20</sup> See <http://www.thecrownestate.co.uk/energy-and-infrastructure/offshore-wind-energy/working-with-us/leasing-rounds/round-3/>. Accessed 11 July 2015.

<sup>21</sup> EN-1, paragraph 4.1.2.

<sup>22</sup> EN-1, paragraph 1.7.13.

<sup>23</sup> Article 3(1) and Annex I, *National overall targets for the share of energy from renewable sources in gross final consumption of energy in 2020*.

<sup>24</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A policy framework for climate and energy in the period from 2020 to 2030* COM/2014/015 Final.

<sup>25</sup> Section 1(1), Climate Change Act 2008 (as amended).

<sup>26</sup> EN-1, paragraph 3.3.22.

<sup>27</sup> EN-1, paragraph 1.4.5. EN-3 only considers these sources (EN-3, paragraph 1.8.1).

<sup>28</sup> EN-1, page 19, paragraph 3.3.11.

<sup>29</sup> EN-1, paragraph 1.7.5.

improvements will be vital it does not consider them as an alternative means of helping to meet the anticipated increase in demand by 2025.

32. EN-1 makes it clear that development should aim to avoid significant harm to biodiversity, including through the consideration of reasonable alternatives. It sets out a number of principles for dealing with alternatives<sup>30</sup>:

- i. The consideration of alternatives should be carried out in a proportionate manner;
- ii. The Examiners should be guided by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity in the same timescale as the proposed development;
- iii. Where legislation imposes a specific target the Examiners should not reject an application on one site simply because fewer adverse impacts would result from developing similar infrastructure on another site, and the examiners are required to consider whether all the sites may be needed for future proposals (the RSPB consider this point in detail below);
- iv. Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the Examiners consider they are both important and relevant to the decision;
- v. If a hypothetical alternative proposal would not accord with the policies in the relevant NPS that alternative proposal is unlikely to be important and relevant to the IPC's decision;
- vi. Alternative proposals which are not commercially viable, or proposals for an unsuitable site can be excluded on the basis that they are not important and relevant to the IPC's decision; and
- vii. Alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the IPC's decision.

33. Before moving on, it should be noted that the tests above are a statement of national policy and appear to be focused on EIA requirements and do not specifically cover the alternative solutions test as set out in reg. 62 of the Habitat Regulations. This is important: the RSPB respectfully suggests that if there is a choice for the Examiners between approving a scheme for which an adverse effect upon the integrity of a European site **cannot** be excluded in the knowledge that there are relevant schemes for which an adverse effect **can** be excluded they must reject the damaging scheme. In addition, the fact that a site may be needed at a subsequent time is an issue which can be returned to by decision makers at that future stage when the imperative *need* for damaging the site can be more clearly established.

34. The need to consider alternative solutions is not limited to other schemes within that area as confirmed in the Secretary of State's Dibden Bay Port Proposal Decision Letter, para 51:

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<sup>30</sup> EN-1, paragraph 4.4.2.

“51. The Secretary of State notes, however, that the consideration of alternatives for projects which would have a significant impact upon a site designated in accordance with the Habitats Regulations must necessarily range more widely. The Secretary of State agrees with the Inspector’s conclusion that the Applicant’s proposal would have a significant effect upon the integrity of designated sites. It follows that consideration of alternatives must concern alternative ways of avoiding impacts on the designated sites. The Secretary of State considers that such alternatives would not be confined to alternative local sites for the project. He draws attention to the European Commission’s methodological guidance on the Assessment of Plans and Projects significantly affecting Natura 2000 sites, which interprets article 6 (4) of the Habitats Directive. The guidance states that a competent authority should not limit consideration of alternative solutions to those suggested by a project’s proponents and that alternative solutions could be located even in different regions or countries.”

### ***The Planning Inspectorate’s Guidance for dealing with alternative solutions***

35. The Planning Inspectorate’s advice on this issue is set out in Advice Note 10: *Habitat Regulations Assessment relevant to nationally significant infrastructure projects* (version 6, June 2015). This brief section is repeated verbatim for ease of reference:

#### **Stage 3: Assessment of alternatives**

4.33 The applicant’s assessment should identify and assess alternatives that have been considered. Details should be provided in the applicant’s HRA Report.

4.34 Alternative solutions can include a proposal of a different scale, a different location, and an option of not having the scheme at all – the ‘do nothing’ approach.

36. We consider the first of these two requirements below. We return to the second set of requirements under the heading “The RSPB’s approach to alternative solutions to the Hornsea Project Two” below.

### ***The alternative solutions considered by the Applicant***

37. Despite, as set out above, arguing in its Planning Statement that future electricity demands are such that this scheme must be consented, the Applicant has confined its consideration of alternatives to those required by the EIA legislation i.e. project-level alternatives available to it as the applicant and not considered the broader requirements of the Habitat Regulations’ alternative solutions test.

38. In addition, the Applicant’s Environmental Statement has limited the consideration of alternatives to two different turbine sizes, with two different layouts per turbine size within the same overall scheme footprint, delivering the same 1.8 GW in total<sup>31</sup> The most recent changes by the Applicant propose a single scheme of 300 6MW turbines with the lowest point of the rotating blade 34.97m above Lowest Astronomical Tide (up from 26m) and a maximum rotor diameter of 241.03m (down from 250m)<sup>32</sup>. With the exception of paragraph 2.2.14 of its Planning Statement (see para 9.1 above), the Applicant has not considered the Habitat Regulations’ alternative solutions test in detail. It is thought this is due to its HRA conclusion that there will be no adverse effects on the integrity of the European sites and their species due to Hornsea Project Two (HRA, Part 1, paragraph 5.8.350, page 167), either on its own or in combination with other schemes, even though paragraph 2.2.14 of its Planning Statement

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<sup>31</sup> Set out in Figure 3.5 and Table 3.3, ES Volume 1, Chapter 4 *Site Selection and Consideration of Alternatives* (January 2015).

<sup>32</sup> Applicant, Appendix A to the Submission of 4 December 2015, *Tabular Review of EIA Conclusions in response to the amendments to the Project Design Envelope*.

clearly anticipates the potential need for consideration of the alternative solutions and IROPI tests.

### **SMartWind's approach to alternative solutions**

39. The RSPB has taken careful note of the Applicant's response at Appendix J of Deadline 2 to our initial submission on alternative solutions<sup>33</sup>, set out in section 9 of our Written Representation. We note that the Applicant:

“does not consider the question of alternative solutions to be a relevant one as this question would only emerge in the event that the Secretary of State does not accept the Applicant's primary position”

that there are no risks of adverse effects upon the integrity of any European site. For reasons advanced in our main Deadline7 Submission we consider that the issue does arise at this point as we consider that it is not possible to discount the risk of an adverse effect on site integrity on a number of features.

40. In its response to the RSPB's initial submission on alternative solutions<sup>34</sup> the Applicant offers a number of observations on the legal framework within which the application should be considered. For ease of reference we set out the relevant text here:

“The Applicant would make a very general point, however, that it considers the question of alternatives to be a false premise in the context of the Project.

The concept of alternatives must be seen and gauged against the purpose and nature of the individual project subject to the assessment. In the case of the Project, as noted in Section 8 of the Statement of Reasons, the Project is principally designed to deliver renewable energy generating capacity for the UK to address the need for such in accordance with the UK's legal obligations.

Regulation 3 of The Promotion of the Use of Energy from Renewable Sources Regulations 2011 (2011/243) places a duty on the Secretary of State to ensure that at least 15% of energy consumption in the UK is from renewable sources by 2020. Crucially, this key target is unconstrained. It is not a fixed percentage or a cap and, accordingly, the Applicant would submit that there can be no ruling out of projects meeting an unconstrained need on the basis of alternative solutions.

The central objective of the current UK Government energy policy is to ensure the security of energy supply whilst responding to the challenge of climate policy by reducing carbon emissions. To meet these objectives, it is recognised that more energy infrastructure is needed with an increased emphasis on energy generation from renewable and low carbon sources. The need for this infrastructure is fully recognised in many areas of Government policy and the need to reduce carbon emissions is further enshrined in European law and international obligations, which has been transposed into a range of UK legislation. The Project will accord with these policies and help compliance with the relevant legislation and so will assist the Government in meeting its energy policy obligations.”

41. The RSPB highlights a number of key issues from the text above, which it will consider further:

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<sup>33</sup> *The Applicant's Response to RSPB's Written Representation*, Appendix J to the Response submitted for Deadline II.

<sup>34</sup> Appendix J, section 2.

- The contribution of Hornsea Project 2 to the UK's renewable energy needs;
- The obligation upon the Secretary of State to ensure that at least 15% of energy consumption from the UK is from renewable energy sources by 2020;
- Whether the delivery of renewable energy is "unconstrained"; and
- The need for additional renewable and low carbon sources.

*The contribution of Hornsea Project 2 to the UK's renewable energy needs*

42. The RSPB does not dispute that Hornsea Project 2 *could* contribute 1.8 GW to the UK's renewable energy supply, but we do not consider that this means that the Secretary of State must therefore consent the scheme.
43. In our Written Representation the RSPB provided detailed information about the supply of renewable energy, both in terms of current generation capacity and in terms of the likely future supply from offshore wind farms that were either:
- consented but unfunded; or
  - going through the planning process or likely to do so within the next 12 months.
44. As highlighted at the start of this document there have been some significant developments since our Written Representation. The revised figures are set out in Tables 1 - 4 below. The key message is that there has been a significant increase in renewable electricity supply and that the increased number of consented schemes is such that the UK Government can readily meet (and indeed exceed) its 2025 target of 33 GW of renewable electricity, set out at para 3.3.22 of NPS EN-1, without needing Hornsea Project 2. As we describe below (paras 54 to 70), recent decisions by the Government on other wind farm schemes demonstrate the Government's willingness to reject significant wind farm schemes due to their environmental impacts.

*The obligation upon the Secretary of State to ensure that at least 15% of energy consumption from the UK is from renewable energy sources by 2020*

45. As highlighted above (para 21), the RSPB notes that Hornsea Project 2 is not expected to be completed until 2022, which means it will not be able to contribute to the 2020 target.
46. Notwithstanding that, the RSPB observes that the 15% target is made up of contributions from electricity generation, heating and transport, and that the Secretary of State has a discretion in *how* to reach the target. Ultimately, it is for the Secretary of State to put in place a framework that ensures that this target is met. The RSPB fully supports the UK Government meeting and exceeding its 15% target, but considers that it is essential that delivery is sustainable and avoids adverse effects on biodiversity in line with the requirements of the Birds and Habitats Directives.
47. The 33 GW target in EN-1 was set *after* the Renewable Energy Directive's 15% target and took account of this figure. Para 3.4.5 of EN-1 includes the statement
- "Paragraph 3.4.1 above sets out the UK commitments to sourcing 15% of energy from renewable sources by 2020. To hit this target, and to largely decarbonise the power sector by 2030, it is necessary to bring forward new renewable electricity generating projects as soon as possible."
48. The RSPB is also aware that on 18 November 2015 the Secretary of State has made clear policy announcements on the intended future funding for renewable energy. In making those announcements the Secretary of State would have been fully cognisant of the legal obligation

upon her.

*Whether the delivery of renewable energy is “unconstrained”*

49. The RSPB considers that in seeking to meet the UK’s 15% target that the Secretary of State needs to take account of potential constraints imposed by the requirement to protect European sites designated under the Birds and Habitats Directives as well as the implications of financial constraints set by the Government. Consequently, where there are more schemes than funding is available for the least environmentally damaging should be preferred.
50. The RSPB respectfully contends that the recent refusal by the Secretary of State of two renewable energy NSIPs provides clear evidence that the Applicant’s contention that need is unconstrained: if the demand was unconstrained the Secretary of State would have been obliged to consent the schemes. We consider these decisions, and their implications for Hornsea Project 2 below.
51. The RSPB notes that due to constraints on funding, the provision of new energy supplies will be moderated by the decisions the Government takes on funding schemes which require an element of subsidy. Funding decisions are therefore clearly a constraint and the Government is clearly aware of this. We return to this point in the section *The Government’s funding decisions and delivery of Government policy* below.

*The need for additional renewable and low carbon sources*

52. The RSPB sets out below our revised analysis of the current and likely future supply of renewable energy. We contrast these figures with the most recent targets outline by the Government on 18 November 2015 in the section *The Government’s funding decisions and delivery of Government policy* below.
53. The RSPB highlights the Secretary of State’s announcements on 18 November 2015, which set out the approach that the Government intends to take to deliver its renewable and low carbon electricity supplies. The need for Hornsea Project 2 must be considered in this light. We return to this point in the section, *The Government’s funding decisions and delivery of Government policy*, below.

**The Government’s approach to alternative solutions following the Navitus Bay decision**

54. Since the RSPB submitted its original position on alternative solutions the Secretary of State has rejected the Navitus Bay offshore wind farm (on 11 September 2015). This is the first refusal of a Round 3 offshore wind farm proposal.
55. In rejecting the decision the Secretary of State considered the statements of need set out in NPSs EN-1 and EN-3. Despite accepting the need, the Secretary of State rejected the scheme on the basis of the impacts which the scheme would cause:

“... The Secretary of State accepts that the need for the development of the kind represented by the Application Development and the TAMO is in accordance with the policy set out in the relevant NPSs (EN-1 and EN-3) but she considers that, in this case, the potential impacts of the Application Development or the TAMO are of such a scale that they

outweigh the policy imperatives set out in those Statements. ...”<sup>35</sup>

56. The decision makes it clear that the issue of need does not trump considerations of impact, and that consequently rejection of applications is justifiable if their impacts are considered sufficiently serious. This runs directly counter to the Applicant’s contention at para {above} that “there can be no ruling out of projects meeting an unconstrained need”. In the present case the RSPB contends that where the risk of harm to a European site cannot be excluded the Secretary of State would need to move on to consider the alternative solutions available to meet the need. We provide detailed information below to assist the Secretary of State on this consideration. On the basis of this information the RSPB considers that the Secretary of State will not be able to conclude that there are no alternative solutions to Hornsea Project 2.

57. The reasons that underpin the refusal demonstrate that visual impact upon the seascape was a reason which could be taken into account when rejecting the scheme:

“19. The Secretary of State has considered the matter in some detail and feels that the ExA’s assessment that there will be a significant adverse impact on the perception of viewers standing on the coastlines mentioned above is a reasonable one.”

58. The Secretary of State also considered that impacts upon a National Park and Green Belt land would also justify refusal of the scheme. However, it is important to note that these were finely balanced considerations and only came into play as grounds for refusal because there were also other grounds that merited refusal.

“21. The ExA accepted that the Applicant’s scope for developing the necessary onshore works in alternative locations was limited. The ExA considered this policy in relation to the proposed siting in a National Park and in land designated as Green Belt where consents from developments can be granted only in exceptional or special circumstances respectively. The ExA concludes that these circumstances would not apply in the current case where it considers that the benefits of the project would not outweigh the significant impacts.”

59. In relation to the National Park and green belt issues the Panel noted:

“The Panel has had regard to the highest level of protection accorded to the NFNP [New Forest National Park] and assessed the Application Project against the considerations listed in EN-1. The onshore elements of the Project have additionally been tested against Green Belt policy. In both instances, the Panel concludes that exceptional circumstances would exist if the renewable energy benefits of the scheme, plus the benefits of jobs, were to outweigh its adverse impacts. The matter is considered in full in Chapter 21.”<sup>36</sup>

60. The Panel considered the balance of these issues in Chapter 21 and concluded that:

“The key issue of greatest concern to the Panel is the adverse impacts from the visual effects of the offshore elements of the proposed development on a range of national and international designations. The level of harm resulting from the Project’s offshore elements is considered by the Panel to be of such seriousness as to outweigh its benefits.” (para 21.2.77)

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<sup>35</sup> Secretary of State’s Decision Letter, 11 September 2015, Paragraph 52. The “TAMO” was a reduced 630 MW “Turbine Area Mitigation Option” scheme introduced by the Applicant in an attempt to address concerns expressed about the original 970 MW scheme’s likely impacts.

<sup>36</sup> Panel’s Recommendation to the Secretary of State, 11 June 2015, para 8.5.3.

61. Consequently:

“It follows from these conclusions that the exceptional or very special circumstances required to justify development in the NFNP and the Green Belt do not exist. ...” (para 21.2.80)

62. The World Heritage Site (WHS) is the only supra-national feature which was considered as part of the reasons for refusal. Again, the visual impact from the wind farm scheme upon the coastal WHS was considered sufficient to justify refusal.

“29. In conclusion, the Secretary of State considers that the development, either the Application Development or the TAMO, though not damaging to the protected feature of the World Heritage Site, would adversely affect the use and enjoyment of that Site. This would have an adverse effect on the use of and enjoyment of the Site irrespective of the fact that the effects are essentially temporary. The Secretary of State, given the importance of the Site, and its utility and amenity value, does not consider the adverse effects, even if considered to be of a temporary nature, are acceptable.”

63. It is worth noting that the visual impacts on the WHS were considered to be essentially temporary – capable of being addressed as soon as the turbines are removed. This needs to be contrasted with the likely ecological impacts of the Hornsea Project 2 scheme where the impacts upon the various populations of birds will require a number of years to recover, if indeed they can. The Hornsea Project Two impacts are not readily reversible.

64. The RSPB submits that if transient aesthetic impacts justify the refusal of an NSIP renewable energy scheme then ecological impacts upon the designated species of a European site clearly justify refusal of the Hornsea Project 2 scheme. The RSPB contends that the fact that the Secretary of State could justify refusal on the basis of visual, green belt and National Park impacts clearly demonstrates that it is acceptable to reject a scheme on Natura 2000 grounds.

65. The Secretary of State also rejected the Myndd Y Gwynt onshore wind farm NSIP application on 20 November 2015<sup>37</sup>.

66. The Secretary of State gave only limited detail about the way in which consideration had been given to energy policy:

“9. The Secretary of State has had regard to the Energy National Policy Statements (“NPS”) EN-1 Overarching NPS for Energy) and EN-3 (NPS for Renewable Energy Infrastructure). ...”

67. Beyond this statement there was no consideration of energy issues such as need by the Secretary of State.

68. The Secretary of State refused the scheme because the Applicant had failed to provide sufficient ecological information in the HRA. The consequence of this failure was that:

“38. The Secretary of State cannot grant development consent because she is not able to conclude that there is no adverse effect on the integrity of the red kite feature of the Elenydd – Mallaen SPA. She is therefore refusing the Application in accordance with regulation 61(5) of the Conservation of Habitats and Species Regulations 2010.”

69. Two key points can be taken from these Government decisions:

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<sup>37</sup> The Scheme was in Powys, located to the west of Aberystwyth.

- The impact of a scheme must be taken into account and may justify its refusal, even in the context of a clear national need for renewable energy generating infrastructure; and
- Applications must fully comply with the requirements of the Habitats Regulations. A failure to supply sufficient information to enable a proper conclusion at any stage of the assessment process is sufficient to justify the refusal of the application.

70. In the latter context the RSPB highlights at {was 9.30 and 9.31} above that the Applicant has provided insufficient information for the Secretary of State to consider any argument by the Applicant that there are no alternative solutions in respect of the tests set out in Regulation 62(1) of the Habitats Regulations. The RSPB contends that the information contained in this document is sufficient to demonstrate that there clearly are sufficient alternative solutions to meet the Government's clearly articulated need.

### **The RSPB's approach to alternative solutions to Hornsea Project Two**

71. In accordance with EN-1 the RSPB has attempted to assess possible alternative solutions in a proportionate manner, focussing on schemes where there is a realistic prospect of delivering similar capacity in a similar timescale to meet Government targets and policy objectives and have concentrated on those that are relevant to the Government's overarching renewable energy targets for 2025. At this stage, we have excluded schemes where their promoters have concluded they are currently commercially unviable (for example Atlantic Array<sup>38</sup>, Celtic Array Round 3<sup>39</sup> or Islay<sup>40</sup> offshore wind farm schemes). All the projects that we consider have sufficiently detailed information already prepared, or are sufficiently far advanced in pre-planning, to justify consideration as alternative solutions and therefore can be included as part of the alternative solutions assessment.

### ***Installed renewable energy capacity since 2011***

72. When it was published in 2011 EN-1 set a clear target of 33 GW for new renewable energy capacity, to be delivered by 2025. In order to identify post-2011 contributions to renewable energy sources the RSPB has identified changes in renewable energy capacity reported by DECC since the first quarter of 2011, as set out in Table 1 below. Given the lead-in times on preparing the NPS all 2011 contributions are included. The figures are up-to-date to the end of the second quarter of 2015. In this time the following additional capacity has been added.

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<sup>38</sup> Potentially 1.2 GW.

<sup>39</sup> Potentially 2.2 GW.

<sup>40</sup> Potentially 0.69 GW.

**Table 1: Changes in installed renewable energy capacity between 2011 and June 2015**

Sources: First Quarter (Q1) of 2011 data from: DECC (2012) *Energy Trends* (June 2012); Q2 2015 data from: DECC (2015) *Energy Trends* (September 2015))

	Q1 2011 figure <sup>41</sup> (GW)	Q2 2015 figure (GW) <sup>42</sup>	Increase Q1 2011 to Q2 2015 (GW)
<b>DECC's Total</b>	9.563 <sup>43</sup>	28.382	18.819
<i>Onshore Wind</i>	4.142	8.723	4.581
<i>Offshore Wind</i>	1.427	5.025	3.598
<i>Solar</i>	0.137	8.277	8.140
<i>Plant Biomass</i>	0.327	2.295	1.968
<i>Other</i> <sup>44</sup>	3.532	04.062	0.530

73. Therefore, as of the second quarter of 2015, DECC's figures show that since the first quarter of 2011, there has been an increase of 18.819 GW of installed renewable energy capacity, or over half the 33GW target. The figures originally provided for offshore wind in Table 1 represented the Q1 figure, coupled with several other offshore wind schemes (Gwynt y Mor<sup>45</sup>, Humber Gateway<sup>46</sup> and Westermost Rough<sup>47</sup>) that had subsequently come fully on stream. The RSPB's figure given in the Written Representation is slightly higher than the Q2 figure, but as it is not possible to account for the difference we have opted to use the Q2 figure instead<sup>48</sup>.
74. There was also a substantial increase in the amount of solar energy supply between Q1 (6.823 GW) and Q2 (8.140 GW). This contributed 1.454 GW of the overall increase of 1.934 GW in renewable energy.
75. Adding in this extra capacity means that since the first quarter of 2011, 18.819 GW of new renewable energy capacity has come on stream. This leaves 14.181 GW of new renewable energy to be delivered in order to meet the 33 GW target for 2025 set out in EN-1.
76. In considering PINS' guidance on alternatives (Advice Note 10, paragraph 4.34, page 11) we have included schemes of different scales and different locations, but due to the ready availability of information for offshore renewable NSIPs have focused on these. As set out above in paragraphs 3.16 to 3.24 of the RSPB's Written Representations, all other types of renewable energy capable

<sup>41</sup> Taken from DECC's *Energy Trends* (June 2012), Table 6.1 *Renewable electricity capacity and generation*, column headed "2011 1<sup>st</sup> quarter" (p47) and rows under the heading "Cumulative Installed Capacity".

<sup>42</sup> Taken from DECC's *Energy Trends* (September 2015), Table 6.1 *Renewable electricity capacity and generation*, column headed "2015 2<sup>nd</sup> quarter" (p47) and rows under the heading "Cumulative Installed Capacity". It should be noted that these are provisional figures.

<sup>43</sup> This figure is taken directly from DECC's *Energy Trends* (June 2012), Table 6.1 *Renewable electricity capacity and generation*, column headed "2011 1<sup>st</sup> quarter" and row "Total" under "Cumulative Installed Capacity". If the figures in the rows below are added this actually comes to 9,565 MW. As there is no explanation for the difference, the total figure given in the table has been kept: this feeds through in to the figure for the total increase 2011 to 2015 which is 2MW higher than indicated by the different sectors. The total figure for 2015 does match the sum of the different sectors.

<sup>44</sup> This includes shoreline wave/tidal, small and large scale hydro, landfill gas, sewage sludge digestion, energy from waste, animal biomass (non-anaerobic digestion), and anaerobic digestion.

<sup>45</sup> Officially opened in June 2015: <http://www.bbc.co.uk/news/uk-wales-33168638>; also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>. <http://www.grimsbytelegraph.co.uk/power-hit-Humber-Gateway/story-26656844-detail/story.html> (9 June 2015).

<sup>47</sup> Officially inaugurated on 1 July 2015: <http://renews.biz/91063/westermost-rough-has-lift-off/>. Also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>.

<sup>48</sup> This also simplifies updating of the figures to reflect the Q3 and Q4 figures for 2015 when they become available.

of contributing within similar timescales are relevant to the consideration of alternative solutions. The RSPB's figures are based on DECC's Energy Trends publication and are up-to-date to the 2015 Q2 update (24 September 2015). The Q3 figure will be published on 22 December 2015 and the Q4 figures on 31 March 2016. The RSPB respectfully asks the ExA to take account of the Q3 figures in their report to the Secretary of State and for the Secretary of State to take account of the Q4 figures in reaching her final decision. We return to the implications of this at para 90 below.

77. Due to the renewable energy target for 2025 set by the Government we have not considered a 'do nothing' approach as required by the EIA requirements, but instead have considered the prospects of meeting the 2025 target of 33 GW of new renewable energy if the Hornsea Two scheme is not consented. We have later considered the influence of available levels of Government funding on the contribution of offshore wind to meeting the 2025 target.

**Table 2: Capacity of offshore wind farms, operational, under construction or consented and funded**

Main source: The Crown Estate (2015) *UK offshore wind – key facts 2015-16* (April 2015). See Appendix 1 for a fuller version including sources for each wind farm.

<b>Scheme categories</b>	<b>Capacity (GW)</b>
<b>Operational</b>	5.025
<b>Under construction</b>	1.980
<b>Consented and funded</b>	3.815
<b>TOTAL</b>	<b>10.820</b>

Note: Data is taken from *UK offshore wind – key facts 2015-16* (The Crown Estate, April 2015) table: *UK offshore wind project pipeline – April 2015* (The Crown Estate, 2015), and the *Digest of UK Energy Statistics, Table 5.10 Power Stations in the United Kingdom* (DECC, 2014). This information under the *operational* heading has been updated to reflect schemes that have come fully online since April 2015.

78. The total of 10.820 GW in Table 2 above is of particular importance. This exceeds the target of 10 GW of new capacity by 2020 mentioned in the Government energy policy announcement made by Amber Rudd on 18 November 2015. This point is returned to below in *The Government's funding decisions and delivery of Government policy*.
79. Including the schemes that are under construction (1.98 GW) reduces the amount of renewable energy required by 2025 to 12.201 GW. It is important to note that there is another 3.815 GW worth of consented and funded schemes that have yet to start construction. In the absence of evidence to the contrary, it is reasonable to assume that all of those schemes will go ahead<sup>49</sup>. Taking these schemes into account reduces the amount of renewable energy to be secured by 2025 to 8.386 GW. It is worth repeating at this point that this target is to be met from **all** renewable sources, not just offshore wind.
80. The RSPB notes that in the Committee on Climate Change's 2015 Report to Parliament, *Meeting Carbon Budgets – Progress in reducing the UK's emissions*, it is suggested that there are a further 2 GW of onshore wind, 2.1 GW of biomass and 0.8 GW of solar power "in the pipeline", which are schemes that have been awarded a CFD or are under construction.<sup>50</sup> No details are provided

<sup>49</sup> Recent information about these schemes is presented in Annex 6.

<sup>50</sup> *Meeting Carbon Budgets – Progress in reducing the UK's emissions, 2015 Report to Parliament*, (Committee on Climate Change, June 2015), Table 1.1 Overview of renewable deployment in 2014 (p53).

on the individual schemes and we have sustainability concerns around the large scale deployment of biomass, but this could represent a further 4.9 GW of capacity which is likely to be delivered. This would reduce the remaining figure to be supplied by 2025 to 3.486 GW.

81. A summary is provided in Table 3 below.

**Table 3: Summary of progress towards installation of 33 GW renewable energy capacity by 2025**

Sources: for detailed references, please see paras 73, 75, 79 and Table 2 above.

	Contribution to 2025 renewable energy target (GW)	Amount of capacity still required to meet 2025 renewable energy target of 33 GW
Renewable energy capacity installed between Q1 2011 and Q2 2015	18.819	14.181
Offshore wind schemes under construction	1.980	12.201
Offshore wind schemes consented and funded	3.815	8.386
Climate Change Committee “pipeline” renewable energy schemes (onshore wind, solar, biomass)	4.900	3.486

Note: The version of this table in the RSPB’s Written Representation included a row adding in offshore wind schemes which had come on stream since Q1 2015. These figures have now been overtaken by the Q2 figures published in DECC’s Energy Trends, and consequently the RSPB has replaced the two separate figures with one entry. This will facilitate the Examining Authority and the Secretary of State updating the figures to reflect revised data for Q3 (available 22 December) and Q4 (available 31 March 2016).

### **Alternative solutions to Hornsea Project Two**

82. Based on the analysis above, the amount of energy capacity required to be installed from all renewable sources to meet the Government’s 2025 target of 33 GW is 8.386 GW if consented and funded schemes are included. If the Committee on Climate Change “pipeline” figures are also included, then this reduces further to 3.486 GW. It is against the backdrop of these two figures that we consider the issue of alternative solutions to Hornsea Project Two in meeting the public interest objectives described above (see para 29).

83. The RSPB has considered additional alternative schemes under a number of headings, set out in Table 4 below). The headings are as follows:

- I. Consented but unfunded offshore wind farms;*  
Those wind farm schemes which have received consent, but which have not yet secured funding via a Contract for Difference (CFD)<sup>51</sup>. The total capacity of these schemes is 9.502 GW.<sup>52</sup>
- II. Offshore wind farm schemes that are currently going through the planning process.*  
There are two schemes which are currently being considered. The total capacity of these schemes (as applied for) is 1.214 GW.<sup>53</sup>
- III. Offshore wind farm schemes expected to be submitted in the next 12 months*

<sup>51</sup> See “The Government’s funding decisions and delivery of Government policy” below for more details on CFDs.

<sup>52</sup> See Appendix 1 for full details.

<sup>53</sup> See Table 4 below for details. Navitus Bay is listed at the 0.970 GW as applied for, although an alternative scheme would bring this down to 0.630 GW and the overall total down to 3.03 GW.

Schemes listed on the Planning Inspectorate’s website. The total capacity of these schemes (as listed on the Planning Inspectorate’s website) is 1.2 GW.<sup>54</sup>

*IV. Alternative offshore renewable energy sources*

Although there are others the only alternative energy solution we have included is the recently consented Swansea Tidal Lagoon (0.320 GW). This offers 1/6<sup>th</sup> of the energy proposed for Hornsea 2 and should be taken into consideration.

*V. Energy efficiency measures*

The RSPB has not attempted to quantify any levels of energy efficiency that it considers should be achieved. However, we note that since the adoption of EN-1 which forecast an energy rise from 85 to 113 GW in 2025, the actual energy consumption rates in the UK have actually fallen by 4.6% (14.6 TWh) to 303 TWh<sup>55</sup>. The Committee for Climate Change noted “Relatively high temperature drove a quarter of this fall and there is evidence to suggest improved energy efficiency (and/or changes in consumer behaviour) and changes in industrial energy use accounted for most of the remainder, with a small contribution from increased embedded generation (i.e. rooftop solar).”

- 84. Before deciding to consent the Hornsea Project Two the Secretary of State would need to satisfy herself that there is no scope for further energy efficiency improvements to offset the need for this scheme.
- 85. We have excluded 0.3 GW of the Rampion Southern Array, which the developer has announced that they will not be proceeding with.
- 86. On this basis, we have set out the energy capacity of potential alternative solutions in categories I-IV in Table 4 below, as explained above, focusing on offshore renewable energy NSIPs due to this information being more easily available.

**Table 4: Energy capacity of alternative solutions from the offshore marine renewable sector**

Source: The Crown Estate (2015) *Energy and infrastructure key facts 2015-16*, table: UK offshore wind project pipeline – April 2015.

<b>Scheme categories</b>	<b>Capacity (GW)</b>
<b>I - Consented but unfunded</b>	
Aberdeen Demonstration	0.066
Dogger Creyke Beck A	1.200
Dogger Creyke Beck B	1.200
Dogger Teesside A	1.200
Dogger Teesside B	1.200
East Anglia One (unfunded part)	0.486
Inch Cape*	0.784
MacColl (Moray Firth)	0.372
Seagreen Alpha (Firth of Forth)*	0.525
Seagreen Bravo (Firth of Forth)*	0.525

<sup>54</sup> See Table 4 below for details.

<sup>55</sup> Committee on Climate Change, *Meeting Carbon Budgets – Progress in reducing the UK’s emissions, 2015 Report to Parliament* (June 2015), Chapter 1: *Progress decarbonising the power sector*, page 47. Final consumption of electricity has fallen from 318.009 TWh in 2011 (*Digest of UK Energy Statistics 2012* (DECC, 2012), Table 5.2 *Electricity supply and consumption*, page 136), to a Final Consumption figure for 2014 of 303.409 TWh (*Energy Trends* (DECC, September 2015), Table 5.2 *Supply and consumption of electricity*, page 42).

<b>Scheme categories</b>	<b>Capacity (GW)</b>
Stevenson (Moray Firth)	0.372
Telford (Moray Firth)	0.372
Triton Knoll	1.200
<i>Subtotal</i>	<i>9.502</i>
<b>II – Currently going through the planning process</b>	
2-B Demo <sup>56</sup>	0.014
East Anglia 3 <sup>57</sup>	1.200
<i>Subtotal</i>	<i>1.214</i>
<b>III – Expected to be submitted within the next 12 months</b>	
East Anglia Four (expected Q4 2016)	1.200
<i>Subtotal</i>	<i>1.200</i>
<b>IV - Alternative offshore renewable energy sources</b>	
Swansea Tidal Lagoon <sup>58</sup>	0.320
<i>Subtotal</i>	<i>0.320</i>
<b>Total</b>	<b>12.266</b>

87. The RSPB wishes to highlight that the decision to grant consent for the schemes marked with an asterisk “\*” has been judicially reviewed by the RSPB. However as the ExA is aware judicial review is focused on the process undertaken by the decision maker and rarely considers the merits of applications. Therefore, even if the RSPB were successful in its judicial review the recourse is for the applications to be re-determined. This may be possible with the timescale being considered and therefore we have included these schemes within the above table. However we do set out below the possible capacity figures without these schemes.
88. Taken at face value, this suggests that there is up to 12.266 GW of alternative offshore renewable energy supply available to meet the current shortfall in meeting the 2025 target of between 3.486 GW and 8.386 GW (see para 9.41 above).
89. Given the stage in the planning process, Category I provides greatest certainty in being capable of delivering capacity in a similar timescale to Hornsea Project Two. Category I can deliver up to 9.502 GW. Category II schemes are in the planning process: They provide up to 1.214 GW. The total of 10.716 GW exceeds the maximum shortfall of 8.386 GW and comfortably exceeds the shortfall if the Committee on Climate Change’s “pipeline” projects are taken in to account.
90. If Category III and IV projects are factored in, as we believe they should be, then the available offshore renewable energy alternative solutions could comfortably exceed the 2025 target of 33 GW and make a significant contribution to requirements beyond 2025. This strongly suggests to the RSPB that there is a wide range of alternative solutions available for consideration by the Secretary of State just from within the offshore renewables sector and that Hornsea Project Two does not need to be consented now to meet the 2025 renewable energy target of 33 GW.
91. It is important to note that other than the “pipeline” figures referred to by the Committee on Climate Change (set out in Table 3 above), the RSPB’s calculations do not include any

<sup>56</sup> A lease for the two experimental twin-blade turbines was signed with The Crown Estate on 19 August 2014, with deployment anticipated in 2016 (<http://renews.biz/72614/2-b-offshore-demo-wins-crown-lease/>).

<sup>57</sup> Submitted on 18 November 2015.

<sup>58</sup> The RSPB is aware that this is funded from a different CFD pot to offshore wind, but considers that as this is an entirely domestic funding issue and therefore the funding pot should be overlooked when considering the requirements of the Habitats Regulations.

contribution from onshore renewables, beyond those included in Table 1 above, which only counts those sources generating electricity at the end of Q2 2015. Our calculations proceed on the extremely unlikely premise that the 4.9 GW of “pipeline” schemes represents the entire remaining contribution towards onshore renewables until 2025.<sup>59</sup> The reality is that significantly more capacity is likely to be available: in the four years since the adoption of EN-1 more than half the capacity required to meet the 33 GW target for 2025 has been installed.

### **Implications of the RSPB’s judicial reviews**

92. As mentioned above the RSPB has taken judicial review proceedings against the Scottish Ministers’ decision to grant consent for the four Firth of Forth offshore wind farms. Only one of these projects is funded and their capacities are as follows:

- Neart na Gaoithe (0.448 GW - funded)
- Inch Cape (0.784 GW - unfunded)
- Seagreen Alpha (0.525 GW - unfunded); and
- Seagreen Bravo (0.525 GW - unfunded)

93. However even if these projects are excluded completely from the relevant categories the total impact would be a maximum reduction of 2.282 GW. The revised figures and the amount of the changes are set out in Table 5 and Table 6 below.

**Table 5: Summary of alternative solutions from the offshore marine renewable sector without the Firth of Forth schemes**

Note: Only category I is affected by the judicial reviews.

<b><i>Scheme categories</i></b>	<b>Capacity (GW)</b>
<b>I - Consented but unfunded</b>	7.668 <i>(was 9.502)</i>
<b>II – Currently going through the planning process</b>	1.214
<b>III – Expected to be submitted within the next 12 months</b>	1.2
<b>IV - Alternative offshore renewable energy sources</b>	0.320
<b><i>Total</i></b>	<b><i>10.402</i></b>

Note: Category I excludes Inch Cape (0.784 GW), Seagreen Alpha (0.525 GW) and Seagreen Bravo (0.525 GW), unfunded schemes totalling 1.834 GW.

<sup>59</sup> The Committee on Climate Change notes that for onshore wind alone there are a further 5.2 GW of onshore wind schemes with planning permission and a further 7.3 GW seeking approval. *Meeting Carbon Budgets – Progress in reducing the UK’s emissions* (June 2015), Chapter 1: *Progress decarbonising the power sector*, page 53.

94. Based on this, in Table 6, we have produced an adjusted summary of progress towards installation of the 2025 target of 33 GW of renewable energy capacity.

**Table 6: Revised summary of progress towards installation of 33 GW renewable energy capacity by 2025**

Sources: for detailed references, please see paras 73, 75, 79, 90 and Table 2 above.

	Contribution to 2025 renewable energy target (GW)	Amount of capacity still required to meet 2025 renewable energy target of 33 GW
Renewable energy capacity installed between Q1 2011 and Q2 2015	18.819	14.181
Offshore wind schemes under construction	1.980	12.201
Offshore wind schemes consented and funded	3.367 <i>(was 3.815)</i>	8.834 <i>(was 8.386)</i>
Climate Change Committee “pipeline” renewable energy schemes (onshore wind, solar, biomass)	4.900	3.934 <i>(was 3.486)</i>

*Note:* The “Consented and funded” category now excludes Neart na Gaoithe (0.448 GW) on the basis of a successful judicial review and the scheme not being re-determined.

95. As the table above shows revisiting the figures set out in paragraphs 73, 75, 79 and Table 2 above, without the Firth of Forth schemes (if the applicant decided not to get the schemes re-determined), would be as follows: There would be up to 10.402 GW of alternative offshore renewable energy supply available to meet a shortfall in meeting the 2025 target of between 3.934 GW and 8.834 GW (see Tables 5 and 6 above).

96. Category I (Table 5) can deliver up to 7.668 GW while Category II still delivers up to 1.214 GW. The total of 8.882 GW exceeds the maximum shortfall of 8.834 GW by 0.048 GW, and comfortably exceeds the shortfall if the Committee on Climate Change’s “pipeline” projects are taken into account.

97. Inclusion of Category III and IV schemes still means that the 2025 target of 33 GW could be comfortably exceeded.

***The Government’s funding decisions and delivery of Government policy***

98. Granting consent for an offshore wind farm is not the last way in which the Government influences whether that scheme will be built. The funding that the Government offers to support the delivery of energy infrastructure which is not currently economically viable at current electricity market prices is key: without this support a scheme will not go ahead despite being granted consent. Through this price support the Government determines and controls the source and amount of new renewable energy supply that will be built. Recent Government announcements (see paras 102 to 104 below) confirm that the price of the electricity generated by offshore wind (and other sources) is a key element in the Government’s policy framework determining what form of renewable energy will receive Government support.

99. In the context of the offshore wind sector, this has historically been through a combination of funding mechanisms including the Renewables Obligation Certificate (ROC) and the Final Investment Decision Enabling for Renewables (FIDER process) which took place in 2014. FIDER

funded five offshore wind projects, including Hornsea Project 1<sup>60</sup>. The Renewables Obligation will close to all new projects on 31 March 2017.<sup>61</sup>

100. From 2014 onwards, offshore wind is funded through the Contracts for Difference (CFD) mechanism. This is a competitive process in which renewable energy generators bid for 15 year contracts in an auction process, which guarantees the generator a fixed price for the energy produced known as the 'strike price'. If the wholesale cost of electricity is less than the agreed strike price, the Government pays the generator the difference; if it is higher, the generator pays the difference back to the Government. The rationale behind this process is that when bidding, the generators will submit the lowest possible strike price that they are willing to accept, therefore pushing down costs. By doing this the Government aims to bring competition into the low carbon energy market, and deliver the maximum amount of energy using a limited pot of money. The mechanism is funded through the Levy Control Framework (LCF) which levies an additional cost onto consumers' energy bills.
101. There are different 'pots' of money within the LCF; offshore wind is funded through Pot 2 (less established technologies). Projects must have received planning consent to qualify for entry in to the CFD auction process.
102. So far there has been one allocation 'round' for CFDs for projects commissioning from 2016/17 onwards. This was announced on 26 February 2015<sup>62</sup>. While there will have been several consented schemes bidding in this confidential auction process, only two offshore wind projects totalling 1.162 GW gained funding: EA1 in East Anglia (0.714 GW) and Neart na Gaoithe in the outer Firth of Forth (0.448 GW). It is worth noting that the limited funding available meant EA1 only received sufficient funding for part of its 1.2 GW scheme. .
103. Since the 2015 General Election the Government has, as highlighted at para 3 above, made a number of statements about its approach to the funding of renewable energy schemes. This started with a statement in relation to onshore wind:

"The Electricity Market Reform Delivery Plan projects that we require between 11 - 13 GW of electricity to be provided by onshore wind by 2020 to meet our 2020 renewable electricity generation objective while remaining within the limits of what is affordable.

We now have enough onshore wind in the pipeline, including projects that have planning permission, to meet this requirement comfortably.

Without action we are very likely to deploy beyond this range.

We could end up with more onshore wind projects than we can afford – which would lead to either higher bills for consumers, or other renewable technologies, such as offshore wind,

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<sup>60</sup> The offshore wind funded via the FIDER mechanism were Beatrice (0.664 GW), Burbo Bank Extension (0.258 GW), Dudgeon (0.402 GW), Hornsea 1 (1.200 GW) and Walney (0.660 GW), a total of 3.184 GW. FIDER also funded 3 biomass-based schemes, Drax Unit #1 conversion (0.645 GW), Lynemouth (0.420 GW) and Teesside (0.299 GW), a total of 1.364 GW. In total 4.548 GW was funded, 70.01% offshore wind, 29.99% biomass.

<sup>61</sup> Note that Clause 60 of the Energy Bill which received its first reading in the House of Lords on 9 July 2015, proposes to close the Renewables Obligation for onshore wind on 31 March 2016. See: <http://www.publications.parliament.uk/pa/bills/lbill/2015-2016/0056/16056.pdf>, accessed 11 July 2015. Since then, at Report Stage in the House of Lords (21 October 2015) an amendment was passed to remove this provision. It is the Government's intention to reintroduce the clause in the House of Commons (letter from Andrew Leadsom, Minister of State, DECC, 23 November 2015).

<sup>62</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/407059/Contracts\\_for\\_Difference\\_-\\_Auction\\_Results\\_-\\_Official\\_Statistics.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407059/Contracts_for_Difference_-_Auction_Results_-_Official_Statistics.pdf).

losing out on support.

...

We are committed to meeting our decarbonisation objectives. The changes I have outlined to Parliament will not change this.”<sup>63</sup>

104. This statement clearly shows that the Government is seeking to constrain its funding of renewable electricity. The subsequent consultation of Feed In Tariffs (see para 113 below) demonstrated a further restriction. Finally, on 18 November, the Secretary of State announced the Government’s revised approach to the provision of funding for offshore wind energy:

“Today I will announce that we will make funding available for three auctions in this Parliament with the first taking place by the end of 2016. This support will be strictly conditional on the delivery of the cost reductions we have seen already accelerating. If that happens we could support up to 10GW of additional offshore wind in the 2020s. We have already seen the cost of solar come down by 35% in the last 3 years.”<sup>64</sup>

105. The Secretary of State expanded on this point in a speech to the Institution of Civil Engineers on the same day<sup>65</sup>:

“On current plans we expect to see 10 GW of offshore wind installed by 2020.

This is supporting a growing installation, development and blade manufacturing industry. Around 14,000 people are employed in the sector.

This ground breaking expertise has helped the costs of contracts for offshore wind come down by at least 20% in the last two years.

But it is still too expensive.

So our approach will be different we will not support offshore wind at any cost.

Further support will be strictly conditional on the cost reductions we have seen already accelerating.

The technology needs to move quickly to cost-competitiveness.

If that happens we could support up to 10GW of new offshore wind projects in the 2020s.”

106. The implications of the Secretary of State’s announcement and speech are that the supply of renewable energy from offshore wind is clearly constrained by the Government’s willingness to pay for it. This is clearly demonstrated by the fact that the CfD auctions are “strictly conditional on the delivery of the cost reductions”. Given these funding constraints, money should be prioritised for the projects that will deliver the most renewable energy for the least environmental impact.

107. Table 2 above supports the Government’s expectation that 10 GW of offshore wind will be installed by 2020. Table 4 above indicates that there is already 9.502 GW of unfunded but

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<sup>63</sup> Oral statement to Parliament on ending subsidies for onshore wind, 22 June 2015:

<https://www.gov.uk/government/speeches/statement-on-ending-subsidies-for-onshore-wind>.

<sup>64</sup> Written statement to Parliament, 18 November 2015, <https://www.gov.uk/government/speeches/priorities-for-uk-energy-and-climate-change-policy>

<sup>65</sup> <https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>. This extract is also set out in Appendix K to the Applicant’s Deadline VI Response.

consented capacity able to bid for the “up to 10 GW” in the 2020s set out by the Secretary of State. This is capable of mopping up most of the likely funding to become available. In addition, it highlights the importance the Government attaches to controlling costs as funding has not been made available to these schemes even ahead of the 18 November 2015 announcement.

108. There is clearly going to be a competitive market within the offshore wind sector for the limited amount of public sector funding that the Government may make available. At present this funding is the only means by which individual offshore wind farm schemes can guarantee that they will be built.

109. Consequently, the RSPB questions the merit of consenting a scheme that is likely to cause an adverse effect upon a Natura 2000 site. The RSPB also notes that East Anglia 3 has just been submitted for examination. If this scheme is consented there will be more capacity seeking funding than the Government intends to make available. This strengthens our view that Hornsea Project 2 should not be consented, as there are sufficient schemes already consented that strike a better balance between the need for renewable energy and the protection of key wildlife sites.

110. The RSPB notes that the Applicant considers that this announcement by the Secretary of State has addressed the concerns expressed by E.ON about the likelihood of Hornsea Project 2 not being able to bid for a CfD round in the next few years.<sup>66</sup> However, we note E.ON’s Deadline 6 submission, which highlights a number of critical qualifications:

“The competition for funding through the auction mechanism has demonstrated that cost savings and efficiency improvements can be made; the Government has now introduced more conditionality into the process. The target level for cost reduction was not revealed nor the timetable for the next CfD auction; these details will need to be clarified by DECC over the coming months.

... There remains much uncertainty regarding projected spending under the Levy Control Framework, as well as the timing and format of future CfD allocation rounds. The size of the subsidy pot is not known, so it is impossible to estimate the volume of capacity that might be supported in the next or subsequent CfD auctions.”<sup>67</sup>

111. The likelihood of Hornsea Project 2 being constructed cannot be seen in isolation from the issue of funding. Indeed, the RSPB note that the issue of funding for Hornsea Project 2 has been raised publicly by one of the SMartWind partners:

“Brent Cheshire, the UK managing director of Dong Energy, said that plans to construct Hornsea 2 and 3 almost 200 kilometres off the Humber estuary were in serious doubt. “The question is what money is available after 2020,” he said. “We don’t know where the government’s thinking is at the moment. We need that visibility or otherwise this will falter very badly.”<sup>68</sup>

112. E.ON’s submission strongly suggests that these funding concerns still remain. The RSPB concurs and takes the above quote as a clear indication that the scheme will only be able to go ahead with public subsidy. Consequently the decisions made by the Government on the amount of funding to make available, and the terms on which it is to be provided, are of direct relevance

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<sup>66</sup> Appendix L to the Applicant’s Deadline VI Response, para 2.4

<sup>67</sup> E.ON E&P UK Ltd, Deadline 6 Submission, Appendix 1: Assessment of Timescales for Development of the Hornsea 2 Project.

<sup>68</sup> The Times, *Funding row could suck the wind from power project’s sails*, 14 September 2015, <http://www.thetimes.co.uk/tto/business/industries/naturalresources/article4555888.ece>.

to the likelihood of Hornsea Project 2 being built.

113. DECC's recent *Consultation on a review of the Feed-in Tariffs scheme*<sup>69</sup>, for schemes below 5MW in size, proposed cuts of 76-87% for solar photovoltaic Tariff payments. The Government announced that if it was not able to introduce new cost control measures "the only alternative would be to end generation tariffs for new applicants as soon as legislatively possible, which we expect to be January 2016" (para 4). This is another clear indication that the Government expects to control delivery of new renewable energy capacity by reference to the cost of the electricity generated by the scheme rather than the need for renewable electricity.
114. It is therefore clear that the availability of Government funding is acting as a major and real constraint for the delivery of offshore wind farm schemes: there is a surplus of consented and planned offshore wind projects in the supply pipeline in comparison to the amount of Government funding that appears to be available (as shown above in Table 4). The Committee on Climate Change recently recommended that the Government should set out the intention to contract 1-2 GW per year of offshore wind, which provides a clear indication of the amount of capacity funding which is needed on an annual basis<sup>70</sup>. The Category I schemes would therefore represent approximately 5-9 years of delivery, the Category II schemes a further 1-2 years, and the Category III schemes a further year, taking delivery to 2021 at the highest end of the funding range or beyond the 2025 target at the lower end.<sup>71</sup> It is important to note that this forecast is contingent on the strike price of offshore wind energy reducing to a level at which the Government is prepared to fund it. The recent announcement by the Secretary of State makes it clear that this cannot be taken as read.
115. The RSPB continues to be supportive of the overall Government policy objective in respect of large scale offshore wind but it is clear that the pot of money available for offshore wind is de facto constraining that policy to a more limited objective, namely that which can meet an as yet unspecified strike price and with a cap of 10 GW by 2020 (already exceeded) and up to a further 10 GW during the 2020s. Therefore, any consideration of the public interest objectives for offshore wind needs to take account of the practical influence on that policy of Government funding decisions. This properly rests with the Secretary of State who oversees all relevant elements. With Government funding decisions acting to constrain the contribution of the offshore wind sector to meeting stated Government renewable energy supply targets (both for 2025 and beyond), it is clear that there will be a significant number of alternative solutions competing for the pot of money the Government has chosen to allocate offshore wind to meet its contribution to the UK's renewable energy requirements. It is important to note that since the RSPB submitted its Written Representation a further 2.4 GW<sup>72</sup> of capacity has been consented, meaning that even more capacity is now competing for whatever funds the Government makes available.

### **Other Natura 2000 features (marine mammals, habitats)**

116. As set out previously (para 15), where it is not possible to rule out an adverse effect on the integrity of an SPA or SAC and their species, the competent authority can go on to consider

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<sup>69</sup> <https://econsultation.decc.gov.uk/office-for-renewable-energy-deployment-ored/fit-review-2015>

<sup>70</sup> Committee on Climate Change, *Meeting Carbon Budgets – Progress in reducing the UK's emissions, 2015 Report to Parliament* (June 2015), *Overview, Table 6, Summary of recommendations – central Government*, recommendation 4 (page 40).

<sup>71</sup> The larger range for the first figure reflects the range from 5.268 to 7.102 GW depending on the outcome of the judicial reviews.

<sup>72</sup> Dogger Bank Teesside A&B, consented on 5 August 2015.

whether there are less damaging alternative solutions that meet the public interest objectives of the plan or project.

117. The purpose of the alternative solutions section above is explicitly to demonstrate that there are other schemes that could produce the energy proposed to be supplied by Hornsea Project Two which would need to be considered to determine if they have less harmful effects upon the ornithological features of affected SPAs. It explicitly does not address the implications of Hornsea Project Two for SAC features, nor does it address the implications for SAC features of those schemes the RSPB has identified as potential less damaging alternative solutions as these matters are outside the RSPB's area of expertise. The RSPB also does not comment upon the risk of harm to European Protected Species (e.g. harbour porpoise)<sup>73</sup>. These are matters for other parties to the Examination, as well as the Examining Authority and the Secretary of State.
118. However, the RSPB is aware from discussions with the Wildlife Trusts that some of those schemes that the RSPB has identified as potential alternative solutions to Hornsea Project Two may not be acceptable due to their impacts upon marine mammals, either as SAC features or as European Protected Species, during the construction or operational phases for example, the Dogger Bank SAC. The RSPB also notes the implications of the current consideration being given to the designation of one or more SACs to protect Harbour Porpoise.<sup>74</sup> As such, the potential alternative solutions that we identify will also need to be evaluated for their impacts upon these candidate SACs and their features by the Secretary of State.
119. The RSPB understands from the Wildlife Trusts that by a careful choice of construction methods and choice of turbine foundations it may be possible to reduce the impacts of those other schemes upon marine mammals and upon the habitat of the Dogger Bank SAC. The Wildlife Trusts are far better placed to advise on these matters and the RSPB defers to them on this issue. However, it is our view, following discussion with the Wildlife Trusts that appropriate safeguards could be put in place to make the potential alternative solutions we identify above acceptable in terms of their impacts on SAC features and European Protected Species. We would urge the Examining Authority and the Secretary of State to consider these safeguards alongside our proposed alternative solutions.

## Conclusions

120. The RSPB advances the following views on the alternative solutions available in preference to Hornsea Project 2:
- The renewable energy schemes that have been consented are sufficient to meet the Government's target of 10 GW by 2020 (these schemes are already funded and/or under construction) and up to another 10 GW by 2030 (sufficient schemes have already been consented to take up the funding that the Government intends to make available, subject to price constraints);
  - The Applicant has provided no information to suggest that there are no alternative solutions to Hornsea Project 2;
  - The Navitus Bay decision has demonstrated that the requirements of the Renewable Energy Directive do not preclude considerations of environmental harm; and

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<sup>73</sup> Listed in Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended).

<sup>74</sup> Set out in Natural England's Relevant Representation (paragraphs 4.2.2 and 4.2.3).

- Where there is a conflict between the requirements of the Renewable Energy Directive and the Birds and Habitats Directives the Government should prefer schemes which are best able to balance these conflicting demands and avoid adverse effects on biodiversity, including European sites.

121. Recent constraints on Government funding for renewables, especially offshore wind, mean that there are a substantial number of consented but currently unfunded alternatives that are environmentally less damaging alternatives to Hornsea Project 2, that in our view the Habitats Directive requires should be preferred to Hornsea Project 2.

## Appendix 1: Wind farms operational, under construction or consented and funded

<i>Scheme categories</i>	<b>Capacity (GW)</b>
<b>A – Operational</b>	
Barrow	0.090
Beatrice*	0.010
Blyth	0.004
Burbo Bank I	0.090
Greater Gabbard	0.504
Gunfleet Sands Demonstration	0.012
Gunfleet Sands 1	0.108
Gunfleet Sands 2	0.065
Gunfleet Sands 3*	0.065
Gwynt y Mor <sup>75</sup>	0.576
Humber Gateway <sup>76</sup>	0.219
Inner Dowsing	0.097
Kentish Flats	0.090
Kentish Flats Extension <sup>77</sup>	0.050
Lincs	0.270
London Array 1	0.630
Lynn	0.097
Methil Demonstration (Fife Energy Park)	0.007
North Hoyle	0.060
Ormonde	0.150
Rhyl Flats	0.090
Robin Rigg (East & West)	0.180
Scroby Sands	0.060
Sheringham Shoal	0.317
Teesside	0.062
Thanet	0.300
Walney 1	0.184
Walney 2	0.184

<sup>75</sup> Officially opened in June 2015: <http://www.bbc.co.uk/news/uk-wales-33168638>; also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>

<sup>76</sup> <http://www.grimsbytelegraph.co.uk/power-hit-Humber-Gateway/story-26656844-detail/story.html> (9 June 2015)

<sup>77</sup> Fully generating: <http://www.businessgreen.com/bg/news/2425947/kentish-flats-extension-offshore-wind-farm-hits-full-power> 15 September 2015)

West of Duddon Sands	0.389
Westermost Rough <sup>78</sup>	0.210
<i>Subtotal</i>	<i>5.170</i>
<b>B – Under construction</b>	
Burbo Bank Extension	0.258
Dudgeon	0.402
Galloper <sup>79</sup>	0.340
Race Bank <sup>80</sup>	0.580
Rampion (Southern Array) <sup>81</sup>	0.400
<i>Subtotal</i>	<i>1.980</i>
<b>C – Consented and funded</b>	
Beatrice <sup>82</sup>	0.664
Blyth Demonstration <sup>83</sup>	0.099
EA 1 <sup>84</sup>	0.714
Hornsea 1 (Heron wind + Njord) <sup>85</sup>	1.200
Hywind 2 (Buchan Deep) <sup>86</sup>	0.030
Neart na Gaoithe <sup>87,88</sup>	0.448
Walney Extension <sup>89</sup>	0.660
<i>Subtotal</i>	<i>3.815</i>
<b>Total</b>	<b>10.965</b>

Sources: Unless stated otherwise, the source for the information above is *UK offshore wind – key facts 2015-16* (The Crown Estate, April 2015).

\* Listed in Table 5.10 Power Stations in the United Kingdom, *Digest of United Kingdom Energy Statistics 2014* (DECC, 2014)

<sup>78</sup> Officially inaugurated on 1 July 2015: <http://renews.biz/91063/westermost-rough-has-lift-off/> Also mentioned by the Secretary of State in a speech: <https://www.gov.uk/government/speeches/address-to-the-renewablesuk-offshore-wind-conference>.

<sup>79</sup> Construction was due to start at the beginning of November (<http://www.bbc.co.uk/news/uk-england-suffolk-34677988>)

<sup>80</sup> Clearance of unexploded ordnance on the cable export route has been undertaken (<http://www.grimsbytelegraph.co.uk/Explosions-Dong-Energy-s-Race-Bank-wind-farm-site/story-27983748-detail/story.html>) (15 October 2015).

<sup>81</sup> Construction began in September (<http://www.businessgreen.com/bg/news/2433684/enbridge-ramps-up-eon-plans-for-400mw-rampion-offshore-wind-farm>).

<sup>82</sup> Hi Def Surveying won a contract from SSE Renewables to provide survey work in 2015 (<http://renews.biz/90182/hidef-woos-beatrice/> (15 June 2015))

<sup>83</sup> EDF Energy Renewables was scheduled to carry out site investigation works in June 2015.

(<http://www.newspostleader.co.uk/news/local/work-continues-on-350m-wind-farm-1-7313366>) (17 June 2015)

<sup>84</sup> Iderdrola has selected Siemens to supply turbines for EA1: <http://renews.biz/89668/siemens-lands-east-anglia-giant/> (5 June 2015)

<sup>85</sup> Hornsea 1 has awarded the contract to construct turbine blades to Siemens' Green Port Hull scheme:

<http://www.hulldailymail.co.uk/Siemens-Hull-factory-wins-UK-s-biggest-wind-farm/story-26642010-detail/story.html> (5 June 2015)

<sup>86</sup> Statoil made its FID at the beginning of November (<http://renews.biz/100318/statoil-commits-to-210m-hywind-2/>) (3 November 2015)

<sup>87</sup> As mentioned above Neart na Gaoithe is one of the Scottish windfarms decisions that is currently subject to a Judicial Review by the RSPB.

<sup>88</sup> Neart na Gaoithe placed an order for Siemens' new offshore transmission module

(<http://www.rechargenews.com/wind/1396924/neart-na-gaoithe-offshore-wind-debut-for-siemens-otm>) (13 April 2015)

<sup>89</sup> DONG Energy confirmed it had made a final investment decision

(<http://www.lancasterguardian.co.uk/news/business/offshore-wind-farm-to-become-world-s-largest-1-7554541>) (8 November 2015)

## Appendix 2: RSPB renewable energy figures – sources and calculations

1. This Appendix sets out how the RSPB has calculated the renewable energy figures set out in its alternative solutions text. The aim is to ensure transparency with the figures and also to ensure that the Examining Authority and the Secretary of State are able to update the figures ahead of (respectively) the Examiners' Report and the Secretary of State's decision.
2. The energy figures for Table 1: *Changes in installed renewable energy capacity between 2011 and June 2015* are derived as follows:
  - Q1 2011 figure – DECC's Energy Trends (June 2012), Table 6.1, *Renewable electricity capacity and generation*, column headed "2011 1<sup>st</sup> quarter" (p47) and rows under the heading "Cumulative Installed Capacity".
  - Q2 2015 figure – DECC's Energy Trends (September 2015), Table 6.1, *Renewable electricity capacity and generation*, column headed "2015 2<sup>nd</sup> quarter"(p47) and rows under the heading "Cumulative Installed Capacity". It should be noted that these are provisional figures.

The differences between these figures were then calculated.

3. The information in Table 1 was used as a starting point for calculating progress towards the Government's renewable energy target of 33 GW for 2025. It represents the **total** increase in renewable energy from the start of 2011.
4. Table 2 was produced to evaluate the likely energy contributions of offshore wind farm schemes. It summarises the energy outputs from all wind farms that are operational, under construction or consented and funded. It represents schemes where delivery is considered to be more-or-less certain. When schemes listed as "under construction" have reached their full generation capacity they have been moved to the "operational" heading. Similarly, where a scheme has proceeded beyond the final investment decision and has started preparatory works (for instance the clearance of unexploded ordnance in the case of Race Bank) it is moved from the "consented and funded" to the "under construction" category. Google searches (under the "Web" and "News" options) have been used to identify recent changes to the schemes. The most recent set of searches were conducted on 11 November 2015. A fuller version of this table, listing all the individual schemes, is set out in Appendix 1.
5. Table 3 combined the information from Tables 1 and 2, along with information about pipeline schemes from the Climate Change Committee, to provide a summary of the amount of capacity that is still required to meet the Government's renewable energy target of 33 GW by 2025.
6. Table 4, contains sites listed by the Crown Estate<sup>90</sup>, which has been updated to reflect recent changes in planning status as well as decisions by developers.<sup>91</sup> As with Table 2 Google searches have been undertaken to ensure that the non-NSIP schemes are caught (the only 2 are Hywind 2 and 2-B Demo). The remaining schemes are all NSIPs and information on consented schemes is picked up via Google searches, and for all other schemes via updates on the scheme page on the Planning Inspectorate's NSIP website. The Table 4 has 4 categories:

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<sup>90</sup> Crown Estate, *Energy and infrastructure key facts 2015-16*, table, UK offshore wind project pipeline – April 2015.

<sup>91</sup> The table has been updated to reflect consent for Dogger Bank Teesside A&B, the refusal of Navitus Bay and Hywind 2 (Buchan Deep) reaching a post-consent Final Investment Decision.

- I Those with consent but no funding
- II Those currently going through the planning process
- III Those we expect to be submitted for planning consideration within the next 12 months
- IV Alternative offshore renewable energy schemes which have consent but no funding.<sup>92</sup>

7. The totals from Table 4 were then used to identify the potential to meet the outstanding renewable energy requirement identified in Table 3.
8. Tables 5 and 6 repeat the process set out in tables 2 and 3, but adjust it to reflect the impact on energy figures that a successful judicial review by the RSPB of the four Scottish offshore wind farms may have.
9. The RSPB's figures are based on DECC's Energy Trends publication and are up-to-date to the 2015 Q2 update (24 September 2015). The Q3 figure will be published on 22 December 2015 and the Q4 figures on 31 March 2016. The RSPB respectfully asks the ExA to take account of the Q3 figures in their report to the Secretary of State and for the Secretary of State to take account of the Q4 figures in reaching her final decision.

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<sup>92</sup> At present the Swansea Tidal Lagoon is the only scheme within this category.