From:	Tania Davey
To:	Norfolk Vanguard
Cc:	[redacted]
Subject:	TWT response to Norfolk Vanguard deadline 1
Date:	14 January 2019 16:27:58
Attachments:	TWT response to NV ExA 1st written questions.pdf TWT Written Representation for Norfolk Vanguard.pdf

Dear Sir/Madam

Pleased find attached the following documents prepared by The Wildlife Trusts for deadline 1 for the Norfolk Vanguard Offshore Wind Farm application:

- Written Representation
- Response to the Examiner's 1st written questions.

I would also like to confirm that I will be attending the Issue Specific Hearing on 6th February on offshore environmental matters.

Kind regards

Tania

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Ms Ridge
National Infrastructure Planning
Temple Quay House
2 The Square
Bristol
BS1 6PN

The Wildlife Trust reference: 20012715

BY EMAIL 14 January 2019

Dear Ms Ridge

Examiner's written questions for Norfolk Vanguard offshore wind farm: deadline 1

Thank you for inviting The Wildlife Trusts (TWT) to respond to questions regarding the Norfolk Vanguard Offshore Wind Farm application. Our response is outlined below.

Question 23.22 NE, MMO, TWT and WDC
The Applicant has proposed a number of mitigation measures within the draft Marine Mammal Mitigation Protocol [APP-037], and the Draft SNS cSAC Site Integrity Plan [APP-041], and it has also proposed that a Marine Pollution Contingency Plan be produced post-consent. The successful delivery of these plans is relied upon for concluding no AEOI, and yet there remains some doubt about the nature and efficacy of some of the proposed measures. Therefore can you please confirm to what extent you are satisfied that the measures referred to in these plans are sufficiently well-defined and deliverable?

SNS cSAC Site Integrity Plan (SIP)
In its current form the SIP lacks detail on the effectiveness of the proposed mitigation methods. Therefore, TWT does not consider it adequate to ensure no adverse effect on the SNS SCI beyond reasonable scientific doubt. To achieve this, more evidence is required to detail how effective the proposed mitigation will be. This should include referenced examples of how the implementation of mitigation will reduce underwater noise disturbance impacts within the SNS SCI. Noise modelling should also be undertaken to demonstrate the degree of noise reduction which could be achieved through mitigation[1].

The following text of the European Commission Article 6 Habitats Directive Guidance from 21st November 2018[2] (page 52) establishes the obligation to detail the effectiveness of mitigation measures.

[1] Faulkner, R.C., Farcas, A. & Merchant, N.D.(2018). Guiding principles for assessing the impact of underwater noise. Journal of Applied Ecology. 1–6.
[2] Commission notice "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC
http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_._nov_2018_endocx.pdf

"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."

We are pleased that the applicant has named TWT on the SIP but we wish to engage with the developer in more detail post-consent than what is proposed. We also wish to be named on the MMMP for piling and UXO clearance. We are in ongoing discussions with the applicant regarding this.

Question 23.47 MMO, NE, WDC, TWT
In light of the information contained in the Change Report [AS-009], and in particular the amended proposal for up to 36 piles in total for the two offshore electrical platforms and an increase in the diameter of the pin piles from 3m to 5m, please confirm whether you concur with the findings contained in the ES and the Change Report.

TWT agrees that the findings of the Change Report do not result in any changes to the results in the Information to Support the HRA report for the Southern North Sea SCI and that mitigation is still required to ensure no Adverse Effect on Integrity (AEOI) of the site.

Thank you for considering our response. We are happy to provide more detail if required.

Yours sincerely

Joan Edwards
Director, Public Affairs and Living Seas
The Wildlife Trusts

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Ms Ridge
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BS1 6PN

The Wildlife Trust reference: 20012715

BY EMAIL 14 January 2019

Dear Ms Ridge

Written Representation by The Wildlife Trusts for Norfolk Vanguard Offshore Wind Farm

The Wildlife Trusts (TWT) welcome this opportunity to comment further on the Norfolk Vanguard Offshore Wind Farm application. Alongside this Written Representation, we have developed a Statement of Common Ground with the applicant.

TWT, with more than 800,000 members 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. TWT manages 2,300 reserves covering more than 90,000 hectares of land including coastal reserves; TWT stand up for wildlife, inspire people about the natural world and foster sustainable living.

TWT support the UK's current targets to reduce greenhouse gas emissions and the government's ambitions to tackle climate change and increase the proportion of overall energy generated from alternative sources. However, we do not believe that this should be at the expense of the environment and firmly believe that it needs to be 'right technology, right place'.

TWT has engaged with the applicant throughout the evidence plan process with representation on the Marine Mammals Expert Topic Group.

As a summary, our concerns regarding Norfolk Vanguard Offshore Wind Farm are as follows:

- **Impacts on the Southern North Sea SCI**: TWT does not agree with the SNCB proposed approach to underwater noise management and therefore cannot agree with the results of the assessment, especially for in-combination impacts. We are pleased that the applicant has committed to develop an in-principle Site Integrity Plan to ensure that mitigation will be delivered. However, this document requires more detail.
- **Marine mammal monitoring**: TWT advocates a strategic approach to marine mammal monitoring and is pleased that the applicant is supportive of this approach. However, a mechanism to deliver this is lacking. TWT advocates the introduction of a conditioned underwater noise levy.

- **Inclusion of fishing in in-combination assessments:** Fishing has not been included in in-combination assessments. Fishing is a licenced activity that can have an impact on the marine environment. To meet Article 6(3) of the Habitats Directive, fishing must be included in the in-combination assessments.
- **Post-consent engagement with the applicant:** TWT is in ongoing discussions with the applicant on post-consent engagement. TWT has built a good relationship with the applicant during the evidence plan process and we wish for this to continue post-consent. However, based on the currently level of proposed engagement by the applicant, we are concerned that post-consent engagement with TWT will not be adequate.

We have included detailed comments on the above points in appendix A.

Thank you for taking our comments into consideration. We are happy to provide more details if required.

Yours sincerely

Joan Edwards
Director, Public Affairs and Living Seas
The Wildlife Trusts

Appendix A

1. Impacts on the Southern North Sea SCI

1.1. Proposed SNCB advice on underwater noise management

1.1.1. TWT do not agree with the proposed SNCB advice on underwater noise management[1]. The approach is based upon the carrying capacity of the Southern North Sea SCI. We have no understanding as to what the carrying capacity of harbour porpoise is in the Southern North Sea SCI. Therefore, there is weak scientific information underpinning the proposed area-based approach to management. Our views are further outlined in a draft joint NGO document which can be found in appendix B.

1.1.2. The SNCB underwater noise management proposal was discussed at a stakeholder workshop in February 2017 and both developers and regulators highlighted the difficulties in delivering the proposed approach. For example, to ensure that the area-based thresholds would not be breached, a piling schedule would be required for offshore wind farm development. Discussions on how this would be implemented are still ongoing and to our knowledge, no resolution has been found**.** The lack of progress on underwater noise management not only puts the conservation status of the Southern North Sea SCI at risk, but also future offshore wind farm development, especially due to the in-combination effects of underwater noise.

1.1.3. TWT are currently advocating the underwater management approach used in Germany[2]. The approach sets noise limits at which piling activity must not exceed. These noise limits are based upon scientific evidence. Germany has stricter noise protection outside their SACs to what is being proposed within UK harbour porpoise SACs. Noise limits are also used in the Netherlands and Belgium.

1.1.4. TWT has expressed this opinion widely with industry, SNCBs, regulators and government. Since the SNCB proposal was presented in February 2017, a number of discussions have taken place in silos, and as a result, underwater noise management within the Southern North Sea SCI has not progressed.

1.2. Assessment results

1.2.1. As a result of our concerns highlighted in 1.1, we cannot agree with the in-combination assessment conclusions of no adverse effect on the Southern North Sea SCI.

1.2.2. When considering the in-combination assessment results, the spatial and temporal thresholds are breached for piling and UXO clearance and therefore we are pleased that the applicant has committed to produce an In-Principle Site Integrity Plan (SIP). However, in its current form the SIP lacks detail and therefore TWT does not consider it adequate to ensure no adverse effect on the SNS SCI beyond reasonable scientific doubt.

1.2.3. To achieve this, more detail should be provided on the effectiveness of the proposed mitigation as outlined in the SIP. This should include referenced examples of how the implementation of mitigation will reduce underwater noise disturbance impacts within the

[1] A potential approach to assessing the significance of disturbance against conservation objectives of the harbour porpoise cSACs. Discussion document. Version 3.0. Distributed by JNCC for the noise management in harbour porpoise cSACs workshop 27th February 2017.

[2] German Sound Protection Concept
http://www.ascobans.org/sites/default/files/document/AC21_Inf_3.2.2.a_German_Sound_Protection_Concept.pdf

SNS SCI. Noise modelling should also be undertaken to demonstrate the degree of noise reduction which could be achieved through mitigation.

1.2.4. The following text of the European Commission Article 6 Habitats Directive Guidance from 21st November 2018[3] (page 52) establishes the obligation to detail the effectiveness of mitigation measures.

"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."

1.2.5. We are pleased that the applicant has named TWT on the SIP but we wish to engage with the developer in more detail post-consent than what is proposed. We also wish to be named on the MMMP for piling and UXO clearance. We are in ongoing discussions with the applicant. Please see section 4 for further details.

1.2.6. We highlight that fishing has not been included in the in-combination assessment. Please see section 3 for more details.

2. Marine Mammal Monitoring

2.1. TWT recommend that strategic approach to monitoring is required, and we are pleased to see that the applicant is supportive of this approach. Pre, during and post construction monitoring is required of both noise levels and harbour porpoise activity to understand the impact of underwater noise on harbour porpoise as an EPS and on the Southern North Sea SCI. TWT believe this should be delivered through an offshore wind underwater noise levy (see section 2.3).

2.2. TWT are concerned that if a strategic approach is not agreed, then monitoring will not be adequate. For example, currently noise monitoring will only be made for the first 4 piles installed and this is only to verify the noise modelling predictions. This does not provide any information on the noise levels per day or during the course of the construction programme, which is essential for understanding the impacts of underwater noise on harbour porpoise as an EPS and the Southern North Sea SCI.

2.3. TWT proposal on an underwater noise offshore wind farm levy

2.3.1. Based on the scale and ambition of the offshore wind industry, there is potential for tens of thousands of harbour porpoise to be impacted by underwater noise disturbance. Therefore, a mechanism to deliver strategic monitoring and mitigation to understand and manage in-combination underwater disturbance impacts is urgently required.

2.3.2. TWT proposes that developers should be conditioned to pay into an underwater noise levy which would fund strategic monitoring and mitigation along with the establishment of a

[3] Commission notice "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_._nov_2018_endocx.pdf

group to coordinate underwater noise management. TWT has produced a draft working document on the underwater noise levy which is included in appendix C.

3. <u>The inclusion of fishing in in-combination assessments</u>

3.1. As a principle, fishing should be included in all in-combination assessment. Fishing is a licensable ongoing activity that has the potential to have an adverse impact on the marine environment. This is supported in the leading case C-127/02 ***Waddenzee*** [2004] ECR I-7405, the CJEU held at para. 6

"The act that the activity has been carried on periodically for several years on the site concerned and that a licence has to be obtained for it every year, each new issuance of which requires an assessment both of the possibility of carrying on that activity and the site where it may be carried on, does not itself constitute an obstacle to considering it, at the time of each application, as a distinct plan or project within the meaning of the Habitats Directive"

This caselaw demonstrates that fishing is considered a plan or a project and therefore not part of the baseline. Fishing should be included in all in-combination assessments where there is an interaction with a designated feature. In-combination impacts must be taken into account in the same way as if they were removed and the total impact of all human activities considered.

3.2. Current Defra policy[4] is to ensure that all existing and potential fishing operations are managed in line with Article 6 of the Habitats Directive. The current, risk-based, 'revised approach' to fisheries management in European Marine Sites is a compromise agreed by all to prevent the closure of fisheries during assessment. This approach further supports that fishing is considered a plan or a project and therefore must be included in the in-combination assessment in line with Article 6(3) of the Habitats Directive.

3.3. A precedent was set for the inclusion of fishing in in-combination assessments when TWT began Judicial Review proceedings against the Department for Energy and Climate Change (DECC) in August 2015 against the approval of Dogger Bank Offshore Wind Farm Order due to the exclusion of fishing from the in-combination assessment as part of the HRA. TWT withdrew the claim due to assurances given by the government regarding the management of fishing within Dogger Bank SAC. One of those assurances was that steps would be put in place to ensure that this scenario would not happen again and that Defra and DECC would work together to ensure fishing would be included in future offshore wind farm impact assessments.

4. <u>Post-consent engagement with the applicant</u>

4.1. TWT is in ongoing discussion with the applicant with regards to post-consent engagement on the Norfolk Vanguard project.

4.2. We are pleased that the applicant has named TWT in the SIP for the Southern North Sea SCI. However, currently this is to provide TWT with a copy of the document. We wish to formally engage with the applicant on the development of the plan post-consent.

[4] Defra Policy to ensure that all existing and potential commercial fishing operations are managed in line with Article 6 of the Habitats Directive
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/345970/REVISED_APPROACH_Policy_and_Delivery.pdf

4.3. There is a great deal of uncertainty at the time of consent on a) the design of the project, b) mitigation that will be effective and c) that there will be no adverse effect on site integrity of the Southern North Sea SCI. TWT aim to take a pragmatic approach to offshore wind farm development on the basis that further detail on impact and mitigation will be put in place once more information is available post-consent. Due to this, we wish to continue close working on this project post-consent.

4.4. With regards to the applicant's commitment to engagement with TWT in the development of the SIP, the applicant is only promising a copy of the document; information providing rather than engagement. This is not adequate and has the potential to cause problems for the applicant closer to construction. If our comments are only taken into account when the MMO consults just months before construction, this may be too late for our concerns to be resolved. We aim to work closely with developers to ensure that the issues we raise can be resolved at an early stage and this is catalogued through the evidence plan process. We propose that, due to the uncertainties at the time of consent, the Marine Mammal Expert Working Group continues into the post-consent stage to support the applicant in the development of the SIP and other marine mammal mitigation and monitoring plans. Those involved in the evidence plan process have a breadth of experience across a range of offshore wind farm projects which would benefit the applicant, and ensure a more consistent and strategic approach to the management of the Southern North Sea SCI.

4.5. TWT also wish to engage with the applicant post-consent on the piling and UXO clearance MMMP and the marine mammal monitoring plan. We are in ongoing discussions with the applicant regarding this.

Appendix B

Draft: The Wildlife Trusts, WWF, Whale and Dolphin Conservation and ClientEarth current views on underwater noise management within mobile species marine protected areas (MPAs)
October2017

Summary
This document sets out:

(i) Our views on the in the UK Interagency Marine Mammal Working Group's (IAMMWG) proposed area-based threshold approach to management of underwater noise in harbour porpoise candidate Special Areas of Conservation (cSACs) in the UK;

(ii) an alternative underwater noise management model based on noise limits, which has been successfully implemented in a number of other European countries; and

(iii) the need for a new UK policy on noise reduction at sea, based on an overall limit on noise throughout the UK, in order to protect this wide-ranging, highly mobile species.

The advantages of a management approach based on noise limits are that it: (i) is based on robust scientific evidence and methodology; (ii) incentivises the development and use of noise reduction technologies and methods; and (iii) enables more detailed planning and certainty at an earlier stage of the project.

Evidence-led noise management is required in order to meet the conservation objectives of these sites and ensure that measures are compliant with the requirements of Article 6 of the Habitats Directive to avoid: (i) disturbance of harbour porpoise, where such disturbance could be significant in relation to the objectives of the Directive; and (ii) adverse effects on these sites.

We recognise that assessing and managing the impact of underwater noise is in its infancy. Therefore, management should be reviewed and updated regularly based on new science and evidence. A mutli-sector forum is required to oversee this.

We want to work with industry, regulators and SNCBs to develop underwater noise management measures that are proven to be effective, legally compliant and that can be used to provide certainty to all at the earliest stage of planning.

1. Introduction

After reviewing the area-based threshold approach[5] proposed by the UK Interagency Marine Mammal Working Group (IAMMWG) at its stakeholder workshop in February 2017, we have concluded that we cannot support this approach in its current form for the following reasons:

- The scientific evidence base underpinning this approach is not sound; bycatch cannot be related to disturbance
- Due to the lack of robust scientific evidence underpinning this approach, it would need to be much more precautionary in order to comply with the requirements of Article 6 of the Habitats Directive
- It provides weaker protection for the harbour porpoise than the approach taken by other European countries
- It does not encourage or incentivise noise reduction technologies and methods

Please see Annex A for an in-depth narrative on the above points.

We advocate an alternative approach to underwater noise management based on noise limits, which has already been implemented by a number of other European countries. This is a tried and tested method which is supported by empirical evidence.

We also set out a number of other areas of work which are required to ultimately lead to noise reduction within UK seas - measures that are needed in order to achieve the strict protection required by the Habitats Directive for harbour porpoises throughout their range.

Much more discussion is required on the methods for managing and implementing underwater noise management and we would like to open the debate on this issue with industry, regulators and SNCBs.

We are requesting feedback on this document and are happy to discuss our thoughts in an open and productive way to progress the development of underwater noise management. Please contact Tania Davey, Living Seas Sustainable Development Officer at The Wildlife Trusts to provide feedback or to arrange a meeting to discuss our proposals:

Email: tdavey@wildlifetrusts.org
Office: 01507 528388
Mobile: [redacted]

2. NGO noise management proposal

Below we propose noise management which would combine noise limits with a more precautionary area-based approach. In addition to this, noise limits should also be set at a wider seas level to achieve the protection required by the Habitats Directive for marine mammals across their natural range, as part of a wider noise reduction strategy. The proposal is focused, at present, on the management of noise from piling activity.

2.1. Assessing individual wind farm developments: noise limits

Precautionary noise limits must be set for harbour porpoise cSACs to ensure the conservation objectives of each site are achieved and requirements of the Habitats Directive are met.

Our proposed approach is simple and would introduce maximum noise limits, based on information within scientific literature, at a certain distance fromimpulsive noise activities in or within 26km of the harbour porpoise cSACs. The benefits of using noise limits are as follows:

[5] A potential approach to assessing the significance of disturbance against conservation objectives of the harbour porpoise cSACs. Discussion document. Version 3.0. Distributed by JNCC for the noise management in harbour porpoise cSACs workshop 27th February 2017.

2.1.1. It is a tried and tested method used in other European countries

Noise limits are currently already being used in Germany, Belgium and the Netherlands (see figure 1).

In Germany, noise limits have been used to manage underwater noise since 2013. From our understanding, regulators and developers work to meet noise levels by implementing the following:

- Noise modelling is used to predict noise levels from piling and to plan the mitigation needed to reduce noise levels to the agreed standard
- Test piling is undertaken to test predicted noise levels
- A programme of monitoring is undertaken to understand marine mammal abundance and distribution pre- consent, during construction and post construction
- A programme of monitoring to understand pre- construction ambient noise levels, construction noise levels of every pile until proof has been provided of continuous, reliable adherence to the noise prevention value and post construction measurements of waterborne operating noise.[6]

Further details on the way that Germany manages noise to protect harbour porpoises can be found in the 'German Sound Protection Concept' document from the German authorities on this subject, available here. We have had some dialogue with the German regulators. We recommend that UK regulators discuss the concept with the German regulators and we are happy to provide contact details.

German Sound Protection concept, requiring constant sound exposure levels (SEL) to be less than 160 dB re 1 µPa at 750m (single peaks up to 190 dB re 1 µPa at 750m) from the noise source within the German EEZ. No piling is allowed within harbour porpoise SACs and an adverse effect on a site is to be presumed if at 10% or more of the area of the site is located within the disturbance radius. *Nehls et al (2016)* shows, for example, that reaching the 160dB threshold at the German Borkum West II wind farm reduced the noise impact area by 90% while still allowing significant wind farm construction, which would significantly reduce the risk of a population-level decline.

Belgium noise management, requiring Peak Level 185 dB re 1 µPa at 750m Peak across EEZ as a measure under the Marine Strategy Framework Directive.

Netherlands noise management, which considers noise limits on a case by case basis in addition to seasonal restrictions on construction. For example, the Borsselle wind farm had a Sound Exposure Level (SEL) limits of 160-172 dB re µPa² at 750m from the source as a function of the number of turbines and time of year of construction

Figure 1: European examples of implemented noise limits

2.1.2. It meets the requirements of the Habitats Directive

Management measures introduced for harbour porpoise cSACs must ensure that each site's conservation objectives are met. The overall conservation objective for all sites is to ensure that the integrity of the site is maintained and that it makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters. More specifically, Conservation Objective One specifies as follows: 'Harbour porpoise is a viable component of the site', while Conservation Objective Two specifies that: 'There is no significant disturbance of the species'.

[6] Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment (StUK4). 2013. Bundesamt für Seeschifffahrt und Hydrographie, BSH

Information from scientific literature is available on appropriate noise thresholds for harbour porpoise for Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS)[7][8] and disturbance[9] . Exceeding noise thresholds has the potential to cause death, injury and disturbance. If these noise limits are exceeded therefore, this is likely to result in the non-achievement of the conservation objectives for these sites, resulting in negative impacts on the Favourable Conservation Status of harbour porpoise, in breach of the Habitats Directive. We do not currently know enough about the functioning and population levels of harbour porpoise within these particular cSACs. Therefore, the limits set out in this scientific literature should be used as a starting point for setting appropriate noise limits for the sites, but they will need to be adjusted downwards in view of this information gap, in order to comply with the precautionary principle embedded within Article 6 of the Habitats Directive.

Another advantage of this approach is that it is possible to equate noise levels with habitat availability when deciding what an appropriate noise level limit should look like. The distance that noise levels are able to travel from the relevant noise source can be calculated and used to plot noise impacts. For example, in Germany it is assumed that if the 160 dB (SEL) threshold is complied with, measured at a distance of 750m, disturbance will occur within a radius of 8km. Plotting disturbance radiuses in this way means that it can be ensured that harbour porpoise have enough access to the cSAC.

2.1.3. It can be monitored and managed

The use of this approach in Germany and other European countries proves that the use of noise limits can be implemented and monitored. This is largely because: (i) overall noise level from source is a relatively easy parameter to measure and monitor for compliance with a noise level limit; and (ii) technology to reduce noise from pile driving and other construction activities already exists, meaning that noise limits can realistically be met while minimising the need to limit wind farm construction.

2.1.4. Information on noise thresholds for injury and disturbance are available in scientific literature

Best available scientific information is available to support the use of noise limits in management. This means that, where there is adequate information about harbour porpoise behaviour and populations, there can be sufficient certainty about the absence of adverse effects on the sites in relation to the chosen management approach, thus meeting the requirements of Article 6 of the Habitats Directive.

2.1.5. It can be factored into early stages of planning

Developers will have clarity from an early stage of the process about what noise limits cannot be exceeded and if and what mitigation will be required, allowing this to be factored in practically and financially at an early stage.

2.1.6. It has benefits for the range of species that might be impacted by piling noise

Harbour porpoise are particularly sensitive to underwater noise. Therefore, without any additional cost to a developer, noise limits will ensure protection of a range of marine mammals.

2.1.7. It encourages industry competition to develop the best technology

In some circumstances, the use of noise limits will require either the need for mitigation or alternative foundation technology to reduce noise impacts. Due to the increased competition and demand, technological and methodological improvements will be made which will in turn drive down the costs of noise reducing technologies and methods.

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[7] Southall, BL, Bowles, AE, Ellison, WT, Finneran, JJ, Gentrym RL, Greene, CR, Kastak, D, Ketten, DR, Miller, JH, Nachtigall, PE, Richardson, WJ, Thomas, JA and Tyack, PL, 2007. Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations. Aquatic Mammals, Volume 33, Number 4, 2007.

[8] National Marine Fisheries Service, 2016 (NOAA). Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permenant and Temporary Threshold Shifts.

[9] Lucke, K., U. Seibert, P.A. Lepper and M-A. Blanchet. 2009. Temporary shift in masked hearing thresholds in a harbour porpoise (Phocoena phocoena) after exposure to seismic airgun stimuli. Journal of the Acoustical Society of America, 125:4060 – 4070.

2.2. Assessing in-combination impacts

A North Sea noise limit is required to assess in-combination impacts, which is currently not in place. To assess in-combination impacts, an area-based approach is still required. However, as we do not know enough about harbour porpoise functioning, including important areas for activities such as feeding and breeding, we believe much more precautionary figures are required than those proposed by the IAMMWG. These would also be more in line with what is used by other European countries. Therefore, we propose:

- A maximum 10% relevant area of an SAC in a day; and
- An average 1% relevant area of an SAC over a season.

We see an area-based approach to assessing in-combination impacts as a temporary measure until North Sea Noise limits can be developed.

2.3 A comprehensive noise at sea reduction policy

It is essential that noise is managed at a wider seas level as well as at a cSACs level to ensure the functioning of harbour porpoise within their natural range, in line with Habitats Directive requirements. A noise at sea reduction policy is required at a UK level to establish a noise baseline, set noise limits and create a marine spatial plan that plots noise levels and limits, taking particular account of vulnerable areas such as the harbour porpoise cSACs. The spatial plan should then form the framework for all decision-making and overall noise limits should also be factored in to all decisions. The best way to avoid delays, costs, conflicts and environmental decline is to choose ecologically sound areas in the first place and technology with least impacts.

The recent Contract for Difference awards has shown how the costs of offshore wind have drastically reduced, with credit to the industry in achieving this. The driver of this however, has been government policy. A noise reduction policy is required to incentivise and encourage investment in mitigation technologies and methods and alternative foundation types, to reduce noise and avoid negative impacts on harbour porpoises and other marine mammals

3. Further measures required

For the successful management of harbour porpoise populations, we believe the following is required:

3.1. Strategic monitoring programme

To understand more about harbour porpoise trends, activity and behaviour within these cSACs, a long-term baseline and impact monitoring programme should be developed and implemented and we are pleased to see that JNCC is taking this forward. A strategic monitoring programme could be supported through a marine user strategic monitoring fund. Ongoing strategic monitoring provides a feedback loop into the management of noise, potentially enabling less precautionary noise level limits to be set in future, due to increased certainty about harbour porpoise behaviour and populations.

The existing JNCC Noise Registry is an essential tool for managing and analysing information and needs to be expanded to include high frequency (above 10kHz) impulsive noises and all other noises.

3.2. Noise modelling

Noise modelling is an essential tool as part of the impact assessment process, but currently each developer uses a different approach, which makes confidence in the results differ between developments. It also makes it very difficult to compare cumulative/in-combination impacts and therefore outcomes produced. Guidance and standardisation of noise modelling used to determine the impacts of noise from piling is required. Noise modelling should be ground-truthed at construction stage.

3.3. Population modelling

There are benefits in developing models to inform strategic management decisions. However, both the iPCoD and DEPONS model should be considered illustrative only at present due to the uncertainty in the data used to inform the outputs. To give us confidence, we would expect to see an analysis of the data used in both models, including the attachment of confidence values.

We believe a coordinated programme of research is required to inform future model development, much of which can be built upon the DEPONS research recently undertaken. Ground truthing modelling data with monitoring is essential.

3.4. Review and update of guidance

To ensure consistent and effective assessment of noise impacts on harbour porpoise cSACs, relevant and up to date guidance is required. JNCC piling guidance is now out of date and should be reviewed considering the submission of harbour porpoise cSACs to the European Commission. This should include an assessment of the disturbance impacts of soft starts and possible injury and disturbance impacts of Acoustic Deterrent Devices (ADDs) for the range of species using the site, currently recommended as part of the JNCC piling guidelines. Other guidance such as that relating to UXO clearance should also be reviewed. Detailed conservation advice is also required. We would welcome involvement in the development and review of any guidance.

3.5. Development of a strategic in-combination and cumulative assessment

It is extremely difficult for individual developers to undertake in-combination and cumulative assessments. The assessment can only be based on the best publicly available quantitative information, which often results in inconsistent assessments between developments and means that a full picture of noise producing activity is never achieved. In addition to this, Environmental Statements and HRAs for individual projects use differing methodologies and different countries bordering the North Sea have different management policies. To ensure a consistent and holistic approach to in-combination and cumulative assessments, a strategic approach is required which includes greater standardisation of the way noise impacts are assessed. This is required at both a cSAC and Management Unit level.

3.6. Underwater noise forum

An independently-chaired forum, made up of regulators, governments, industry and NGOs, is essential to discuss key noise management issues in relation to harbour porpoise cSACs. Underwater noise management is in its infancy and it is important that findings and new information is regularly shared to inform future noise management. The management of all sources of noise also needs to be considered alongside management of other activities that can impact porpoises (e.g. fisheries bycatch).

4. Next steps

We do not believe that the current proposed area-based threshold approach to underwater noise management will achieve the site's conservation objectives or comply with the law and therefore we are advocating the use of noise limits for the project alone assessment, and more precautionary area-based thresholds for the in-combination assessment.

We believe more discussion is required on the management of underwater noise and any future proposals should be developed and agreed at a UK level as part of a transparent process in consultation with regulators, SNCBs, industry and NGOs. We suggest the best way forward would be through a second workshop with regulators, SNCBs, industry and NGOs to discuss noise limits as a future management option within a package of wider noise reduction measures.

Annex A: View on the area-based threshold approach

As set out above, we cannot support the area-based threshold approach[10] proposed by IAMMWG for the following reasons:

1. Non-compliance with the Habitats Directive

The area-based threshold figures that have been proposed are based on the carrying capacity of the cSACs. Firstly, there is not enough scientific evidence to understand what the carrying capacity is for harbour porpoise sites. Secondly, each cSAC may have a different carrying capacity depending on the status of the population and pressures it is under. There is therefore insufficient evidence to show that these noise threshold figures will meet the conservation objectives for these sites of (i) ensuring the harbour porpoise remains a viable component of the site; and (ii) avoiding significant disturbance of the species.

These conservation objectives must be interpreted through the lens of Habitats Directive requirements. What this means is that the overall objective of the legislation, i.e. in this context to achieve Favourable Conservation Status for harbour porpoise, must not be compromised. In other words, noise levels must not be permitted to negatively impact on harbour porpoise populations, range or habitat – if they did, this would constitute an adverse effect on site integrity, in breach of Habitats Directive requirements. This is confirmed by the JNCC, which states that the overall conservation objective for these sites is "*To ensure that the integrity of the site is maintained and that it makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters*".[11]

We have set out the legal position in more detail below.

1.1. Favourable conservation status

Management of EMSs must ensure that "favourable conservation status" is achieved, or recovered, for a site's designated or classified features.[12]

In relation to species, Article 1(i) of the Habitats Directive confirms that a species will be in FCS where:

I. the population is stable;
II. the nature range of the species is not being or likely to be reduced; and
III. there is a sufficiently large habitat to maintain populations on a long-term basis.

This means that, broadly speaking, in order to comply with their Article 6 duties, the authorities need to ensure that noise levels do not prevent the outcomes listed at (i)-(iii) above from being achieved.

1.2. Article 6 Habitats Directive (HD) and the precautionary principle

Article 6(3) HD provides that, where a plan or project may have a significant effect on a site, the competent national authorities shall agree to that plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.

Therefore, plans or projects that will generate underwater noise can only take place if it is certain the activity will not have an adverse effect on the integrity of the site concerned. In order for site integrity not

[10] A potential approach to assessing the significance of disturbance against conservation objectives of the harbour porpoise cSACs. Discussion document. Version 3.0. Distributed by JNCC for the noise management in harbour porpoise cSACs workshop 27th February 2017.

[11] See for example http://jncc.defra.gov.uk/page-7241

[12] Article 2(2) Habitats Directive

to be adversely affected, the site must be preserved at "favourable conservation status". We have already discussed the meaning of this above and the associated need to avoid the negative outcomes listed.

In addition, authorities must adhere to the precautionary principle when making decisions. Therefore, "certainty" in this context means situations "where *no reasonable scientific doubt remains* as to the absence of such [adverse] effects"[13] (our emphasis).

This means that the authorities must not permit an activity to go ahead if there is insufficient evidence forthcoming from their assessment to exclude the possibility of harm to site integrity arising out of that activity. In the same way, the authorities may not authorise a management approach if there is insufficient evidence to show that the approach will exclude the possibility of harm to site integrity arising from the activity that is being managed.

The European Court has confirmed that in the case of permanent damage a small loss may still amount to a loss of site integrity.[14]

2. Unsound methodology

The area-based threshold approach is based on the management of bycatch. Bycatch and disturbance are in fact unrelated and it is not an appropriate or scientifically robust methodological approach to based disturbance management on bycatch management.

3. It provides weaker protection than other European countries

The UK would end up with a weaker management regime for noise *inside* these high-density sites than other North Sea countries have *outside* of their own harbour porpoise SACs. As harbour porpoise are a mobile species, an approach that is cohesive with our European neighbours is required in order to ensure the FCS of harbour porpoise and comply with Habitats Directive requirements relating to the strict protection of this species throughout its range. Also, underwater noise management based on noise limits is a tried and tested method in countries such as Germany that has been shown to be effective; we do not need to reinvent the wheel to implement a sound, legally compliant management approach.

4. It does not encourage or incentivise noise reduction

Such an arbitrary spatial approach on its own offers no motivation for individual sea users or developers to take positive measures to reduce underwater noise and would simply open up space for other less responsible users. It also favours developers who pile early in the season.

[13] Case *C-127/02 Waddenzee* - answer to question 4 put to the Court

[14] See Case *C-258/11 Sweetman v* .

Appendix C

A draft working document: An approach to implementing strategic monitoring and mitigation for the Southern North Sea

1. Introduction

The majority of upcoming offshore wind farm developments are located within the Southern North Sea, and we are likely to see cumulative underwater noise impacts as a result of construction activities. This is a particular risk to harbour porpoise populations, which is recognised by both OSPAR[15] and ASCOBANS[16]. The Wildlife Trusts (TWT) advocate underwater noise management at a regional seas level, ensuring consistent management across the natural functioning ranges for marine mammals.

With a number of offshore wind farms either entering planning applications, included in the BEIS review of consents or close to construction, **a clear approach is required to implement underwater noise management**. It is important to act now to create a management approach that will give industry, regulators, SNCBs and NGOs certainty that legal compliance can be achieved for European Protected Species (EPS) and the Southern North Sea SCI. In addition, this will provide industry with certainty on mitigation requirements and expected costs associated with this.

Underwater noise management is complex; our proposal encourages a coordinated approach across the sector in the development of underwater noise management. Key to our proposal is the establishment of an implementation group which would provide the much-needed forum to progress mitigation and monitoring, bringing together experts who can advise on underwater management and most importantly, ensure a consistent approach.

It is important to understand the spatial and temporal impacts of large scale offshore wind development within EPS functioning ranges and on the Southern North Sea SCI. The Wildlife Trusts believes that this would be best achieved through a programme of strategic monitoring. It would allow the best use of resources and achieve the best results.

To be successful, the approach should be captured as a Development Consent Order (DCO) condition for all offshore wind farms within the Southern North Sea. The case studies included in this document highlight that what we are proposing is not new and much can be learnt and built upon from these examples.

2. The levy proposal

2.1. What would be achieved with the levy?

It is important to note that the proposed approach is about delivering a much-needed strategic approach to underwater noise management.

The levy would deliver the following:

- Strategic monitoring of underwater noise levels and harbour porpoise population activity.
- Strategic mitigation for underwater noise impacts
- Research into underwater noise mitigation methods and the promotion of best practice
- Establish and provide long-term support for the Southern North Sea Underwater Noise Implementation Group, with secretariat and officer support. The Group would manage and oversee the development and delivery of strategic monitoring and mitigation. The group would be responsible for:
    - Overseeing the development and implementation Southern North Sea strategic monitoring plan.

[15] OSPAR Recommendation 2013/11 on furthering the protection and restoration of the harbour porpoise (Phocoena phocoena) in Regions II and III of the OSPAR maritime area. Reference Number: OSPAR Recommendation 2013/11

[16] ASCOBANS Conservation Plan for Harbour Porpoises (Phocoena phocoena L.) in the North Sea as adopted at the 6 th Meeting of the Parties to ASCOBANS (2009)

- Overseeing the development and implementation of Southern North Sea strategic mitigation plan.
- Provide advice for individual offshore wind farm developments on best practice mitigation and make recommendations to the regulators on individual development mitigation plans (see 3.1 as an example).
- The implementation group should have representation from industry, regulators, SNCBs and NGOs. The implementation group should be established as soon as possible to develop a programme of work to estimate the amount of developer contributions required.

2.2. How could the levy be implemented?

We propose that all offshore wind developments within the Southern North Sea should be conditioned as part of their planning consent to financially contribute to a strategic underwater noise mitigation and monitoring fund. As part of the conditions, developers would be required to participate in the implementation group which would oversee the implementation of strategic monitoring and mitigation. This approach is already being undertake in Scotland (see 3.1).

TWT have considered several options for how individual developers would pay into the levy. We have selected the option outlined below based upon ease of delivery by regulators and developers. It also incentivises noise reduction, ensuring legal obligations in relation to EPS and the Southern North sea SCI are met.

The levy should be based upon the amount of noise an offshore wind farm is expected to produce from construction activity. As shown in figure 1, we have considered the noise management approach used in Germany and recommended two levy rates.

Lower levy rate £x = less that 160dB @ 750m x number of piling events

Higher levy rate £x = more than 160dB @750m x number of piling events

Figure 1: Proposed underwater noise level levy

TWT believe this approach is the best way to implement the levy for the following reasons:

- Developers and regulators can easily predict the levy rate through noise modelling
- Developers and regulators can easily monitor the noise level to confirm the levy rate
- Developers need only to pay into the lower levy rate if they deploy of noise mitigation or use alternative technology to reduce noise impacts.
- The propose noise levels are used by German regulators[17] and are therefore tried and tested and based on good science.
- The approach ensures consistency at a regional seas level.

Details on the discounted options can be found in Annex A.

3. Case studies

What we are proposing is not new and much can be learned from other sectors. Here we outline three case studies as examples of a strategic approach to ensure the best use of resources and legal compliance.

[17] German Sound Protection Concept
http://www.ascobans.org/sites/default/files/document/AC21_Inf_3.2.2.a_German_Sound_Protection_Concept.pdf

3.1. Moray Firth Regional Advisory Group and Forth and Tay Regional Advisory Groups

This case study exemplifies how the participation in a strategic monitoring and mitigation group can be captured though offshore wind farm planning conditions.

These regional advisory groups were set up as part of planning and marine licensing conditions for the development of various offshore wind farms in Scotland[18], to ensure effective environmental monitoring and mitigation is undertaken at a regional scale[19]. The terms of reference[20] [21] for the groups outline the requirement for the offshore wind farm developer to participate in the Group, established by Scottish Ministers, for the purpose of advising the Scottish Minister on research, monitoring and mitigation programmes for areas such as:

- Marine mammals
- Ornithology
- Diadromous fish
- Commercial fish

The planning conditions also require offshore wind farm developers to participate in the Scottish Strategic Environmental Group (SSMEG) established by Scottish Ministers for the same purpose as above but to ensure effective monitoring and mitigation is undertaken at a national scale.

3.2. Aggregate Levy Sustainability Fund

This case study exemplifies how a fund can legally be conditioned as part of development activity to deliver strategic work to make environmental improvements to an industry.

The Aggregate Levy was introduced as a means to better reflect the environmental costs of winning primary construction aggregates, and to encourage the use of alternative, secondary and recycled construction materials. To reduce the environmental consequences of winning primary construction aggregates, a proportion of the revenue raised by the new Levy was allocated to a research fund, termed the Aggregate Levy Sustainability Fund[22].

A steering group was established which had a number of key aims including improving the evidence base on the seabed environment, increasing understanding of the environmental effects of aggregate dredging, and developing monitoring, mitigation and management techniques. In the 9 years that the fund was in place, £22.5 million was spent on research associated with marine aggregate extraction, to improve the way in which the industry was planned, assessed and managed as well as a community grant scheme.

3.3. Solent Mitigation Disturbance Partnership

This case study exemplifies how both a payment and strategic partnership can be established as part of planning conditions for the to ensure no adverse effect on a Special Protection Area (SPA).

The Solent Mitigation Disturbance Partnership[23] purpose is to facilitate joint work to implement measures which will mitigate the impact of additional recreational activity from planned housing development so that it does not have a significant effect on the three SPAs in the Solent. The

[18] Moray Firth Regional Advisory Group – Beatrice Offshore Wind Farm (BOWL) and Telford, Stevenson and MacColl Offshore Wind Farm in the Outer Moray Firth (MORL). Forth and Tay Regional Advisory Group - Seagreen Alpha, Seagreen Bravo, Neart na Gaoithe and Inch Cape Offshore Wind Farms.

[19] Planning conditions for Scottish offshore wind farms http://www.gov.scot/Topics/marine/Licensing/marine/scoping

[20] Moray Firth Regional Advisory Group http://www.gov.scot/Topics/marine/Licensing/marine/scoping/mfrag

[21] Forth and Tay Regional Advisory Group http://www.gov.scot/Topics/marine/Licensing/marine/scoping/ftrag

[22] http://www.bmapa.org/issues/aggregates_levy.php

[23] http://www.birdaware.org/CHttpHandler.ashx?id=27311&p=0

membership comprises of local authorities, the parks authority, Natural England, RSPB, Hampshire and Isle of Wight Wildlife Trust and Chichester Harbour Conservancy.

Within a set zone around the SPAs, all housing developers are required to pay a fixed amount per dwelling[24] before planning permission is granted which contributes towards the delivery of Solent Mitigation Disturbance Strategy[25].

[24] http://www.birdaware.org/article/28101/Developer-contributions
[25] http://www.birdaware.org/strategy

Annex A

Discounted options considered to implement the levy

Option 2: area based levy
Lower band £ = noise disturbance impacts less than 8km
Medium band £ = noise disturbance impacts between 8km and 20km
High band £ = noise disturbance impacts over 20km

This option was discounted as it will be difficult to implement and monitor. It would also require a complex piling schedule. Also, the science underpinning such an approach is weak.

Option 3: MW output levy
Lower band £ = less than 500MW
Medium band £ = up to 750MW
High band £ = over 750 MW

Most upcoming offshore wind farms are in the high band bracket in terms of MW output, and therefore this option does not benefit developers.