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Background to the advice on noise management within harbour porpoise SACs in England, Wales and Northern Ireland

1. Introduction

Special Areas of Conservation (SACs) have been designated for harbour porpoise with the main aims of protecting recognised important habitats for the species and avoiding significant disturbance in order to allow those habitats to contribute in the best possible way to supporting the species. The areas inside and around the SACs (in particular the Southern North Sea SAC) have, over the last couple of decades, experienced a certain level of noise disturbance, particularly from oil and gas exploration and military activities. Harbour porpoise are sensitive to underwater noise associated with these activities and field studies have shown that animals respond to the disturbance over relatively large areas, for example by moving away or changing activity patterns. Despite historical levels of noise, the cetacean survey data collected over the last two decades showed the SACs to sustain higher persistent densities of harbour porpoise than other areas, suggesting that animals may cope with a certain level of disturbance whilst still favouring those areas. More recently, the installation of offshore wind turbines has created temporary noisy areas with lower densities of porpoises (see noise guidance for detail and references). The scale of offshore wind installation planned over the next decades in some of these areas raises the potential for unprecedented disturbance, on top of a continuing background of noise from oil and gas and other sources. Given the now protected status of these areas, it is the responsibility of competent authorities to set the bar higher than in other areas within the species range, in terms of regulation, risk assessment, mitigation and monitoring applied to all industries producing noise and associated disturbance. The Statutory Nature Conservation Bodies (SNCBs), when developing advice on the management of noise, have tried to devise an approach that could be equally applied to all relevant industries, one that reduced accumulated noise at times of the year where porpoise occur in particularly higher densities and one that incentivised industry to look for less noisy alternatives and ways to reduce their disturbance footprint in time and space.

This note sets out the background to the development of advice on managing activities resulting in noise and disturbance to harbour porpoise in SACs. It also addresses the questions that have been posed over the last couple of years of consultation with stakeholders (see Annexes for list of held workshops and stakeholders), clarifying the rationale behind the advice. It is recognised that there is low confidence in the evidence base for the guidance. In common with other advice on marine management this guidance uses the best available evidence and is intended to be applied adaptively. This means that where evidence supports an alternative approach to noise management regulators can consider that in preference to the guidance.

2. What approaches were considered for managing noise in harbour porpoise SACs?

SNCBs considered two approaches to assessing the impacts of noise on the SACs: the first was grounded in quantifying the *numbers* of porpoise disturbed and the second in quantifying the *loss of habitat* available to harbour porpoises as a result of disturbance.

These approaches were discussed during the SNCBs Inter Agency Marine Mammal Working Group (IAMMWG) meetings.

a. Numbers of porpoise disturbed

SNCBs considered an approach that would use estimated numbers of animals disturbed and the impact that could have on the densities within the site and/or on the population as a whole (i.e. Management Unit). The estimate of numbers of animals disturbed by an activity is now standard in Environmental Impact Assessments and Cumulative Impact Assessments (e.g. DEPONS, iPCoD). However, there were two key issues with this approach: 1. animals using the SACs are highly mobile, able to travel 100s of km in a short period of time, part of large wide-ranging populations with highly variable numbers of animals spatially and temporally, hence the concept of a 'site population' as traditionally applied to terrestrial species and breeding seabird populations does not apply here; 2. The focus of conservation objectives (CO) is on the protected site itself, not on the population across their range.

Population consequences models such as DEPONs (Disturbance Effects on the Harbour Porpoise Population in the North Sea) and iPCoD (interim Population Consequences of Disturbance model) can be very useful in helping understand the mechanisms and magnitude of effects of disturbance and to compare different disturbance scenarios and may help, together with other available evidence, inform wider scale population level assessments. For example, work commissioned by NE and JNCC used iPCOD and estimated that the risk to the North Sea harbour porpoise population from English offshore windfarms is low, but outcomes are heavily dependent on a range of assumptions and estimated parameters with considerable associated uncertainty.

The use of these models in the context of assessing effects on harbour porpoise SAC *site integrity*, namely when addressing the CO on avoiding significant disturbance was considered not appropriate. One issue is that the number of animals affected (even if it could be robustly determined) would need to be assessed against a "site population". However, the variability in numbers within the site at any one time varies given the wide ranging and mobile nature of the species and so there is no such thing as 'site population'. In addition, as EC Guidance*[1] states: '*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*.' In this case we are not faced with destruction of a site but with temporary habitat loss, nonetheless the principle is the same - model predictions on the potential effects on the Favourable Conservation Status (FCS) of the species in UK waters, whilst useful context under Environmental Impact Assessment (EIA)/ European Protected Species (EPS) assessments in particular, do not provide the robust evidence that would allow us to conclude no 'significant disturbance' of the species within the site. The key here is to devise an approach to assess whether the site is contributing in the 'best possible way to achieving FCS'.

b. Temporary habitat loss

The second approach considers that assessments, and consequently management, could be couched in terms of loss of habitat to harbour porpoise within the site. This seemed a more logical approach given that sites are designated for the "*habitats of the species"*; EC Guidance on article 6.4. considers that that significant disturbance of a species in a Natura 2000 site could be:

1. Any **event** which contributes to the long-term decline of the population of the species on the site can be regarded as a significant disturbance

[1] https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_2018_en.pdf

2. Any **event** contributing to the reduction or to the risk of reduction of the range of the species or *reduction of the size of the habitat* within the site can be regarded as a significant disturbance

This guidance also states that the intensity, duration and frequency of repetition of disturbance are important parameters. The sites are designated because the habitat supports higher densities of porpoises in those areas and therefore, it is important that a component of maintaining site integrity would require maintenance of access to the habitat. Given the issues around use of numbers and models, and coupled with the purpose of site designation, the IAMMWG concluded that a habitat (area) based approach would be more appropriate than an approach based on numbers of porpoise disturbed. It was agreed that such an approach would also be simpler to apply, relied less on uncertain numbers within the site and would level the playing field across various developments/activities.

A habitat-based approach is also part of impulsive noise management in Germany, in addition to the dual legal threshold value for impulsive noise sound level (190dB SPL/160dB SEL at 750m). To limit disturbance, the sound level thresholds were coupled with additional spatial thresholds to ensure there were enough areas unaffected by noise from pile driving available for harbour porpoises. No more than *ten per cent of the area of the Economic Exclusive Zone (EEZ) in the German North Sea* can fall within the disturbance radiuses. Additionally, within MPAs with porpoise as qualifying feature, no more than 1% of the site is to be located within the disturbance radius during May – August (defined as breeding season)[2].

The IAMMWG agreed that a spatial threshold was the most appropriate and measurable metric for assessment and management of disturbance from noisy activities. In addition, a temporal component would need to be considered. The IAMMWG considered definitions within the Habitats Directive guidance documents to develop thinking on what level to set that threshold to, i.e. what portion of temporary habitat loss within protected sites could impact site integrity. The group considered the EC Guidance recommendation that the loss of more than 1% per year could constitute a “large decrease in habitat surface area”, as well as 1% change in population abundance to be a “large” change. However, 1% was considered disproportionate given that:

- here we are dealing with a temporary loss of access and not a permanent loss
- these sites have been identified despite a baseline of past decades of noisy activities (e.g. from seismic surveys) and therefore there is some level of disturbance that an area can experience and still provide habitats that are used preferentially by the species.
- there needs to be a balance between maintaining the sites integrity but also permitting managed levels of activity to proceed to ensure carbon reduction targets are met.

The IAMMWG then decided to pursue an approach used in a Defra commissioned expert report under the Habitats and Wild Birds Directives – Marine Evidence Group (Touggard et al. 2013). This report analysed the potential broad-scale impacts on harbour porpoise from proposed pile driving activities in the North Sea[3]. In this report a simple approach was used that equated harbour porpoise habitat loss (being excluded from an area by disturbance) to

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2 https://www.ascobans.org/sites/default/files/document/AC21_Inf_3.2.2.a_German_Sound_Protection_Concept.pdf

3 http://randd.defra.gov.uk/Document.aspx?Document=13482_MB0138ExpertGroupreport_harbourporpoiseandpiledriving.pdf

a reduction in carrying capacity; with the premise that if loss of habitat is persistent over many years this would result in population decline. In developing SNCB advice, various approaches to defining acceptable limits of reduction in carrying capacity to marine mammal populations were considered (e.g. The International Whaling Commission and the US Marine Mammal Protection Act). SNCBs chose to use the ASCOBANS[4] interim conservation objective for small cetacean populations, i.e. recovery to and/or maintaining ≥ 80% of carrying capacity in the long term, since this was the more precautionary of the approaches. This objective provides an indication of what magnitude of temporary 'habitat loss' might be considered significant, i.e. up to 20% of carrying capacity can be unavailable and still achieve its objective. One purpose of the ASCOBANS agreement is the requirement of Parties to cooperate closely in order to achieve and maintain an FCS for small cetaceans; adopting the principle of FCS aligns it with the objective of the Habitats Directive. However, the ASCOBANS interim objective was not developed to be applied to specific locations within the species' range, but it was agreed by the agreement's contracting parties to facilitate conservation of populations of small cetaceans such as the harbour porpoise. This was due to it being considered practical yet precautionary and it has since been used to set other thresholds, such as those for unacceptable limits of bycatch. This coupled with the Tougaard et al. 2013 work, became the foundation for the development of the SNCB advice.

Since SNCBs considered that it would not be sufficiently precautionary to allow a fifth of a site to be disturbed every day for six months of the year given that within the SACs the abundance of harbour porpoise per unit area is persistently higher than the equivalent in the rest of the relevant Management Unit. Therefore, the advice is that a more precautionary 10% is used, i.e. that noise disturbance within the site does not exclude harbour porpoise from more than 10% of the site on average within a site's seasonal area. Maintenance of the site's carrying capacity in the long term through management of temporary habitat 'loss' to below defined area/time thresholds is therefore designed to ensure that it continues to contribute in the best possible way to the maintenance of the species at FCS.

3. Effective Deterrence Range (EDR)

Questions have been raised by stakeholders regarding the use of fixed Effective Deterrent radii in the guidance; this has subsequently led to amendments of the guidance to consider additional EDRs based on available scientific evidence for pin piles, conductor piling, piling using noise abatement and high-resolution geophysical surveys. These EDRs are considered the initial starting point for consideration in any environmental assessments. Case-by-case EDRs may be considered, providing there is robust peer-reviewed evidence on which to do so. Field studies looking at porpoise abundance and behaviour around these activities are needed to validate the EDRs. In German waters, a fixed distance is also advised; the disturbance range is defined as a radius of 8 km around the centre of an offshore wind farm. This distance is deemed equivalent to a sound exposure level of approximately 140 dB re 1µPa²s.

The current SNCB advice for England and Northern Ireland favours the use of fixed EDRs based on empirical evidence as opposed to disturbance ranges estimated from noise modelling. The latter carries considerable uncertainty, in particular: there are no agreed quantitative thresholds for disturbance as there are for auditory injury; depending on the choice of numerical models to estimate sound source and propagation one can end up with several orders of magnitude different predictions for disturbance ranges; received sound levels are not the single most influencing factor in triggering disturbance; other characteristics of sound and how they propagate with distance will influence how an animal

[4] https://www.ascobans.org/en/species/threats/bycatch

perceives the noise; behavioural context, individual animal motivation and previous exposure will also all play a role in determining response.

4. Noise abatement techniques and alternative foundations for wind farms

Techniques to abate noise at source and alternative foundations have been raised by stakeholders as a potential management measure to reduce disturbance in the sites. The SNCB approach has been criticised for not incentivising the use of noise mitigation through limits (as per German approach). However, the German sound thresholds (e.g. 160db SEL at 750m) were imposed to address the risk of injury and not disturbance. In the UK this is dealt with via a suite of mitigation measures, such as the use of marine mammal observers and acoustic deterrent devices focussed on minimising the risk of animals occurring in the potential auditory injury zone. In relation to disturbance, there has been no requirement for noise abatement since the previous rounds of wind farm installation were of a considerably smaller scale than current ones and there were no sites designated for harbour porpoise. With the increase in scale of current and future offshore wind installation rounds overlapping with a site designated to protect harbour porpoise habitats it has become likely that without alternative methods of installation not all projects can go ahead as planned if these are to meet the SNCBs' area-time thresholds. There is therefore an incentive to implement noise abatement measures/ alternative foundations. These should be considered alongside other options, such as scheduling of piling operations.

5. Seasonal approach to management

The seasonal application of the noise thresholds in the guidance offers some flexibility for spatio-temporal management within sites. This is because many of the sites have been identified based on persistent high densities in *winter* (October – March) or *summer* (April – September). During the rest of the year the usage of the site is no different from the species wider range. The focus is therefore on ensuring harbour porpoise use the habitats within the sites in the best possible way at those times of the year when the species occurs in particularly higher densities. Outside those seasons, the strict protection from disturbance (European Protected Species (EPS) regulations) still applies, although derogations are possible under certain circumstances and if this does not affect species FCS.

6. Adaptive management

In 2017, the draft advice was endorsed by the SNCB Chief Scientists Group as an approach to be implemented in the context of adaptive management, i.e. to be updated as new evidence becomes available through monitoring. This has now been made clearer in the guidance document and further context provided in relation to the adaptive management approach, monitoring needs and guidance review aspects.

7. Application of guidance in UK waters

The guidance is advice from JNCC, NE and DAERA and therefore it applies to UK offshore areas, English and Northern Irish waters (within 12nm). Application in Scotland was not considered necessary primarily due to a different set of noise issues relevant to the single Scottish harbour porpoise SAC in the Inner Hebrides & Minches. For those sites that are joint responsibility of NRW and NE and/or JNCC, advice may differ between the SNCBs, although every effort will be made to align advice as much as possible. NRW has not signed up to this guidance to retain some flexibility in approaches to the management of noise. NRW plan to advise on the application of the area-time thresholds, but not on the use of fixed EDRs.

Annex 1 - Workshops to discuss approach and organisations attending

Stakeholder Workshop, February 2017 – Edinburgh
Regulators and SNCBs workshop, June 2017 - Newcastle
Regulators and SNCBs workshop, November 2018 – Aberdeen
Stakeholder Workshop, July 2019 – London
Offshore Renewable Energy Stakeholder Workshop, October 2019 – by phone
Oil and Gas Stakeholder Workshop, November 2019 – Aberdeen and London

Marine Management Organisation, WWF, Department for Environment, Food and Rural Affairs, Scottish Natural Heritage, Oxford Facilitation Services, Natural England, Department for Business and Industrial Strategy (BEIS), BEIS - OPRED (Offshore Petroleum Regulator for Environment and Decommissioning), BEIS - Energy Development and Resilience, Renewable UK, Hartley Anderson, Renewables CG, Scottish Power, Marine Scotland, Royal-Haskoning, Dong energy (now Orsted), Vattenfall, The Crown Estate , Joint Nature Conservation Committee, Natural Resources Wales, SSE Renewables, GoBe Consultants, SeaWatch Foundation, Pelagica, Triton knoll, Whale and Dolphin Conservation, Department for Agriculture, Environment and Rural Affaris, The Wildlife Trusts, RPS group, Innogy, Natural Power Consultants, ClientEarth , Res-group, Royal Navy, Oil and Gas UK, BP, ENI, Equinor, Eon, EDF Energy, IAGC, Energy UK.

Note: Oil and gas companies have been consulted on the noise guidance since 2019, so did not participate in the 2017 and 2018 workshops. All other stakeholders have been consulted since 2017.

Annex 2 – Organisations that sent written feedback on the SNCB proposed approach (prior to the 2020 consultation via the Southern North Sea Regulators Working Group)

The Wildlife Trusts
International Association Geophysical Contractors
BEIS – OPRED
Oil & Gas UK
RenewablesUK