From:	Taylor, Jessica
To:	Norfolk Vanguard
Subject:	RE: EN010079 Norfolk Vanguard Natural England Deadline 6 Submission (Ref: 277479)
Date:	05 April 2019 17:08:44
Attachments:	EN010079 277479 Norfolk Vangaurd EIFCA Position Statement for Comment_Final.pdf EN010079 277479 Norfolk Vanguard Natural England"s Written Representation of Oral Representation provided at ISH4 & 5 Final.pdf OffshoreRegisterEntry_SouthernNorthSea (Citation).pdf SouthernNorthSeaDRAFTConservationObjectivesAndAdviceOnActivities.pdf

Dear Sirs,

Please find attached Natural England's submissions at Deadline 6 in relation to the Norfolk Vanguard Offshore windfarm Application, including:

- Natural England's Written Summary of Oral Representations made at ISH4: Environmental Matters and ISH5: draft Development Consent Order Hearings;
- Natural England's detailed comments in response to Action Point 14 from ISH4: Position Statement on EIFCA byelaw issues including reference to relevant maps and brief overview of our position with regards to the proposed Defra management area;
- Offshore Register Entry for the Southern North Sea SAC (Citation) in response to Action Point 16 from ISH4: Environmental Matters; and
- Southern North Sea SAC Draft Conservation Objectives and Advice on Activities in response to Action Point 16 from ISH4: Environmental Matters

Best wishes,
Jessica

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We are here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

In an effort to reduce Natural England's carbon footprint, I will, wherever possible, avoid travelling to meetings and attend via audio, video or web conferencing.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

NORFOLK VANGUARD OFFSHORE WIND FARM

Planning Inspectorate Reference: EN010079

NATURAL ENGLAND
WRITTEN SUBMISSION FOR DEADLINE 6

Natural England's Written Summary of Oral Representations made at ISH4: Environmental Matters and ISH5: draft Development Consent Order Hearings

05 April 2019

Norfolk Vanguard
ISH 4: Environmental Matters 27 March 2019
Written Summary of Natural England's Oral Representations.

1. Agenda Item 5: Onshore Ecology

i. Water dependent designated sites

1.1. As per Natural England's response to the water dependent designated sites clarification note provided to the Applicant on 18 March 2019 and subsequently submitted into the examination on 20 March 2019 at Deadline 5, Natural England confirmed that we had withdrawn our concerns in this regard.

1.2. Full details are provided in our Deadline 5 response [REP5-017].

ii. Bats associated with Paston Great Barn SAC

1.3. As per Natural England's response to the Paston Great Barn SAC clarification note provided to the Applicant on 20 March 2019 and subsequently submitted into the examination on 20 March 2019 at Deadline 5, Natural England confirmed that we had withdrawn our concerns in this regard.

1.4. Natural England still advises that any mitigation plan should be in place for 7 years or until the original hedgerow has recovered fully.

1.5. Full details are provided in our Deadline 5 response [REP5-017].

iii. Sediment management at the River Wensum crossing

1.6. Natural England confirmed that as per our response to the sediment management at the River Wensum crossing clarification note provided to the Applicant on 18 March 2019 and subsequently submitted into the examination on 20 March 2019 at Deadline 5, our concerns in this regard have been broadly allayed. However, three areas of concern remain:

- Restoration Plan: Natural England confirmed that in regards to the proposed methodology within the functional floodplain Natural England had withdrawn our concerns. However, Natural England questioned why similar consideration had not been given to areas within the catchment, but outside the functional floodplain. The Applicant confirmed that they had identified an area of grassland and would continue to engage with Natural England in this regard.

- Proposed reinstatement of work areas**:** Natural England confirmed that broadly speaking we were happy with the Applicant's approach. However, the clarification note does not provide sufficient detail as to how this will be achieved. The Applicant confirmed that further information will be provided in this regard at Deadline 6, including a revised Code of Construction Practice.

- Horizontal Directional Drilling areas north of Penny Spot Beck: Natural England confirmed that the clarification note broadly allayed our concerns in this regard. However, we would expect confirmation on the exact number of HDD crossings to be provided in the detailed scheme

and programme which will include site specific water course crossing information.

1.7. Natural England also noted that whilst this clarification note broadly allayed our concerns it would be important to ensure that Environment Agency were also allowed to comment with regards to its suitability to allay concerns with regards to flood risk.

1.8. The Applicant confirmed that the clarification note had been provided to Environment Agency.

1.9. Natural England confirmed that we had no additional concerns with regards to sediment management at the River Wensum Crossing.

1.10. Full details are provided in our Deadline 5 response [REP5-017].

iv. Other Unresolved Matters Clarification Note

1.11. Natural England confirmed that as per our response to the other unresolved issues clarification note provided to the Applicant on 18 March 2019 and subsequently submitted to the examination on 20 March 2019 at Deadline 5, our concerns with regards to the following issues has been withdrawn:

- Sand martins at Happisburgh cliffs;
- Use of the 300m disturbance buffer in relation to designated sites;
- Grade 3 Agricultural Land Classification (ALC); and
- Reinstatement of topsoil.

1.12. However, Natural England confirmed that we have outstanding concerns with regards to Broadland SPA and the lack of thorough assessment of the potential impacts that crop rotations may have on overwintering bird species present.

1.13. Natural England stated that whilst we agreed that only one year of survey was conducted this only provides the Applicant with bird species present under one cropping regime and therefore further assessment is required to ascertain which crops will be present at the time of works and the implications of this.

1.14. Natural England also stated that mitigation was required in terms of crop rotations that will be in place at the time of construction and therefore the Applicant should look at possible mitigation measures.

1.15. Natural England confirmed that until this issue was addressed it would not be possible to rule out Adverse Effect on Integrity (AEoI) of Broadland SPA and Ramsar.

1.16. Full details are provided in our Deadline 5 response [REP5-017].

2. Agenda Item 6: Offshore Ornithology (outstanding areas of disagreement)

2.1. Dr Mark Trinder, on behalf of the Applicant, highlighted that a meeting had been held with both Natural England and Royal Society for Protection of Birds (RSPB) prior to the start of the hearing to discuss outstanding areas of disagreement and agree methodologies to be employed to address these.

i. Collision Risk Modelling (CRM)

a. Question from examiner: Are you content with this methodology?

2.2. Natural England confirmed that the meeting held prior to the start of the hearing was productive.

2.3. Natural England also confirmed that we were in agreement with the proposed CRM methodology including the use of parameters in the Band 2012 model using option 2 for flight heights and avoidance rates as per the Statutory Nature Conservation Body advice provided in 2014[1] with upper and lower confidence intervals, use of means with upper and lower values and range of nocturnal activity factors.

b. Question from examiner: would a ten percent reduction in numbers lead to 10% less collisions?

2.4. Natural England stated that whilst there was some correlation there were more nuances than just a simple 10%, for example turbine design may also have an influence.

c. Question from examiner to RSPB: you made recommendation for use of density independent PVA outputs. Can you explain why?

2.5. Natural England have previously noted that empirical evidence of mechanisms of density dependent population regulation are lacking for most seabird populations and assuming that a population is capable of exhibiting a compensatory density dependent response, in the absence of empirical evidence at the relevant population scale, has the potential to underestimate the potential impact of a proposed development on the focal seabird population.

2.6. Natural England agrees that density dependent process are likely to operate on seabird populations, but where there is no clear evidence to support application of any particular form or magnitude of density dependence operating we have recommended that density independent model outputs should be considered.

2.7. Natural England has previously considered the outputs of both density dependent and density independent models in offshore wind farm assessments, where the evidence indicated it was appropriate to do so.

2.8. Therefore, as stated at ISH4 our position regarding density dependent versus density independent PVA outputs is that if there is clear evidence of the form and strength of density dependence operating on the focal population (colony) then we would (depending on the evidence provided) consider the outputs from

[1] https://www.nature.scot/sites/default/files/2018-02/SNCB%20Position%20Note%20on%20avoidance%20rates%20for%20use%20in%20collision%20risk%20modelling.pdf

density dependent models. However, it will also be important to consider whether there is any actual evidence that density dependence is acting on the focal population at the present time. We recommend using a density independent model where there is no information on population regulation for the focal population but careful consideration should be given to the potential for dispensatory population regulation. In the case of the colonies discussed during the Vanguard hearings (kittiwake at Flamborough and Filey Coast (FFC) SPA and lesser black-backed gull (LBBG) at Alde-Ore Estuary SPA), we have considered the density independent model outputs to be the most appropriate in previous offshore wind farm assessments.

2.9. Natural England re-confirmed that we were happy with the proposed methodology as described by the Applicant, however, noted that further comment would be provided following provision of the updated assessment.

d. Question from examiner with regards to displacement of red-throated diver (RTD) both alone and in-combination and the assessment undertaken for Thanet Extension Offshore Wind Farm

2.10. Natural England confirmed that we are content with the proposed methodology presented by the Applicant.

2.11. Natural England also noted that in terms of seasonal restrictions concerning cable laying activities this was only in relation to Greater Wash SPA.

e. Question from examiner with regards to the updated assessment of displacement of auks at the FFC SPA

2.12. Natural England confirmed that we are content with the proposed methodology presented by the Applicant.

f. Natural England comments regarding the importance of supporting habitats

2.13. Natural England highlighted the need to consider impacts on the SPA not just in purely numeric terms such as an increase in baseline mortality, but also whether the SPA continues to be able to contribute across its extent to the favourable conservation status of the species for which the site is classified, which requires an emphasis on assessing whether an activity prevents the supporting habitats within the SPA from fulfilling that function.

2.14. Natural England confirmed that it would be useful to know how long cable installation activities might take particularly when within the Great Wash SPA. This would allow an assessment to be made of how significant this impact is.

2.15. Natural England also confirmed that we had no concerns with regards to the baseline information that has been provided.

g. Question from examiner with regards to figures to be used during cable laying activities (reliable figures or the worse-case for the baseline)

2.16. Natural England confirmed that a matrix-style approach with the full range of values would be the most useful as it gives a clear image of likely range of impacts.

h. Question from examiner with regards to gannet cumulative displacement

2.17. Natural England confirmed that we are content with the proposed methodology presented by the Applicant.

i. **Question from examiner with regards to update to apportioning rates for several species, including LBBG at Alde-Ore Estuary SPA and seasonal apportionment of gannet at FFC SPA.**

2.18. Natural England confirmed that we are content with the proposed methodology presented by the Applicant as long as the full breeding season is used and the non-breeding season months are then adjusted accordingly to avoid double counting.

j. Question from examiner with regards to kittiwake at FFC SPA and the use of RSPB tracking data

2.19. Natural England confirmed that discussions had been started with regards to what impacts might be generated from Norfolk Vanguard OWF alone and will be reviewing this information for further discussions.

2.20. However, Natural England remain concerned with regards to the proposed methodology for cumulative impacts proposing to apply a blanket figure of 26% to all offshore wind-farms within a 250km range, not least because this approach would seek to revise figures for other projects that had already been agreed in their Examinations.

2.21. In addition, Natural England noted that several wind-farms including Hornsea Project One, Hornsea Project Two and Hornsea Project Three all have apportioning rates far in excess of this figure.

2.22. Natural England would question, therefore, if this approach is too simple to make a robust assessment.

k. Question from examiner with regards to the screening response for Bancs des Flandres SPA and Cap Gris-Nez SPA.

2.23. Natural England stated that as these are both French SPAs, Natural England have not been concerned with them to date as the French authorities would provide a response in the regard.

l. Question from examiner with regards to Natural England's review / update for guillemot and puffin population sizes at Hornsea Project Two

2.24. In our response to the Applicant's auk and gannet displacement note (Appendix 3.3) Natural England noted that there were differences in the largest BDMPS/reference populations listed in the cumulative assessments of this appendix and those for the largest BDMPS figures for the UK North Sea and Channel BDMPS in Furness (2015) for guillemot and puffin. The Applicant had confirmed in its response to the Q3.23 of the Examining Authorities second round of questions that these figures were those reported by Natural England for the Hornsea Project Two wind farm (Natural England 2015, Written

Submission for Deadline 6, 26th Nov 2015, Table 2[2]). This was discussed with Natural England during a call on the 8th March following which Natural England were to review these figures and advise on their suitability.

2.25. Natural England has subsequently reviewed the BDMPS/reference figures presented for these two species in the Hornsea Project Two document and as stated in our response to the Applicant's response to Q3.23 (submitted at Deadline 5 [REP5-017]), we note that the population scale figures used by the Applicant of 2,045,078 for guillemot and 868,689 for puffin are those used by Natural England in its assessment at Hornsea Project Two (Natural England 2015). We note that these figures are for the largest population scale (all birds) and are the population estimates for UK colonies within North Sea BDMPS scale (see Table 1 of Natural England 2015).

2.26. Given that the cumulative auk displacement assessments presented by the Applicant in the auk displacement update, Appendix 3.3, are year round assessments, we consider it appropriate that the levels of impact are assessed against the largest population of individuals for each species predicted to be in North Sea waters in any season, which based on Natural England (2015) are considered to be:

- Guillemot - 2,045,078 (breeding – note error in Table 2 of Natural England 2015: this should be breeding and not winter)
- Razorbill – 591,874 (migration)
- Puffin – 868,689 (breeding)

2.27. These figures are consistent with those used by the Vanguard Applicant in the cumulative assessments in the Applicant's Appendix 3.3.

2.28. Natural England confirmed that we are happy with the figures presented by the Applicant.

m. **Further comments with regards to CRM**

2.29. Natural England also highlighted that because of the revised WCS in terms of number of turbines all species previously assessed through CRM are subject to revised CRM.

2.30. Natural England stated that this had been discussed in the pre-hearing meeting and it was additionally agreed by the Applicant that for herring gull a cumulative assessment would be undertaken alongside an assessment alone

2.31. Natural England also highlighted that CRM for non-migratory seabirds had also been discussed and Natural England were broadly happy with the Applicant's approach, with only minor clarifications required.

[2] Natural England (2015) Hornsea Offshore Wind Farm – Project Two Application: Written Submission for Deadline 6. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010053/EN010053-001223-Natural%20England.pdf

ii. Displacement

a. Question from examiner with regards to use of 100% displacement and 10% mortality for red-throated diver at Vanguard West and / or Vanguard East and West combined which equates to a moderate adverse effect and the Applicant's view on this.

2.32. Natural England confirmed that as definitive mortality rates are unknown we advise a range of figures between 1 and 10% and would continue to do so.

2.33. The Applicant confirmed that they would continue to use rates proposed by SNCBs, alongside their preferred rates to allow a comparison to be made.

b. **Question from examiner with regards to REP5-017, Natural England's advice in relation to red-throated diver mitigation measures**

2.34. The Applicant asked for clarification from Natural England as to which stages of development this related to.

2.35. Natural England confirmed that these are mitigation measures that have been included in other examinations and primarily relate to Operations & Maintenance activities where very often fast moving boats are used to transit people out to site. This activity could have significant impacts on RTD.

2.36. Natural England also noted that we are not proposing these mitigation measures for larger cable installation style vessels.

c. Question from examiner with regards to additional disturbance and displacement from lighting impacts

2.37. Natural England had no further comments in this regard.

iii. Cumulative and in-combination effects.

a. Request from examiner to provide update on our thoughts in this regard, including concerns with data for Hornsea Project Three and implications of this

2.38. Natural England confirmed that the Hornsea Project Three examination period closes on 2nd April. Natural England stated that the Hornsea Project Three offshore ornithology baseline surveys are incomplete and insufficient to adequately characterise the baseline, primarily because there are 4 months of missing data and therefore only one set of winter data. As a result of this it is not possible to rule out AEoI. Natural England's position on this will not change before the end of the Hornsea Project Three examination.

2.39. Natural England emphasised that it is recognised that the Hornsea Project Three decision making process is outside of the Applicant's control and therefore we advise that the Applicant focuses on ensuring that the assessment and figures presented for the Norfolk Vanguard project alone are as robust as possible. In addition the Applicant should consider opportunities to minimise the project alone impacts as much as possible.

2.40. Natural England suggested that the Applicant could base their in-combination/cumulative assessment on where there is some degree of certainty in the figures presented, e.g. for East Anglia Three cumulative totals, and then adding the figures for both Norfolk Vanguard and Thanet Extension.

2.41. Alongside this the Applicant could run a separate assessment which includes Hornsea Project Three and then both figures could be presented. It was noted that Natural England would advise a high degree of scientific doubt in this scenario such that an Adverse Effect on Integrity couldn't be ruled out.

2.42. Natural England suggested that a broader decision needs to be made because Hornsea Project Three is impacting on all projects.

2.43. Natural England highlighted that we were already at in-combination threshold for kittiwake from FFC SPA at the end of the East Anglia Three examination and therefore all subsequent projects continue to add to this cumulative collision total. However, it is up to the Applicant to determine/demonstrate how much of an addition to the in-combination total their project makes.

2.44. Natural England also stated that there are several offshore windfarm NSIPs under examination at the same time which does set a precedent. Natural England therefore agrees with the Applicant that the building block approach makes undertaking the in-combination assessment and consideration of any potential mitigation measures challenging.

2.45. Natural England highlighted a previous more strategic approach undertaken under Section 36 of the Electricity Act (before OWFs becoming NSIPs) for three offshore windfarms impacting on the North Norfolk Coast SPA ['The Greater Wash AA: Impacts on Annex I Sandwich Terns 2012']. In this particular case Docking Shoal OWF did not gain consent as it had a greater environmental impact. Therefore, Natural England would welcome the decision makers' collective consideration of OWF NSIPs which have interrelated environmental issues/impacts and are in the planning system at the same time, to enable the best environmental outcomes to be achieved.

b. **Question from examiner with regards to CRM for herring gull at Alde-Ore Estuary SPA**

2.46. Natural England confirmed that a cumulative assessment on impacts at an EIA scale was still required, however, as herring gull is not a feature of Alde-Ore Estuary SPA there is no requirement for an HRA assessment to be undertaken.

2.47. Natural England noted that the Applicant has agreed to do this assessment.

c. Question from examiner with regards to the effects on gannet at FFC SPA from operational displacement from project alone

2.48. Natural England highlighted that following conversations with the Applicant we believed that this would be addressed by information provided at Deadline 6.

2.49. At this stage Natural England have said that there is LSE alone and this should be reflected in the initial screening, however, we would need to see analysis before a conclusion can be reached as to whether that results in AEoI.

d. Question from examiner with regards to common scoter at Greater Wash SPA and AEoI

2.50. Natural England stated that there is a LSE for common scoter, however, we have sought mapping from the Applicant demonstrating the cable laying activities and vessel movements will not interact with common scoter populations, in order to rule out an AEoI.

e. **Question from examiner with regards to preference of RSPB for a site-specific meeting rather than strategic monitoring**

2.51. Natural England agreed with the Applicant in this regard suggesting it was premature to flesh out an In Principle Monitoring Plan (IPMP).

2.52. However, after the Deadline 6 submissions the key issues should be identified and narrowed down so that we can identify what may need to be explored further.

3. Agenda Item 7: Benthic ecology (outstanding areas of disagreement)

i. Potential impacts on Sabellaria Spinulosa reef and sandbanks

3.1. The Examiner referenced the DML condition requiring a single plan for Haisborough, Hammond and Winterton (HHW) SAC; and an update to the Conditions of Schedules 11 and 12 [REP4-062]. This involves a cable-burial interim study, cable burial risk assessment and sandwave levelling methodology.

3.2. Natural England queried whether the cable-burial interim study and cable risk assessment were the same thing, which the Applicant confirmed they were not.

a. Question from the examiner with regards to Site Integrity Plan (SIP) for Haisborough, Hammond and Winterton SAC

3.3. Natural England highlighted that it was important for the SIP to not only include mitigation, but also how feasible and likely to achieve that mitigation is and how exactly it would be achieved.

3.4. Natural England commented that any SIP provided at Deadline 7 is likely to be a halfway house between an export Cable Installation Plan (eCIP) and a full pre construction SIP based on further project specific survey data and known contractor requirements. Therefore sufficient information is needed now to allay concerns over both Annex I sandbank and reef features. Natural England commented that without this we could not rule out AEoI.

3.5. Natural England also commented that we would expect the SIP to include thematic areas, such as:

- Impacts and scale: e.g. cable protection; sandwave levelling, cable reburial, operation and maintenance.

- Conservation objectives: A condition assessment has been conducted by Natural England, which whilst is currently unpublished should be available before the end of examination. This condition assessment indicates that both Annex I sandbanks and reef features of the site are currently in unfavourable condition due to fishing and existing infrastructure.

b. Update from Natural England with regards to proposed fisheries byelaw and management plan within Haisborough, Hammond and Winterton SAC

EIFCA Byelaw Area

3.6. Please note, provided below is a summary of the oral representation made by Natural England at ISH4. However, as per Action Point 14, Natural England has also provided further information in the separate '*Natural England detailed comments in response to Action Point 14 from ISH4: Position Statement on EIFCA byelaw issues including reference to relevant maps'* document which has also been provided at Deadline 6.

3.7. Natural England provided a brief background to a proposed new EIFCA fisheries byelaw area that interested parties should take into consideration.

3.8. The proposed EIFCA fisheries byelaw area is a management tool that is proposed to remove bottom towed trawling to protect and aid recovery of red risk features, in this instance Annex I *Sabellaria spinulosa* reef.

3.9. The byelaw area is intended to protect areas where there is good data to have confidence in the reoccurring presence of Annex I reef feature. **However, it is important to note that the entire byelaw area, not just the reef as it is currently located, is to be managed as reef due to the high potential for reef to grow and recover into new areas.**

3.10. The Norfolk Vanguard (and Boreas) cable corridor as it is currently routed would traverse a sizeable proportion of this proposed byelaw area, although it should be noted that the exact boundary of the fisheries byelaw area is yet to be confirmed.

3.11. Natural England is aware that informal consultation on the boundary of the byelaw area is occurring week commencing 01 April 2019 with a proposal to go to the EIFCA board in May 2019. At the time of the hearing, Natural England were not aware of timeframes to implement the byelaw. .

3.12. Natural England also highlighted that the byelaw area may change and EIFCA may look at other areas for recovery or as exclusion zones for fisheries over the life time of the OWF project, but currently the focus is on the area provided in Figure 1.

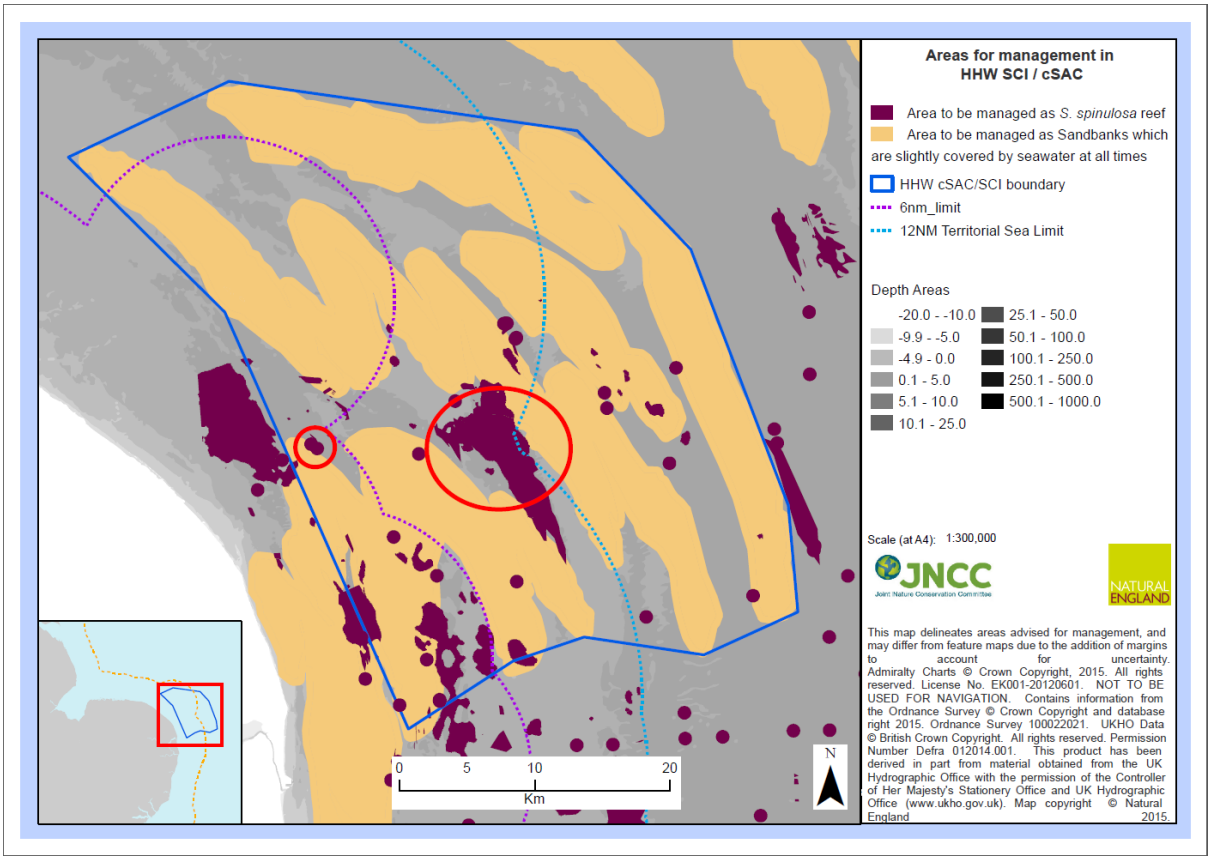

Figure 1: Proposed areas for management in Haisborough, Hammond and Winterton SAC. The smaller red circle closer inshore indicates an area of reef that the EIFCA intend to protect through a fisheries byelaw.

3.13. Natural England noted that the byelaw may not necessarily hinder other activities beyond fishing, especially where the activity can be shown to be a one-off activity (as opposed to continued scraping of the seabed by fishing vessels).

3.14. However, as was demonstrated previously at Race Bank OWF, there is precedent for an offshore wind-farm going through a byelaw area and causing reoccurring impacts. Therefore, any recovery of the feature has either been negatively impacted, halted and/or could be permanently obstructed.

3.15. As noted previously, cable protection does not contribute to favourable condition of the site. Cable protection is seen as a permanent impact and Natural England would therefore advise complete avoidance of areas to be managed as "areas of reef".

3.16. It should also be noted that as part of the evidence plan process and at Deadline 1 [REP1-088] Natural England has highlighted the need for consideration of this byelaw area. Natural England were drawing the attention of the Examining Authority to this issue now as it had recently been flagged that a consultation was imminent.

Defra Management Area

3.17. Natural England also mentioned the Defra led fisheries management area located beyond 6nm with the same aim as the EIFCA fisheries byelaw area. This proposed area is considerably larger than the EIFCA byelaw area and again overlaps with the proposed cable corridor route for Norfolk Vanguard.

3.18. Natural England are aware that MMO will be making full representation with regards to the proposed Defra fisheries management area at Deadline 6 and therefore defer to MMO in this regard.

Further comments

3.19. Natural England highlighted that the EIFCA byelaw area had been discussed at earlier stages of the examination process including during the evidence plan process as well as in Natural England's Written Representations provided at Deadline 1 [REP1-088]. However, there had been limited awareness by all parties in relation to the Defra management area.

3.20. **Importantly, Natural England stated that whilst we were aware of both byelaws and had provided nature conservation advice to the relevant regulatory authority regarding them, neither are the responsibility of Natural England to implement or manage and therefore we would defer to EIFCA and MMO in this regard.**

3.21. However, Natural England would of course continue to help as much as possible whilst ensuring that we don't present inaccurate information or misrepresent other parties' information.

ii. Further assessment, mitigation and removal of cable protection

3.22. Whilst we welcome the continued effort by the Applicant to reduce cable protection to a more realistic level of 5%, Natural England continued to advise that 5% is a significant amount inside a designated site.

3.23. This is particularly true along the area of cable corridor which falls inside HHW SAC as there is no site fabric in this area. Accordingly, any cable protection will be on designated Annex I features and therefore an AEoI couldn't be ruled out.

a. Question from examiner with regards to the idea that more long-term harm is caused by removal of cable protection rather than leaving it in situ.

3.24. Natural England stated that there was conflicting evidence from different developers with regards to the recovery of features following decommissioning.

3.25. However, from Natural England's perspective, we would consider that either way this would be permanent habitat loss, especially as there is no evidence that the site will return to its previous state.

3.26. Natural England noted that the SIP should allow for flexibility at time of decommissioning to allow for removal of cable protection if technology / methodology had developed sufficiently to provide confidence that decommissioning would be achieved without causing more harm to the SAC than what would be caused by leaving it in place.

3.27. The Applicant were aligned with Natural England in this regard.

b. Question from examiner with regards to amount of cable protection within HHW SAC

3.28. Natural England welcomed the confirmation from the Applicant that figures for both volume and area of cable protection within the designated site have now been provided.

3.29. However, Natural England would continue to advise that cable protection should not be allowed within a designated site.

c. **Question from examiner with regards to whether the Applicant can submit anything further to rule out AEoI on HHW SAC.**

3.30. Natural England stated that the Statement of Common Ground [REP5-007] fully highlights Natural England's outstanding concerns up to Deadline 6. However, in summary, we cannot rule out AEoI at present.

3.31. Going forward, our position would be dependent on the content of the submissions provided by the Applicant at Deadline 6 and 7. However, it should be noted that the two fisheries byelaw / management areas complicate things.

3.32. In addition there also remains significant concerns with regards to cable protection. Therefore, uncertainty may not be fully addressed by the provision of a SIP and if this is the case our position would not change.

iii. Habitats Regulation Assessment implications

3.33. Natural England confirmed that we had nothing further to add.

3.34. Natural England also confirmed that they would provide a copy of the Southern North Sea Conservation Objectives and citation as requested by the examiner.

Norfolk Vanguard
ISH 5: Draft Development Consent Order 28 March 2019
Written Summary of Natural England's Oral Representations.

4. Agenda Item 4: Proposed arbitration procedures

i. Matters arising from the Applicant's revised approach as set out in Articles 6 and 38 and Schedule 14 of the latest revised dDCO, and further responses.

4.1. As per our response to changes made to dDCO document provided at Deadline 5 [REP5-017], Natural England stated that as we are providing statutory advice to the decision making process being undertaken by BEIS and MMO, we believe that with the amended wording to the arbitration clause Natural England is now excluded from this process.

4.2. Natural England raised further concerns, concluding that by moving certain elements to post consent discussions there is a high probability that the MMO will need to make a decision which relates to HRA and if this results in AEoI being identified this is not a simple process to solve.

4.3. Natural England would support the MMO with regards to the concerns that they have raised about the subsequent changes that have been made to the dDCO as a result of the change to the arbitration clause.

4.4. We recognise that issues need to be resolved now as part of consenting process as expecting Natural England to respond in less than 20 working days may not be feasible with the number of OWF projects now being taken forwards.

4.5. Please note, this summary provides Natural England's response to Action Point 6 from ISH5: Draft Development Consent Order.

a. Natural England further comments on the benthic SIP

4.6. Natural England remain concerned with regards to deferring impact analysis to post-consent discussions as for other cases this has created problems such that sites have been damaged beyond parameters of plans and will do so for more than 20 years. If we are saying AEoI and mitigation measures cannot be identified then you are looking at alternatives and IROPI which will not be solved within a 6 month period.

4.7. Natural England stated that we had held further internal discussions overnight to discuss the SIP and are of the view that the benthic SIP is very different to that for marine mammals where the in-combination requirements are outside of the Applicant's control and there are more viable options to mitigate any impacts. Whereas, a worst case scenario has been presented for benthic impacts and therefore will need to be considered by the RIES.

4.8. As it stands Natural England advises that the condition that has been put in does not alleviate our concerns with regards to AEoI.

5. Agenda item 10: Any other dDCO matters including any items which are potentially missing

5.1. Natural England requested that clarity is needed regarding SIPs (and other key documents) in relation to Hornsea Project Three and other OWFs as currently the same terminology is used, but the documents do not include the same content. This is leading to misunderstandings across all parties.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

NORFOLK VANGUARD OFFSHORE WIND FARM

Planning Inspectorate Reference: EN010079

Natural England's detailed comments in response to Action Point 14 from ISH4: Position Statement on EIFCA byelaw issues including reference to relevant maps and brief overview of our position with regards to the proposed Defra management area.

05 April 2019

Table of Contents

1. Introduction

1.1. Eastern Inshore Fisheries and Conservation Authority (EIFCA) are currently developing fisheries closures for within 6nm. Closures for beyond 6nm are being progressed through the Joint Recommendation process under the Common Fisheries Policy.

1.2. During Issue Specific Hearing 4: Environmental Matters, Natural England received an action point to provide a position statement with regards to the proposed EIFCA fisheries byelaw area to close areas of *Sabellaria spinulosa* reef to bottom-towed fishing.

1.3. The MMO were asked to provide an update with regards to the closures for beyond 6nm that are being progressed through the Joint Recommendation process and therefore this has not been included in this document.

1.4. This document provides an update in this regard including:

- provision of draft maps detailing the approximate location of the proposed area;
- Copy of Natural England and Joint Nature Conservation Committee's (JNCC) joint formal advice on Haisborough, Hammond and Winterton cSAC with regards to which areas should be managed as Annex I reef. This document has been provided as Appendix 1; and
- Copy of Natural England's formal advice on the use of an adaptive approach to management in Haisborough Hammond and Winterton SAC. This document has been provided as Appendix 2.

1.5. In addition, Natural England recommend that this document is read in conjunction with the following documents (provided as links only due to the size of the documents):

- Defra Joint recommendation policy document. Available from: https://lbst.dk/fileadmin/user_upload/NaturErhverv/Filer/Fiskeri/Natura_2000_hav/Fiskeriregulering_i_andre_lande/WORKING_Draft_NNSSR_HWW_Joint_Recommendation_v0.7.pdf; and
- Defra revised approach policy delivery document. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/345970/REVISED_APPROACH_Policy_and_Delivery.pdf.

2. EIFCA Fisheries Byelaw

2.1. Background

2.1.1. Defra's revised approach to fisheries requires that fishing activity in European Marine Sites are managed in line with the requirements of Article 6 of the EC Habitats Directive. Towed demersal gear is considered a red risk interaction with *Sabellaria* spp. reef, meaning the use of towed demersal gear over *Sabellaria* spp. reef is not considered compatible with achieving the conservation objectives for the feature at any level of fishing effort.

2.1.2. In respect of fishing with bottom towed gear, *Sabellaria* spp. reef is sensitive to the following pressures exerted by towed demersal gear:

- Abrasion/disturbance of the substrate on the surface of the seabed;
- Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;
- Removal of non-target species; and
- Physical change (to another sediment type).

2.1.3. Reef in Haisborough Hammond and Winterton SAC is currently considered to be in unfavourable condition, in part due to insufficient fisheries management.

2.1.4. EIFCA acts as the regulator for fishing activities in coastal waters up to 6 nautical miles (nm). Through this function EIFCA (along with other regulators such as MMO) ensure that licensed activities do not impact upon the conservation objectives for designated features within marine protected areas such as Special Areas of Conservation (SACs).

2.1.5. EIFCA are currently developing fisheries closures for within 6nm. Closures for beyond 6nm are being progressed through the Joint Recommendation process under the Common Fisheries Policy and one such area coincides with the Applicant's cable corridor.

2.1.6. In 2015 Natural England and JNCC provided formal advice with regards to consideration for a number of areas within Haisborough, Hammond and Winterton SAC (and Inner Dowsing, Race Bank and North Ridge cSAC) to be managed as *Sabellaria spinulosa* reef. A copy of this advice letter is provided as Appendix 1 to this document.

2.1.7. Natural England has advised that all areas of *S. spinulosa* reef within Haisborough Hammond and Winterton SAC are closed to towed demersal gears in order to remove these pressures and so enable the reefs to recover and the site to achieve its conservation objectives.

2.1.8. **Natural England have advised that fisheries closures protect areas which are suitable for reef formation, as described in the Conservation Advice package, rather than solely where reef is present at any given time, due to *S. spinulosa* reef extent being variable in space and time and reliant on the physical and biological processes that allow reefs to form.**

2.1.9. On 22 March 2019 Natural England also provided formal advice to EIFCA with regards to an Adaptive Risk Management approach in Haisborough Hammond and Winterton Special Area of Conservation. A copy of this letter is provided as Appendix 2 to this document.

2.1.10. Please note that whilst the byelaw does not legally restrict other activities, it is the advice of Natural England that it is the duty of all to ensure that their activities do not

hinder the achievement of the conservation objectives by undermining current management measures.

2.2. Update to EIFCA byelaw (provided by EIFCA)

2.2.1. EIFCA is developing management (in the form of a byelaw) to close *Sabellaria spinulosa* reef areas to bottom-towed fishing. This has been planned for several years but development of measures can only be progressed after appropriate consideration is given to the evidence supporting the need for management. Eastern IFCA and Natural England have been working together to examine the available evidence for the Annex I *Sabellaria spinulosa* reef feature within the 0-6nm part of HHW SAC.

2.2.2. Eastern IFCA has explained this position to the applicant during pre-examination consultations and whilst developing the Statement of Common Ground during the examination process.

2.2.3. There was also some discussion about the byelaw closures during the Issue Specific Hearing on 6th February 2019 (at 01:25:45 on recording of Hearing) although Eastern IFCA were not able to give specific details as they were not known at that time).

2.2.4. One of EIFCA's proposed closure areas coincides with the Norfolk Vanguard and Norfolk Boreas export cable route. The closure will be within the area of management interest shown as "Box 1" in the East Norfolk Coast chart provided with the informal engagement materials on the Eastern IFCA website http://www.eastern-ifca.gov.uk/wp-content/uploads/2019/04/2019_03_29_MPA_2019_charts.pdf. Co-ordinates of this area are also given on the website.

2.3. Process of creating a byelaw

2.3.1. The following step by step guide has been drawn up by EIFCA to show how the process of creating regulation follows a formal procedure:

1. Consideration of evidence of need for management, including statutory advice and site evidence;
2. Consideration of likely impact of management - includes "informal engagement", which is a consultation targeting fishery stakeholders likely to be affected by the proposed restrictions. Feedback is used to inform an Impact Assessment to be presented to the Eastern IFCA members alongside the byelaw recommendation. Eastern IFCA has launched the informal engagement this week (beginning 1st April 2019). Supporting information is available on the Eastern IFCA website http://www.eastern-ifca.gov.uk/marine-protected-areas-byelaw-2019-proposed-additional-restricted-areas/ - including charts showing areas of management interest (but not final closure areas at this stage), background information and a questionnaire;
3. Presentation of byelaw recommendation, including detail of closed area shapes, and impact assessment to Eastern IFCA members - planned for 15th May 2019. Decision to progress or reject byelaw;
4. If accepted, formal public consultation to follow (to last approx. 28 days);
5. Submission of byelaw to Marine Management Organisation and Defra for scrutiny and ultimate sign-off (est. 6-9 months); and
6. After the byelaw is implemented, the areas closed to bottom-towed fishing gear will be reviewed and could be increased or decreased, where evidence supports such a change.

3. Conservation Objectives and Condition Assessment

3.1. Adverse effect on reef features

3.1.1. Based on our current understanding, Natural England considers it likely that operations and activities already taking place within the site have the potential to impact on factors that may directly influence the extent and distribution of area to be managed as *Sabellaria spinulosa* reef (sediment composition and biological assemblages), structure and function (physical structure and biological structure), and supporting processes (supporting habitats).

3.1.2. This includes oil and gas infrastructure which is already in place in the site along with bottom-towed fishing activities.

3.2. Conservation Advice

3.2.1. Natural England has recently produced revised conservation advice for Annex I Reefs feature of Haisborough Hammond and Winterton SAC which sets a restore objective for:

a. the presence and spatial distribution of reef communities;

b. the total extent and spatial distribution and types of reef (and each of its subfeatures); and

c. the species composition of component communities.

3.2.2. In addition Annex I reef extent attribute states: *When Sabellaria spinulosa reef develops within the site, its extent and persistence should not be compromised by human activities, accepting that, due to the naturally dynamic nature of the feature, its extent will fluctuate over time.*

3.2.3. This revised conservation advice can be found by following this link (available online only): https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030369&SiteName=haisborough&countyCode=&responsiblePerson=&unitId=&SeaArea=&IFCAArea=

3.3. Condition Assessment

3.3.1. Natural England have recently undertaken a condition assessment of the features within Haisborough Hammond and Winterton SAC (unpublished) and our latest view on condition is that the reef feature is in unfavourable condition and needs to be restored to favourable condition. Installation of infrastructure may have a continuing effect on extent and distribution of the reef within the site. Restoration of the feature requires an overall reduction, or removal, of pressures associated with human activities that cause impacts to the reefs' extent and distribution, delineated by both substratum and biological communities. As such, any human activities which can cause pressures resulting in changes to substratum or biological communities to the reef feature may present a risk to the site's restoration. Activities must look to minimise, as far as is practicable, damaging the established, i.e. high confidence, reef within the site.

3.3.2. Natural England note that there is no expectation that The Applicant should demonstrate recovery of the site. We do, however, expect the Applicant to demonstrate the appropriate mitigation of risk levels that they believe their proposed operations will present to the restoration of the extent and distribution of the reef feature and thus excluding potential adverse effects on the integrity (AEoI) of the site beyond reasonable scientific doubt.

4. Habitats Regulation Assessment Implications

4.1. Avoidance of Annex I *Sabellaria spinulosa* Reef

4.1.1. The primary mitigation for impact to *Sabellaria spinulosa* reef in the application remains "where possible" avoidance of reef area. We note that if the suggested mitigation is successful in its entirety (i.e. all reef feature is avoided) we would agree with the assessment of magnitude. However, we advise that it is necessary to look at this primary mitigation with a degree of precaution.

4.1.2. However, Natural England remains concerned with the caveat 'where possible', due to the increased level of risk to the integrity of the site such a caveat would endorse as there are no parameters to assess and agree what is "possible".

4.1.3. Using the Applicant's survey data and the recent site survey data it is highly probable that the area to be managed as a fisheries byelaw area for the recovery of reef will straddle the cable route (see Figure 1).

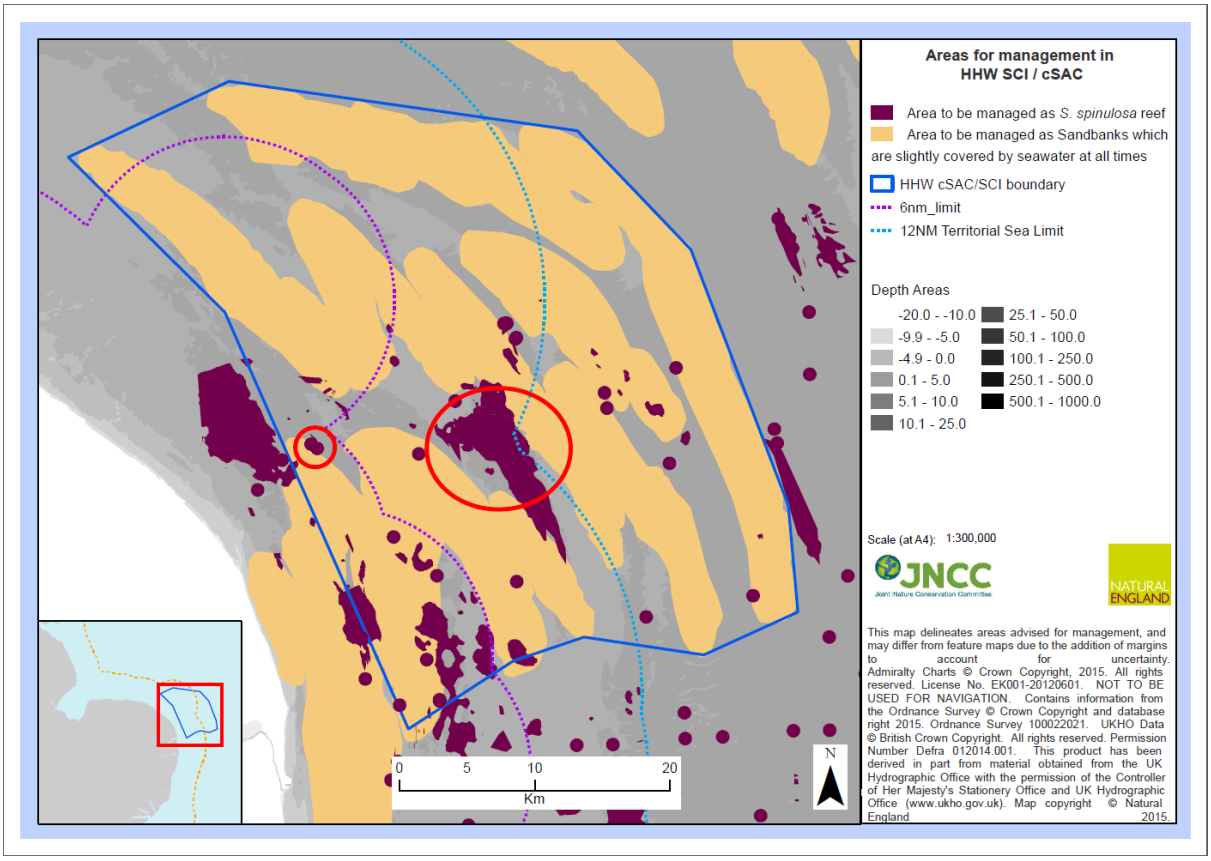

Figure 1: Proposed areas for management in Haisborough, Hammond and Winterton SAC. **The smaller red circle closer inshore indicates an area of reef that the EIFCA intend to protect through a fisheries byelaw.**

4.1.4. We therefore advise that this potentially leaves insufficient space in the proposed cable corridor to micro-route around the byelaw area and any additional Annex I reef feature. Whilst we continue to advocate that the standard mitigation measure/marine licence conditioned to avoid reef features should be included in the Projects DML, it may not be feasible to do so.

4.1.5. We do not consider the Applicant's consideration of routing through 'lower quality/reefiness' reef to be acceptable in terms of restoration of conservation objectives as the 'lower quality' reef mentioned by the Applicant is still considered to be Annex I reef to be avoided..

4.1.6. In addition the evidence presented in the HRA to support conclusions on recoverability predominantly relates to individuals/abundance, and doesn't take into account repeated O&M impacts (once every three years) or cable protection. Therefore we have limited confidence in the ability of reef to recover from cable installation and ongoing maintenance activities. Therefore, we further advocate that the standard mitigation measure of avoidance is adhered to.

4.1.7. Furthermore whether reef is avoided or not during installation there does remain a risk during O&M cable remediation activities that reef could establish across the cable corridor or nearby areas where remediation activities needed to occur. Accordingly, every effort should be made, with input from the MMO and NE, to minimise the impacts at the time of undertaking the works and we would expect any SIP to consider this.

4.2. Long term loss of sea bed habitat including from cable protection.

4.2.1. Without removal at decommissioning the impacts are likely to persist and depending on the location may hinder the conservation objectives of the designated sites. Currently there is no guarantee of removal. The documents provided for the current Race Bank marine licence application includes two options for rock armouring removal that involve dredging up the material. The document provided was purely a method statement and didn't take into consideration the feasibility and confidence in being able to decommission in similar environments; including the associated impacts. For example the two options presented involve dredging to no lower than 30cm below seabed, and in undertaking this activity there would almost certainly be disturbance to, or removal of, the interest features of the site.

4.2.2. For that application we suggested that there needs to be some evidence presented where rock armouring has been decommissioned, in similar sediment types, and monitoring provided of the associated impacts. To date all the evidence presented to Natural England from OWF developers is that rock armouring (and some other cable protection methods) cannot currently be removed. A good example of this issue is within Thanet OWF, where a section of cable under rock armouring needed to be replaced. It was determined that removing that hard substrate to access the cable wasn't feasible, so a new cable section was spliced in around the existing cable leaving the original section with protection in situ. See Natural England's recent cable's paper (Natural England, 2018).

4.2.3. Whilst the preliminary information presented by the Applicant provides a robust argument for WCS presented as being 5% of cable to be rock armoured within a designated site, it doesn't take into account the impacts from any secondary scouring that may happen**.**

4.2.4. Overall, it is the view of Natural England that cable protection should not be used within MPAs as it has the potential to cause persistent impacts and/or permanent changes to the interest features. Theoretically impacts may not be permanent if a condition is put in place to remove cable protection at decommissioning stage. However, at present there is uncertainty both around the ability to remove cable protection and around what the impacts of removal would be on the designated features of the site

4.3. Natural England advice with regards to Annex I Reef (only)

4.3.1. Natural England recommend that under HRA the following steps should be considered:

1. In the first instance at the design stage impacts to designated sites should be avoided completely whenever possible;
2. If this is not possible then all Annex I reef should be avoided completely during cable laying activities. As described above, Natural England consider that micro-routing around reef can be considered appropriate mitigation in this regard. **However,** it is the duty of the Applicant to demonstrate that this can be achieved before AEoI can be ruled out
3. In addition, Natural England consider that cable protection should not be permitted anywhere within designated sites as this would result in permanent change to the interest feature.
4. Finally, it is the view of Natural England that Operations and Maintenance activities should either be excluded from within this designated site (at the consenting stage with option to apply for a separate marine licence at a later date) or sufficiently restricted t. This is because repeated O&M activities can result in continued disturbance which would prevent recovery of Annex I reef, as seen for Race Bank.

4.4. Natural England advice with regards to fisheries byelaw / management areas

1. EIFCA Byelaw Area

4.4.1. It is Natural England's advice that the small EIFCA byelaw area should be avoided completely and therefore the cable corridor for Norfolk Vanguard (and Boreas) should not be allowed to pass through this byelaw area.

4.4.2. This area has been selected as one of two top priority sites for management of reef due to the good evidence base and likelihood for reef to recover. Unlike with the Defra approach EIFCA has chosen to protect small areas specifically surrounding know area of reef with no 'site fabric' included. Therefore, we advise that no activities should be allowed to take place within this area that would hinder the outcome of the management measure.

4.4.3. Therefore, we advise that The Applicant should seek to find a way to route around this byelaw area once the boundary has been defined.

2. Defra fisheries management area

4.4.4. Natural England are aware that the MMO will be making full representation with regards to the proposed Defra fisheries management area at Deadline 6 and therefore this summary just details Natural England's advice in this regard rather than providing a detailed background to the proposal.

4.4.5. Natural England are aware that the current boundary for the Defra fisheries management area encompasses a wide area including some non red risk features, which would make it incredibly difficult for the Applicant to route the cable corridor outside of (see Figure 2 below). Therefore a more pragmatic approach could be considered for this particular management area.

4.4.6. Natural England provided the Applicant with the Figure below, along with a link to the full joint recommendation document on 27 March 2019.

4.4.7. Natural England advises that as a minimum the area of high confidence reef (as indicated by the larger red circle in Figure 1 above) should be avoided in its entirety.

This proposal still includes areas where reef is not currently present but will be managed as reef to ensure that it is supporting the necessary processed that will allow establishment of reef.

4.4.8. This is because this area has been selected as one of two top priority sites for management of reef due to the good evidence base and likelihood for reef to recover and therefore we advise no activities should be allowed to take place within this area which would hinder the outcome of the management measures.

4.4.9. If the Applicant can demonstrate that it is possible to avoid Annex I reef outside of this priority area but within the management area boundary, Natural England would advise that cable laying activities could occur without hindering the conservation objectives of the site or the management measures.

4.4.10. Please note, that whilst it is the view of Natural England that cable laying activities would be permitted Natural England would continue to advise that every effort would need to be made to demonstrate/ensure that this is a one of activity, including:

- Excluding cable protection within the management area; and
- As set out above excluding and/or limiting Operations and Maintenance activities in the site.

4.4.11. Natural England would therefore request that the Applicant provides further information as to what they can do to reduce risk further.

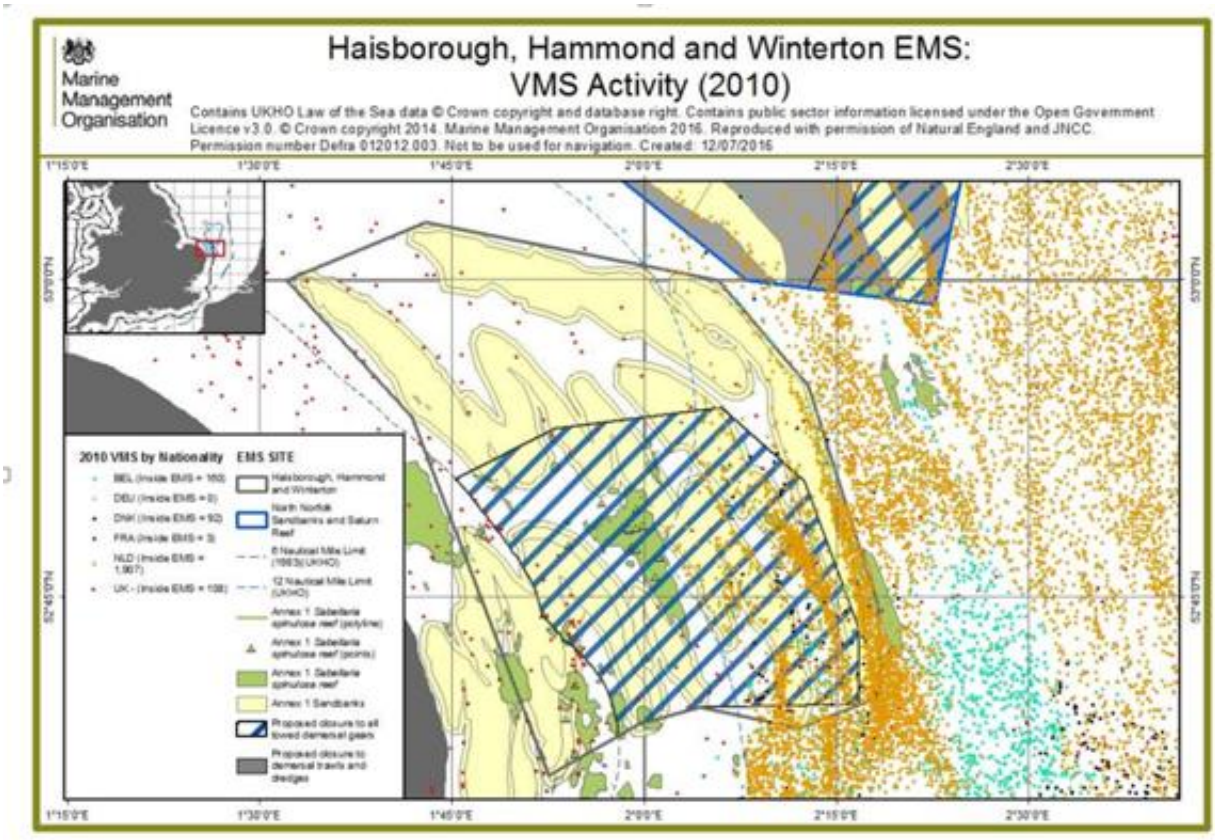

Figure 2: Proposed Defra fisheries management area within Haisborough, Hammond and Winterton SAC. Taken from Joint Recommendation regarding the protection of Sandbanks slightly covered by seawater all the time and Reefs features within the North Norfolk Sandbanks and Saturn Reef Site of Community Importance and the Haisborough, Hammond and Winterton Site of Community Importance under the Habitats Directive 92/43/EEC of 21

May 1992 under Articles 11 and 18 of Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy (the Basic Regulation).

Appendix 1: Copy of Natural England and Joint Nature Conservation Committee's (JNCC) joint formal advice on Haisborough, Hammond and Winterton cSAC with regards to which areas should be managed as Annex I reef

11th September 2015

Our ref:

Your ref:

Apex Court,
City Link,
Nottingham
NG2 4LA

T 0300 060 0308

By E-mail Only

Dear Elaine,

The Joint Nature Conservation Committee's and Natural England's advice to the MMO for protecting designated features in Haisborough Hammond and Winterton SCI/cSAC.

The advice provided in the annex to this letter, and in the accompanying map files comprise our joint advice to support the management of the designated features of Haisborough Hammond and Winterton SCI/cSAC, to ensure the site's features achieve their conservation objectives. This September 2015 advice represents an evolution of the detailed information we provided to the MMO previously in July 2015, in line with the discussion at the Southern North Sea Fisheries Management meeting on 31 July 2015 and on our offshore sites call on 8th September 2015. In working towards the goal of effective management of the SCI/cSAC, please do not hesitate to contact either the JNCC and/or NE to discuss any aspects of the advice provided.

For purposes of clarity, the JNCC and Natural England note there are now in existence four separate maps showing the extent and distribution of the features in this site. As the availability of evidence and our understanding of the features has evolved this advice has been accordingly updated. In chronological order the feature extent maps are:

i) the original maps provided within the SAC Selection Assessment Document (SAD) (2010);
ii) the Natural England Evidence Project "data release" (April 2015);
iii) the maps within our recent advice update provided in July 2015 at the MMO's request; and
iv) the simplified feature maps in *this* current advice required for proposed management action.

We must emphasise the simplified map presented in Annex A are derived from the detailed technical maps provided in July 2015 to aid communication to a wider audience. An

explanation of the data used to construct the maps and our confidence in it is provided in Annex B.

It is also important to recognise that the mapping provided in this advice represents areas of Annex I reef or sandbank habitat in this site at this moment in time that should be considered for management. It has been produced specifically to meet the requirement to inform the management of fisheries in this site by the MMO and Defra and differs from, but does not replace, our national feature presence and extent mapping (i.e. Natural England's Evidence Project data release that is published on MAGIC).

The differences relate to:

- Inclusion of new data which have yet to be incorporated into the Evidence Project but which, if excluded would risk significantly underestimating feature extent.
- Addition of margins to account for uncertainty in feature extent and/or dynamism that are not included in the Evidence Project feature maps published on MAGIC.

Yours Sincerely

Conor Donnelly
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East Midlands Area Team
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Hannah Carr
Senior Marine Protected Areas
Marine Protected Sites Team
hannah.carr@jncc.gov.uk

Annex A. Site specific advice for Annex I habitat features

This advice has been produced jointly by the Joint Nature Conservation Committee (JNCC) and Natural England (NE). Both JNCC and Natural England endorse this advice and it has been signed off as joint advice. We will continue to work together on any matters relating to this site.

1. Areas to be managed as Annex I **Sandbanks which are slightly covered by seawater at all times** and Annex I **Reef** within **Haisborough Hammond and Winterton SCI/cSAC.**

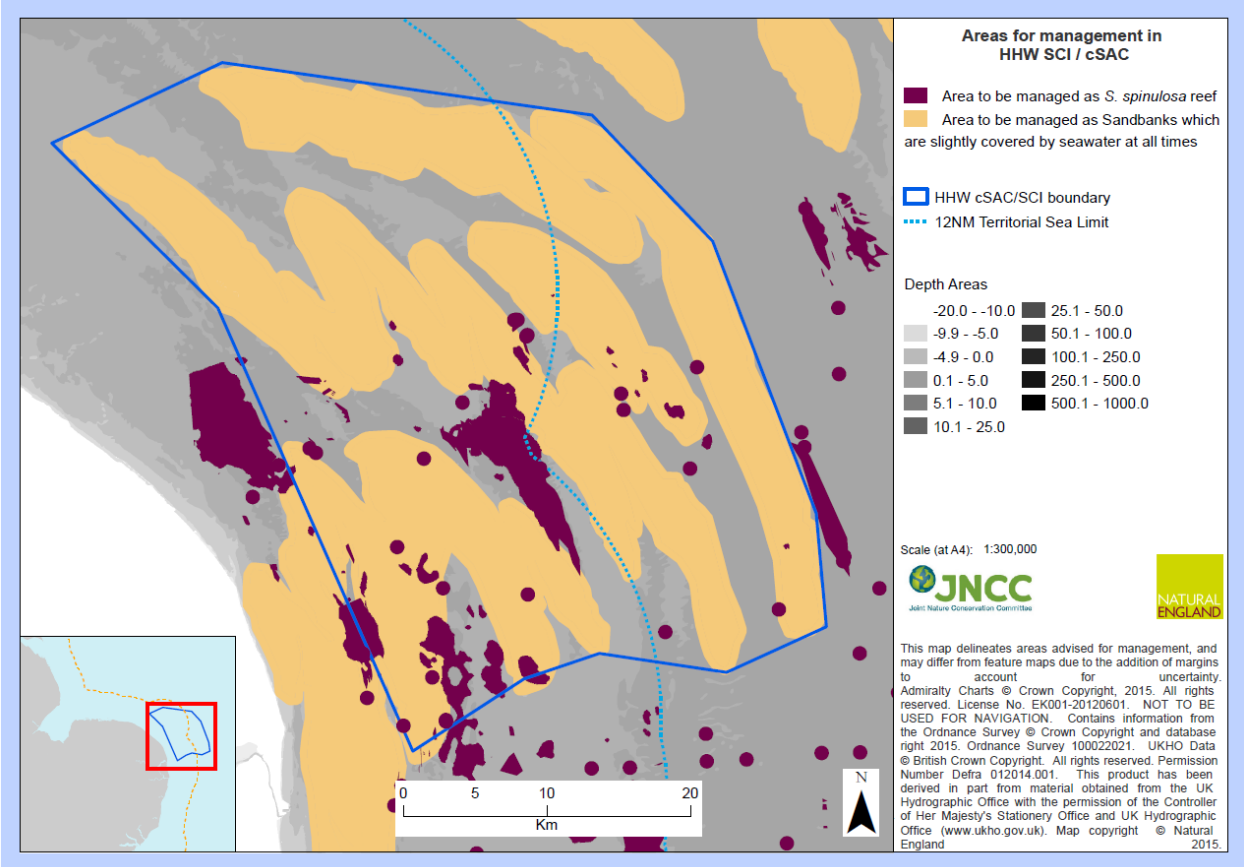


Figure 1. Areas to be considered for management as Annex I 'Sandbanks which are slightly covered by seawater all the time' and Annex I 'Reef' in Haisborough, Hammond and Winterton SCI/cSAC. A margin is included within the delineated Sandbank feature extent to account for both potential migration of the sandbank feature and some uncertainty in the modelled extent of the feature. It may be necessary to apply an additional buffer to the area delineated above in order to prevent damage to this area by activities which occur outwith the delineated extent.

JNCC and Natural England advise that the area as delineated in Figure 1 represents the extent of Annex I Sandbanks and Annex I Reef in Haisborough, Hammond and Winterton (HHW) SCI/cSAC to be considered for management purposes using the best available evidence.

The dynamic nature of the Reef feature presents challenges to precisely mapping its location at any instance in time and therefore the areas included represent our best judgement on those parts of the site that should be managed for the Annex I reef feature. The map includes both original data from the time of site designation together with new data made available since site designation. Some of these new data displayed were provided by third parties and it has not yet been possible for JNCC or Natural England to independently review its quality;

rather we have relied on the quality assurance processes of the evidence providers. Nevertheless, we consider the balance of evidence at this time indicates that these areas form part of the full extent of the feature at this site and excluding them risks significantly underestimating the extent and distribution of reef in the site and puts the feature at risk of not achieving its conservation objectives.

As ground truthing data cannot provide information on reef extent, a 500m margin around point and polyline records, as shown in Figure 1, is considered appropriate to account for uncertainty in reef extent.

The datasets which underpin our understanding of the areas which we advise are considered for management as Annex I habitat are listed below. Further information on these datasets can be found in Annex B.

1. Gardline Environmental Ltd, 2010. Bacton to Baird pipeline route and environmental survey, October and November 2009, Habitat Assessment Report. 1578-0709-BSCL February 2010
2. Barrio Froján, C., Callaway, A., Whomersley, P., Stephens, D., Vanstaen, K. 2013. Benthic survey of Inner Dowsing, Race Bank and North Ridge cSAC, and of Haisborough, Hammond and Winterton cSAC. Cefas Report C5432/C5441.
3. Limpenny, S.E., Barrio Froján, C., Cotterill, C., Foster-Smith, R.L., Pearce, B., Tizzard, L., Limpenny, D.L., Long, D., Walmsley, S., Kirby, S., Baker, K., Meadows, W.J., Rees, J., Hill, K., Wilson, C., Leivers, M., Churchley, S., Russell, J., Birchenough, A.C., Green, S.L., Law, R.J. 2011. The East Coast Regional Environmental Characterisation. MALSF. Cefas Open report 08/04. 287pp.
4. JNCC/NE, 2010, Haisborough Hammond and Winterton SAC Selection Assessment: Version 6.0

Annex B. Evidence used to inform our understanding of areas to be managed as Annex I feature in HHW cSAC / SCI.

1. Sandbanks

The SAC Selection Assessment Document (SAC SAD) (JNCC/NE, 2010)[1] for Haisborough, Hammond and Winterton (HHW) SCI/cSAC showed the likely location of the Annex 1 'Sandbanks which are slightly covered by seawater at all times' delineated using the Klein Slope Analysis modelling method[2]. This mapping was also used in the Regulation 35/18 Package (JNCC/NE, 2013)[3]. Natural England and the JNCC advise the Marine Management Organisation (MMO) that our best estimate of the feature extent has not changed since 2010 based on our current knowledge and data for the site.

The dynamic nature of sandbanks presents challenges to precisely mapping location and defining extent in relation to surrounding areas. Maps that modelled the distribution of Annex I habitats, such as Figure 1 above, were developed for UK-level representation and may only

[1] JNCC/NE, 2010, Haisborough Hammond and Winterton SAC Selection Assessment: Version 6.0

[2] Klein, A. 2006. Identification of submarine banks in the North Sea and the Baltic Sea with the aid of TIN modelling. In: H. von Nordheim, D. Boedesker, J.C.Krause, eds. *Progress in Marine Conservation in Europe. Natura 2000 sites in German Offshore Waters.* The Netherlands: Springer, 97 – 110

[3] http://jncc.defra.gov.uk/PDF/HHW_Reg%2035_Conservation%20Advice_v6.0.pdf

provide an indication of the location of a sandbank feature within the site. The Klein Slope Analysis modelling approach for the delineation of sandbank features is broadly based on the definition of Annex I Sandbanks provided in the European Commission notes of 2007[4]. However, the definition recognises the biological communities present within a sandbank are the key elements of conservation interest. A modelling approach using just physical environmental parameters cannot fully account for the distribution of the biological elements of the feature.

Margins and buffer zones

The sandbanks within HHW represent dynamic sediment environments, and whilst large scale bank migration appears to be slow, there is a level of sediment movement around the bank system and across banks (JNCC/NE, 2010)[1]. Different sandbanks are reported to have moved at different rates in the past, which makes calculating a margin for this relatively dynamic habitat difficult. The McCave and Langhome (1982)[5] analysis suggests that the lateral crest migration is occurring across Haisborough banks at a rate of 2.5m per year. However monitoring data from the aggregate dredging permission area 436/202 demonstrates that Middle and North Cross Sandbanks are moving eastwards and northwards, respectively, by approximately 100m per year (HAML, 2009)[6]. The most recent survey in 2011 (Cefas) found a displacement of sandbank ridges that could be a further indication of ridge migration in a generally north-easterly direction of up to 200m (Froján et al 2013) but the exact reason for this or the time period over which it occurred could not be determined.

As such, Natural England and JNCC have added a margin of 1000m to the boundary of Middle and North Cross sandbanks (in a North and East direction) to account for migration over the last 5 years and the next 5 years. This calculation is based on projected movement over a period of 10 years since bank delineation in 2010, and should be reviewed after this time period.

As well as this margin for migration we have added an additional margin of 500 meters around the edges of all sandbanks to reflect current uncertainty in feature extent. As previously stated, the dynamic nature of the feature presents challenges to precisely mapping its location. This margin is based on aggregates research that compares sandbank boundaries delineated using the Klein method, with those obtained through geophysical analysis, at specific sandbanks in the Southern North Sea. Variability was identified in the order of hundreds of

[4] European Commission. 2007. Interpretation Manual of European Union Habitats. Eur 27. DG Environment. http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/2007_07_im.pdf [Accessed 14/07/2015]

[5] McCAVE N & LANGHORNE D N, 1982. Sand waves and sediment transport around the end of a tidal Sandbank. Sedimentology 29(1):95-110.

[6] HAML, 2009. Licence Area 436/202 Cross Sands Monitoring Report. Hanson Aggregate Marine Limited Report: 436/202/KB/08. Hanson Aggregate Marine Limited, Burnley Wharf, Marine Parade, Southampton, SO14 5JF.

meters[7] [8]. This margin has been derived on a precautionary basis and may be regarded as a fuzzy boundary. This boundary will also reflect the potential of the sandbanks to migrate, where there is insufficient evidence to suggest annual migration figures. This will allow for uncertainty in the feature location and by taking a precautionary approach ensure the feature is provided adequate protection to ensure the conservation objectives can be met.

In addition to the 'margin' described / mapped above we also advise that an appropriate buffer zone is applied around the features and associated habitats to ensure the feature is protected from both the direct and indirect impacts of the managed activities.

Sub Features

We are unable to provide a map delineating the sub features (as defined in the Conservation Objectives; Low diversity dynamic sand communities and gravelly muddy sand communities) within the site due to insufficient data. Should further biological data become available and be used in subsequent analyses then this may be possible. In particular, the distribution of EUNIS Level 3 subtidal sediments (Figure 2) may inform any future interpretations since the biotopes associated with the sub feature 'Gravelly, Muddy Sand Communities' described in the Regulation 35/18 package may be present in areas of subtidal mixed sediment (EUNIS Level 3 code: A5.4). However, where the subtidal sediment polygons extend outside of the Annex 1 feature boundary and margin then they are not considered part of the feature and we do not advise that they are managed beyond the Annex 1 feature boundary and margin.

Natural England has produced a map showing EUNIS level 3 substrate types across the whole site. Figure 2 shows sediment data obtained from different surveys and mapping exercises undertaken over a number of years. Full details of the different data sets used, and which points / areas they relate to, are found in the attribute table within the GI data release already provided to MMO. Natural England can provide further explanation of these records on request.

[7] BMAPA. 2009. SACs in UK waters – An informal response from the Marine Aggregate industry. Report to Natural England.

[8] Lefarge Tarmac. 2013. Defining the margin of the Newarp Sand Bank within the Haisborough, Hammond and Winterton SAC. A report to the MMO under marine aggregate license areas 296 & 494.

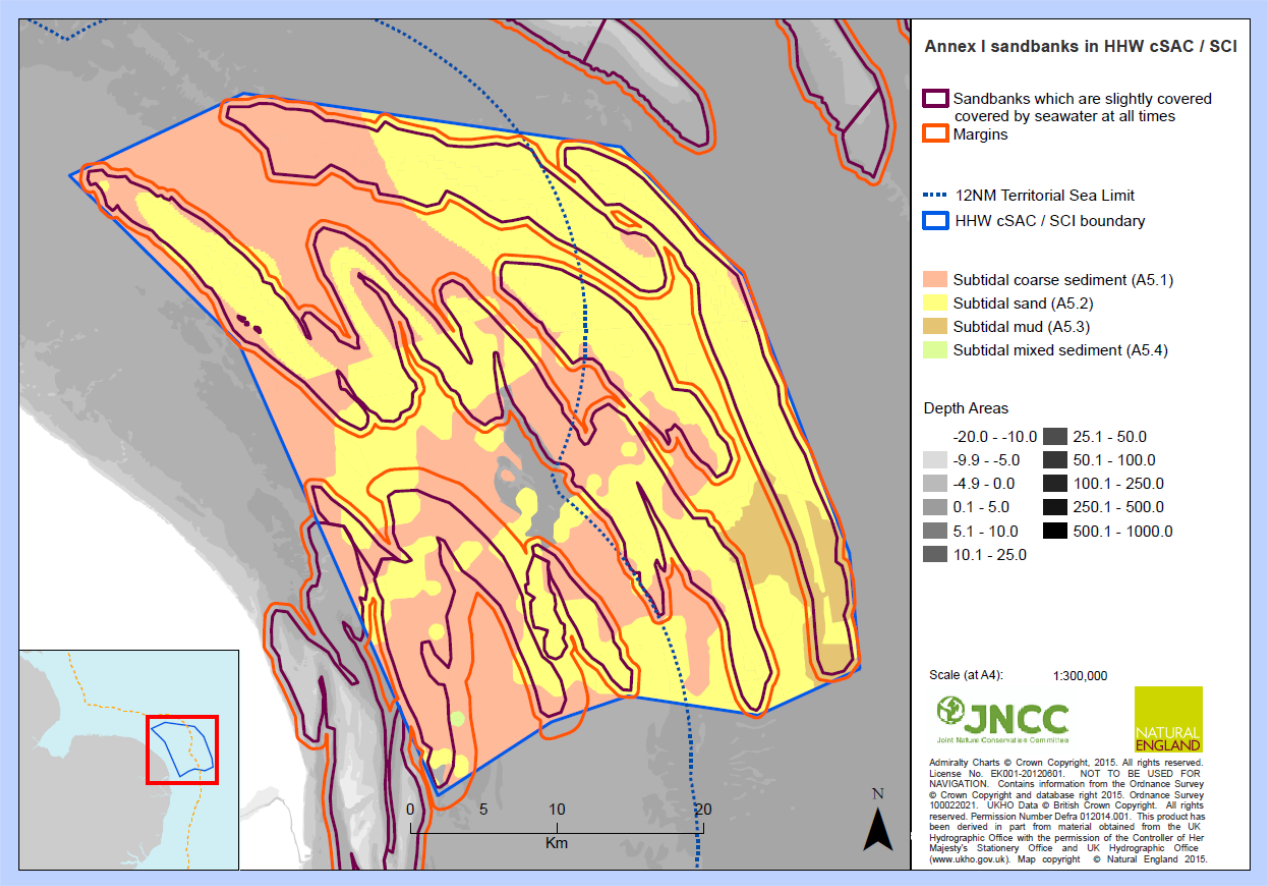


Figure 2.- A map of sediment obtained from different surveys and mapping exercises undertaken over a number of years. This map is for supporting information and NE and the JNCC do not advise that the management measures developed apply to the full extent of these sediment habitats.

2. Reef

Natural England and the Joint Nature Conservation Committee (JNCC) advise that there have been changes to our understanding of the presence and extent of Annex I feature 'Reefs' in Haisborough Hammond and Winterton cSAC as presented in our formal advice on the site in the site Selection Assessment Document (JNCC/Natural England, 2010) and Regulation 35/18 Package (JNCC/Natural England, 2013).

The new data has been gathered from the Marine Aggregate Levy Sustainability Fund's East Coast Regional Environmental Characterisation (REC) survey (MALSF, 2010)[9] and ground truthing data from a Cefas/JNCC benthic Survey of the site undertaken in 2011[10]. Natural England and the JNCC advise that both the confirmed and potential reef habitats are considered for management as Annex 1 habitat.

2.1 Baird Bacton pipeline

[9] http://www.marinealsf.org.uk/catalogue/result.php?id=21712

[10] Frojan et al, 2013, Benthic Survey of Inner Dowsing, Race Bank and North Ridge cSAC and of Haisborough, Hammond and Winterton cSAC.

Sabellaria spinulosa reef extent is identified along the Baird Bacton pipeline, as in the HHW SAC SAD and Regulation 35 package[11]

2.2 The East Coast Regional Environmental Characterisation (REC)

The East Coast REC (MALSF, 2011) collected numerous acoustic and ground truthing data and several habitat maps were created from these data. Three mapped distributions were used to inform our understanding of the likely extent of *Sabellaira spinulosa* reef in HHW cSAC/SCI; *Sabellaria spinulosa* reef polygon delineated from acoustic data, a biotope map polygon produced using a 'bottom-up' modelling approach, and the ground truth point data to which the 'reefiness' assessment had been applied (Gubbay et al, 2007[12], Foster-Smith & Hendrick, 2006[13]) . A description of our confidence in each dataset used is outlined below.

S. spinulosa reef identified from acoustic records

Reef was interpreted from side scan sonar and multi-beam backscatter data as areas of irregular texturing. This is a recognised technique[14], and good correspondence was found between the areas identified as likely reef and the ground truthing data confirming reef presence (71% match between acoustic reef and high confidence reefiness point data), demonstrating the potential that this area supports *S. spinulosa* reef. However, it remains challenging to distinguish reef from other ground forms that produce similar texturing in the acoustic record, notably cobbles and mussel beds.

'Bottom-up' modelled biotope map

Two *S. spinulosa* dominated communities were identified; 'dense *Sabellaria'* and 'moderately dense *Sabellaria'.* This model is informed by both ground truthing and acoustic data, and has higher correspondence with ground truth data confirming reef than the reef delineated from the acoustics, and it produced less false positives (86% match between modelled biotope and high confidence point data; 10% false negatives compared to 23% from the acoustic data). However, the modelling uses statistics to interpolate between faunal samples in order to create predictive distributions, rather than identifying reef extent directly from survey data.

The dense *Sabellaria* areas are described as forming extensive *reefs*. This conclusion is based upon interpretation of the acoustic data and the groundtruth data that occur within this polygon.

The acoustic and groundtruthing data indicate the moderately dense *Sabellaria* represents areas with crust and patches, rather than extensive reef. These should therefore be considered as areas that have the potential to support reef due to the high presence of *S. spinulosa* individuals.

---

[11] Gardline Environmental Ltd, 2010. Bacton to Baird pipeline route and environmental survey, October and November 2009, Habitat Assessment Report. 1578-0709-BSCL February 2010

[12] Gubbay, S. 2007. Defining and managing *Sabellaria spinulosa* reefs: Report of an inter-agency workshop 1-2 May 2007. *JNCC Report* No. 405 [online] URL:http://www.jncc.gov.uk/page-4097 [accessed 17th April 2014]

[13] Hendrick, V.J., Foster-Smith, R.L. 2006. A scoring system for evaluating 'reefiness'. Journal of the marine biological association of the UK.

[14] Limpenny, D.S., Foster-Smith, R.L, Edwards, T.M., Hendrick, V.J., Diesing, M., Eggleton, J.D., Meadows, W.J., Crutchfield, Z., Pfeifer, S., Reach, I.S. 2010. Best methods for identifying and evaluating *Sabellaria spinulosa* and cobble reef. ALSF Ref No MAL0008.

Ground truthing data

Ground truthing data (video, grab and trawl) was assessed for 'reefiness' using an assessment based on recommendations made by Foster-Smith and Hendrick (2006)[15] and Gubbay (2007)[16], including key reefiness criteria. Ground truthing data were categorised by both reefiness and confidence in the assessment. However, there is not a clear explanation in the report of how the reefiness or confidence assessments were aggregated together to form the overall reefiness score provided in the data.

2.3 Cefas/JNCC Benthic survey of HHW

This survey collected video, grab and acoustic data across Haisborough Hammond and Winterton cSAC. Grab and video tow data provides evidence of the presence of *Sabellaria spinulosa* reef at a number of locations and were assessed for reefiness using the JNCC guidance on 'Defining and managing *Sabellaria spinulosa* reefs' [17]. Five of the video transect lines meet the criteria for Annex I reef and are displayed in Figure 1. No extent polygons for *Sabellaria spinulosa* reef were created around these data as no obvious or diagnostic acoustic signature was observed that may be classified unequivocally as reef or that could enable the precise differentiation or delineation of reef habitat from surrounding sediments.

Following the revisions to the Territorial Seas baselines in 2014, video data (Cefas 2011 survey, **Frojan** et al, 2013) identifying reef at stations 315 and 316 (Winterton Ridge Reef), are now within the MMO's jurisdiction; these lines are close to the existing Annex I polygon in this area. We advise these data are considered in the same way as the previous video data from this survey (Station 317 & 319), protecting an area around the video line.

Buffer

We advise that an appropriate buffer zone is applied around the features and associated habitats to ensure the feature is protected from both the direct and indirect impacts of the managed activities.

[15] Hendrick, V.J., Foster-Smith, R.L. 2006. A scoring system for evaluating 'reefiness'. Journal of the marine biological association of the UK.

[16] Gubbay, S. 2007. Defining and managing *Sabellaria spinulosa* reefs: Report of an inter-agency workshop 1-2 May 2007. *JNCC Report* No. 405 [online] URL:http://www.jncc.gov.uk/page-4097 [accessed 17th April 2014]

[17] Gubbay, S., (2007), Defining and managing Sabellaria spinulosa reefs: Report of an inter-agency workshop 1-2 May, 2007, Online only, JNCC Report 405, ISSN 0963-8091. Available here: http://jncc.defra.gov.uk/page-4097

Appendix 2: Copy of Natural England's formal advice on the use of an adaptive approach to management in Haisborough Hammond and Winterton SAC

Date: 22 March 2019

Our ref:

Your ref: Click here to enter text.

BY EMAIL ONLY

Natural England
Area 5A Nobel House
17 Smith Square
London
SW1P 3JR

Dear Judith,

Re: An Adaptive Risk Management approach in Haisborough Hammond and Winterton Special Area of Conservation

Natural England (NE) and the Joint Nature Conservation Committee (JNCC) provided formal advice on areas to be managed as reef within Haisborough Hammond and Winterton Special Area of Conservation (HHW SAC) on 11th September 2015. NE and Eastern Inshore Fisheries and Conservation Authority (EIFCA) have had extensive conversations over the evidence used in the NE and JNCC formal advice. NE welcome these discussions and EIFCA feedback on our advice.

We recognise that confidence in our understanding of the extent and distribution of Annex I reef in this site is relatively low, in particular due to the low density of ground truthing. HHW was designated as an SAC relatively recently, its geographic location and size mean that it requires considerable resource to survey. We therefore do not have a complete baseline of feature extent and distribution. The data used is the best available evidence on which we must base our advice, and it does indicate that the area can support *S. spinulosa* reef. If appropriate management is not put in place then there is therefore the risk of not meeting the requirements of the Habitats Directive. The moderate density *S. spinulosa* polygons describe areas which may be crust and patches rather than extensive reef. However, for the reasons set out above we view the inclusion of these areas in your management considerations as important so that areas which are suitable to support Annex I *S. spinulosa* reef are protected.

Our advice on the extent which should be considered as reef habitat therefore remains the same as our formal advice issued in September 2015. Acknowledging the variation in confidence between the datasets available for reef in this area we suggest a differential approach to interpreting this evidence would be appropriate. Management measures could be developed which target the areas with the most confidence of *S.* spinulosa reef. Those areas with lower confidence could be prioritised for further monitoring as part of the management strategy to build our understanding and confidence of areas within the site that do support Annex 1 reef. This would enable management to be adapted accordingly, so that it ensures feature integrity within the site is maintained, whilst also ensuring management is

proportionate to the risk. Should EIFCA adopt a differential approach management, then we advise the management is developed based on the principles set out in the Defra Adaptive Risk Management paper[1]. Of particular note are the points laid out in Section 1.5:

- "Longer term management must be genuinely adaptive; i.e., it would be expected to be accompanied by an appropriately designed monitoring programme that would be capable of detecting anthropogenic change, and with management measures regularly reviewed, and if necessary amended, in the light of results from monitoring."
- "Management change is not unidirectional i.e. it is not necessarily more restrictive."

Please do not hesitate to contact me if you have any questions or require further information.
Yours Sincerely,

Georgina Roberts
Marine Senior Adviser
georgina.roberts@naturalengland.org.uk

Register of European offshore marine sites

Register entry UK0030395 under Regulation 19 of The Conservation of Offshore Marine Habitats and Species Regulations 2017

This is the register entry for the European offshore marine site known as **Southern North Sea** in the '**Southern North Sea' and 'Northern North Sea'** Regional Seas. This area has been proposed to the European Commission by the Secretary of State for Environment, Food and Rural Affairs pursuant to Article 4.1 of the "Habitats Directive" (Council Directive 92/43/EEC) as eligible for designation as a Special Area of Conservation. The register reference number for this European offshore marine site is UK0030395 and a folder, kept under this reference as part of this register, contains a map of the European offshore marine site and a description, both signed by me, giving the reasons for designation of the site as a Special Area of Conservation. As the boundary of this site crosses into English inshore waters, there is an additional entry for this site in the Register of European Sites for England (UK0030395).

Other details of the European offshore marine site are as follows:

Date submitted to European Commission: 30th January 2017

Date approved by the European Commission as a Site of Community Importance: 12th December 2018

Date site designated as an SAC: 26th February 2019

Site centre location[1]

Longitude: **01 47 60 E**

Latitude: **53 33 04 N**

Area: **3,695,054 ha (Projection: Europe Albers_Equal_Area_Conic[2])**

Priority status[3]: **No**

Date of registration as European Offshore Marine Site: 12th December 2017

Signed: [redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs.

[1] This indicates the approximate centre of the site, calculated in WGS84.
[2] Modified projection suited for mapping the offshore continental shelf. Full details available from Joint Nature Conservation Committee OffshoreMPAs@jncc.gov.uk.
[3] Indicates whether the site has been identified under Article 4.2 of the Habitats Directive (Council Directive 92/43/EEC) as hosting one or more priority natural habitat types or priority species.

Reasons for recommendation as a Site of Community Importance

Area name: **Southern North Sea**

Administrative area: **Norfolk/Suffolk/offshore**

Component SSSI: **N/A**

This area has been recommended as a Site of Community Importance (SCI) because it contains habitat types and/or species which are rare or threatened within a European context. The habitats and/or species for which the area has been recommended as an SCI are listed below.

Site description:
The Southern North Sea SAC is located in the North Sea Management Unit and has been recognised as an area with predicted persistent high densities of harbour porpoise (JNCC, 2017). The site includes some areas that are more important for the species during the winter, some that are more important during the summer and some that are important throughout the year (Heinänen and Skov, 2015). The site is located to the east of England and it stretches from the central North Sea (north of Dogger Bank) to the Straits of Dover in the south, covering an area of 36,951 km^2. A mix of habitats, such as sandbanks and gravel beds, cover the seabed and water depths range from mean low water to 75 m, with the majority of the site shallower than 40 m.

Reference

HEINÄNEN, S and SKOV, H. 2015. The identification of discrete and persistent areas of relatively high harbour porpoise density in the wider UK marine area, JNCC Report No. 544, JNCC, Peterborough.

JNCC (2017) SAC Selection Assessment: Southern North Sea. January, 2017. Joint Nature Conservation Committee, UK. Available from: http://jncc.defra.gov.uk/page-7243

Qualifying interest(s) submitted to the European Commission:

1. **1351: Harbour porpoise (*Phocoena phocoena*)**

- **for which this is considered to be one of the best areas in the United Kingdom.**

This documentation relates to a site entered in the Register of European Offshore Marine Sites

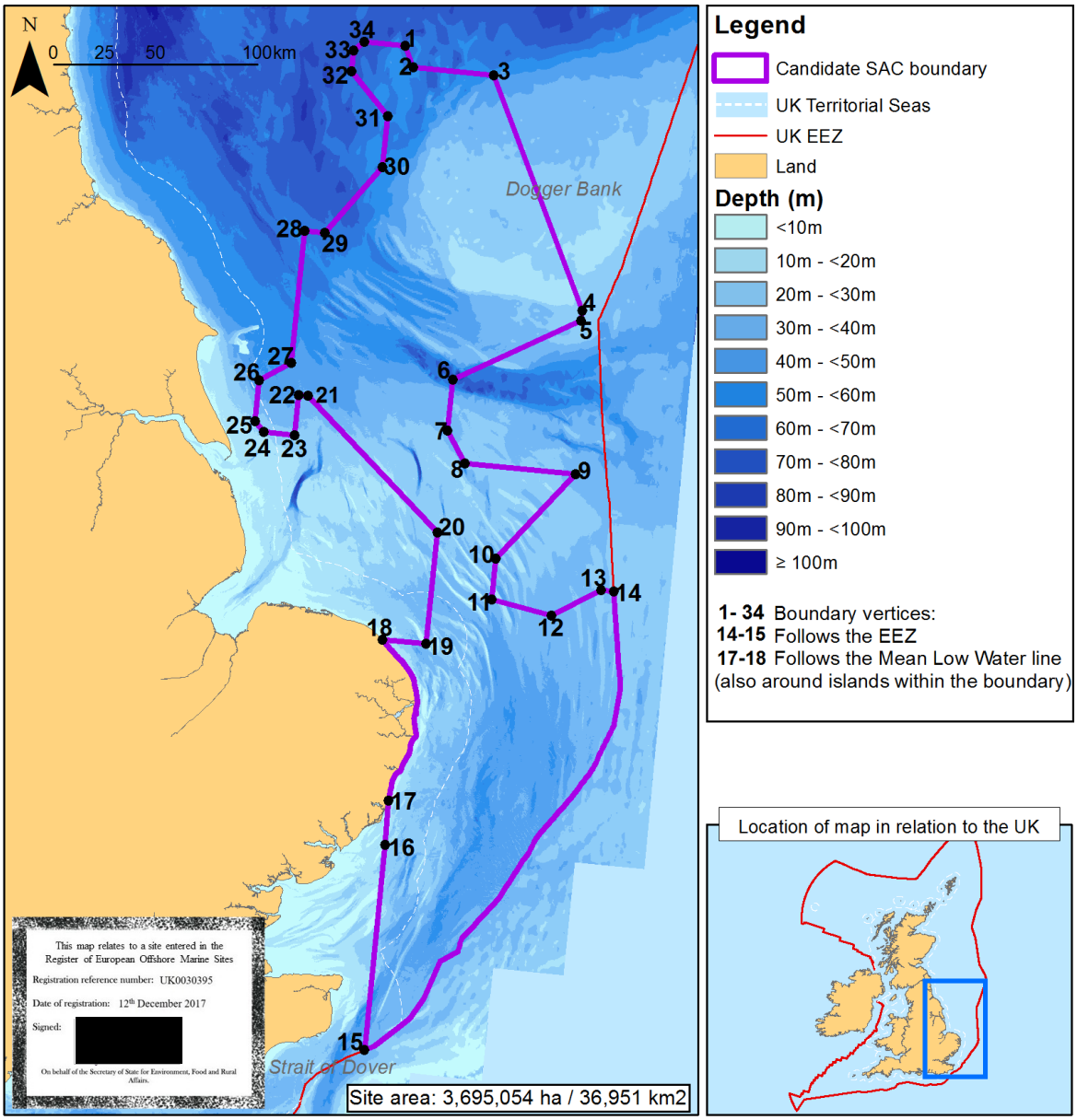
Registration reference number: UK0030395

Date of registration: 12th December 2017

Signed: [redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs.

Southern North Sea



Legend

- Candidate SAC boundary
- UK Territorial Seas
- UK EEZ
- Land

Depth (m)

- <10m
- 10m - <20m
- 20m - <30m
- 30m - <40m
- 40m - <50m
- 50m - <60m
- 60m - <70m
- 70m - <80m
- 80m - <90m
- 90m - <100m
- ≥ 100m

1- 34 Boundary vertices:
14-15 Follows the EEZ
17-18 Follows the Mean Low Water line (also around islands within the boundary)

ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude
1	55° 28' 53.1" N	01° 02' 24.8" E	10	53° 17' 32.9" N	02° 11' 31.6" E	19	52° 53' 06.4" N	01° 45' 21.9" E	28	54° 37' 00.5" N	00° 27' 44.8" E
2	55° 23' 34.2" N	01° 07' 24.8" E	11	53° 06' 45.7" N	02° 11' 43.8" E	20	53° 22' 42.4" N	01° 44' 22.2" E	29	54° 37' 11.8" N	00° 37' 01.8" E
3	55° 24' 03.2" N	01° 45' 17.6" E	12	53° 04' 11.8" N	02° 38' 38.6" E	21	53° 54' 05.6" N	00° 39' 29.7" E	30	54° 56' 28.6" N	00° 59' 18.7" E
4	54° 25' 05.4" N	02° 37' 56.9" E	13	53° 12' 19.1" N	02° 59' 22.3" E	22	53° 54' 00.3" N	00° 35' 04.2" E	31	55° 09' 56.9" N	00° 58' 38.1" E
5	54° 22' 23.6" N	02° 37' 58.3" E	14	53° 12' 19.0" N	03° 04' 57.1" E	23	53° 43' 17.2" N	00° 35' 41.1" E	32	55° 20' 23.2" N	00° 39' 10.7" E
6	54° 03' 07.5" N	01° 43' 06.7" E	15	51° 04' 38.9" N	01° 39' 44.1" E	24	53° 43' 00.0" N	00° 22' 03.6" E	33	55° 25' 46.4" N	00° 38' 51.5" E
7	53° 49' 40.4" N	01° 43' 32.5" E	16	51° 59' 04.9" N	01° 38' 08.0" E	25	53° 45' 35.5" N	00° 17' 20.7" E	34	55° 28' 33.4" N	00° 43' 26.4" E
8	53° 41' 38.9" N	01° 52' 54.2" E	17	52° 10' 53.8" N	01° 37' 10.6" E	26	53° 56' 22.0" N	00° 16' 38.8" E			
9	53° 41' 57.7" N	02° 42' 50.7" E	18	52° 52' 51.5" N	01° 26' 06.6" E	27	54° 02' 03.1" N	00° 30' 01.3" E			

Harbour Porpoise (*Phocoena phocoena)* possible Special Area of Conservation:

Southern North Sea

<u>Draft</u> Conservation Objectives and Advice on Activities

January 2016

Advice under Regulation 18 of The Offshore Marine Conservation (Natural Habitats, *etc*.) Regulations 2007 (as amended), and Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended).

Further information

This document is available as a pdf file on the JNCC website for download if required (www.jncc.defra.gov.uk).

Please return comments or queries to:

Marine Species Advice Team

Joint Nature Conservation Committee

Inverdee House

Aberdeen

AB11 9QA

Email: porpoise@jncc.gov.uk
Tel: +44 (0) 01224 266550

Summary of Conservation Objectives and Advice on Activities

The Conservation Objectives and Advice on Activities are set out for the Southern North Sea possible SAC (pSAC) for the Annex II species harbour porpoise (*Phocoena phocoena*). The site covers both inshore (within 12 nautical miles of coast) and offshore (beyond 12 nautical miles of coast) waters where Natural England (NE) and the Joint Nature Conservation Committee (JNCC) have respective advisory responsibilities.

The general objective of achieving or maintaining Favourable Conservation Status (FCS) for all species and habitat types listed in Annexes I and II of the Habitats Directive needs to be translated into site-level Conservation Objectives. These describe the condition to be achieved by species and habitat types within the sites in order for the site to contribute in the best possible way to achieving FCS at the national, bio-geographical and European level. The Conservation Objectives have been developed for the feature (harbour porpoise) throughout the recommended possible SAC network to ensure coherence across the network. This is also appropriate for a wide ranging, mobile and continuous population. The Advice on Activities is site-specific but based on a broad assessment of the sensitivity of the harbour porpoise to man-made pressures at a UK scale. The advice has been developed using the best-available scientific information and expert interpretation as at November2015. The advice provided here will be subject to change as our knowledge about the site and the impacts of human activities improve.

The site should be managed in a way that ensures that its contribution to the maintenance of the harbour porpoise population at FCS is optimised. This may require management of human activities occurring in or around the site if they are likely to have an adverse impact on the site's Conservation Objectives either directly or indirectly identified through the assessment process. Management of activities that may affect processes on which the harbour porpoise is dependent, e.g. recruitment of prey species from supporting habitats, cannot be considered at present due to insufficient (often no) evidence linking habitat characteristics to prey of the harbour porpoise. There is some information on the prey of harbour porpoises, but their prey preferences whilst within the sites are not well known. It should be noted that as European Protected Species under Annex IV of the Habitats Directive, harbour porpoise are already strictly protected wherever they are in European waters. As such several management measures are already in place in the UK.

To fulfil the Conservation Objectives for the Southern North Sea harbour porpoise site, the relevant[1] and competent[2] authorities should consider human activities within their remit which might affect the integrity of the site.

[1] Relevant authorities are those who are already involved in some form of relevant marine regulatory function and would therefore be directly involved in the management of a marine site.

[2] A competent authority is any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office.

Contents

1 Introduction

1.1 Background

A potential network of eight sites was identified within UK waters for harbour porpoise (*Phocoena phocoena*). Sites were identified within the UK portions of Management Units (MUs) defined for the species (ICES, 2014; IAMMWG, 2015a). The Welsh and Northern Ireland Governments, along with Defra on behalf of England and offshore waters, gave approval for sites within their areas of jurisdiction to proceed to consultation. The resulting five sites are shown in Figure 1.

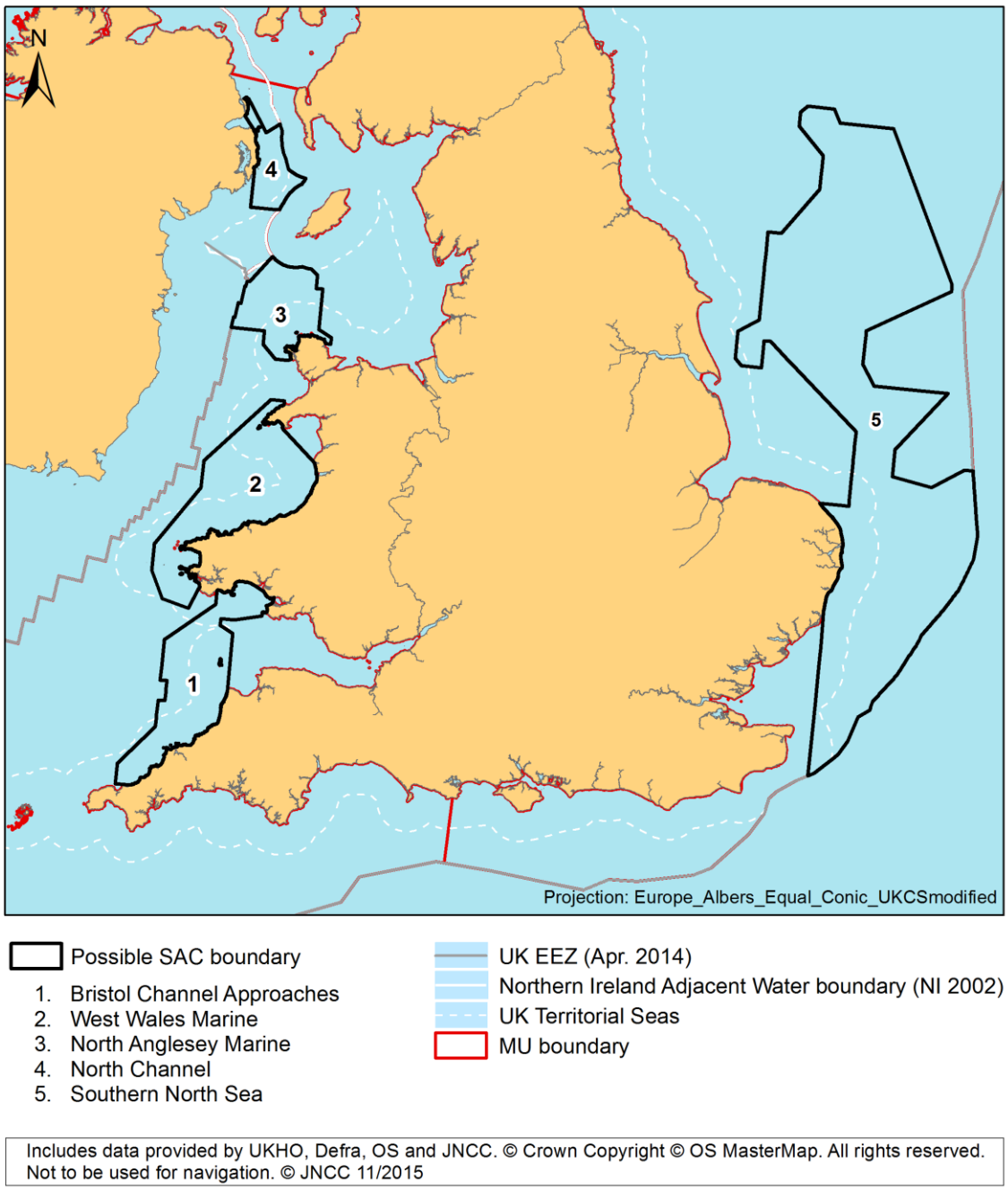


Figure 1: Possible Special Areas of Conservation for the harbour porpoise, *Phocoena phocoena* identified in Northern Ireland, England, Wales and offshore waters. The MU boundary refers to management units North Sea and Celtic and Irish Seas.

This advice is for the Southern North Sea site (Figure 2) which is subject to protection under the Habitats Directive as transposed by the Conservation of Habitats and Species Regulations 2010[3] and the Offshore Marine Conservation Regulations (Natural Habitats, *etc*.) Regulations 2007[4] (as amended). The advice is given in fulfilment of the duty of the Statutory Nature Conservation Bodies (SNCBs) under the Habitats Regulations to inform Relevant and Competent Authorities as to (a) the Conservation Objectives for the site; and (b) any activities which may negatively impact the feature [harbour porpoise] for which the site is designated. The SNCBs aim to ensure that the Conservation Objectives are up-to-date, accessible and allow the assessment of the impact of proposed developments against them.

2 Responsibilities of Relevant and Competent Authorities

The Habitats Regulations require Relevant and Competent Authorities to exercise their functions so as to secure compliance with the Habitats Directive. Competent Authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on the site. This may include consideration of issues outside the boundary of the SAC, if the impact of these occurs within the site boundaries. Relevant and Competent Authorities are not required to undertake any actions or ameliorate changes in the condition of the site if it is shown that the changes result wholly from natural causes.

The natural variability of harbour porpoise distribution and abundance within sites is likely to be large due to the mobility and wide ranging nature of this species. Apparent deterioration of harbour porpoise presence at the site must be contextualised in terms of the natural variability in abundance and distribution patterns at the population level (i.e. Management Unit level). SNCBs will work with Relevant and Competent Authorities and others to agree a protocol to guide assessments, and this will require consideration for the population at the wider scale MU population. It is essential that any assessment for the site reflect the natural variation of the species, including assessments in the condition of the site.

3 Conservation Objectives for harbour porpoise SACs

3.1 The role of Conservation Objectives

Site level Conservation Objectives are a set of specified objectives that must be met to ensure that the site contributes to maintaining or achieving Favourable Conservation Status (FCS) of the designated site feature(s) at the national and biogeographic level (EC, 2012). Conservation Objectives constitute a necessary reference for identifying site-based conservation measures and for carrying out Habitat Regulations Assessments of the implications of plans or projects. The purpose of the Habitat Regulations Assessment is to determine whether a plan or project adversely affects a site's integrity. The critical consideration in relation to site integrity is not the extent or degree of an impact, or whether an impact is direct or indirect, but whether the implications of any activities affecting a site, either individually or in combination with other plans or projects, affect the site's ability to achieve its conservation objectives and favourable conservation status.

Harbour porpoise are protected everywhere in European waters under the provisions of Annex IV and Article 12 of the Habitats Directive. The harbour porpoise in UK waters is considered part of a wider European population and the mobile nature of this species means that the concept of a 'site population' may not be appropriate for this species. Site based

[3] http://www.legislation.gov.uk/uksi/2010/490/pdfs/uksi_20100490_en.pdf
[4] http://www.legislation.gov.uk/uksi/2007/1842/pdfs/uksi_20071842_en.pdf

conservation measures will complement wider ranging measures that are in place for the harbour porpoise.

3.2 Background to Conservation Objectives

The Conservation Objectives are designed to ensure that the obligations of the Habitats Directive can be met. Article 6(2) of the Directive requires that there should be no deterioration or significant disturbance of the qualifying species or to the habitats upon which they rely. Therefore, the focus of the Conservation Objectives for harbour porpoise sites is on addressing pressures that affect site integrity and would include:

- killing or injuring significant numbers of harbour porpoise (directly or indirectly);
- preventing their use of significant parts of the site (disturbance / displacement);
- significantly damaging relevant habitats; or
- significantly reducing the prey base.

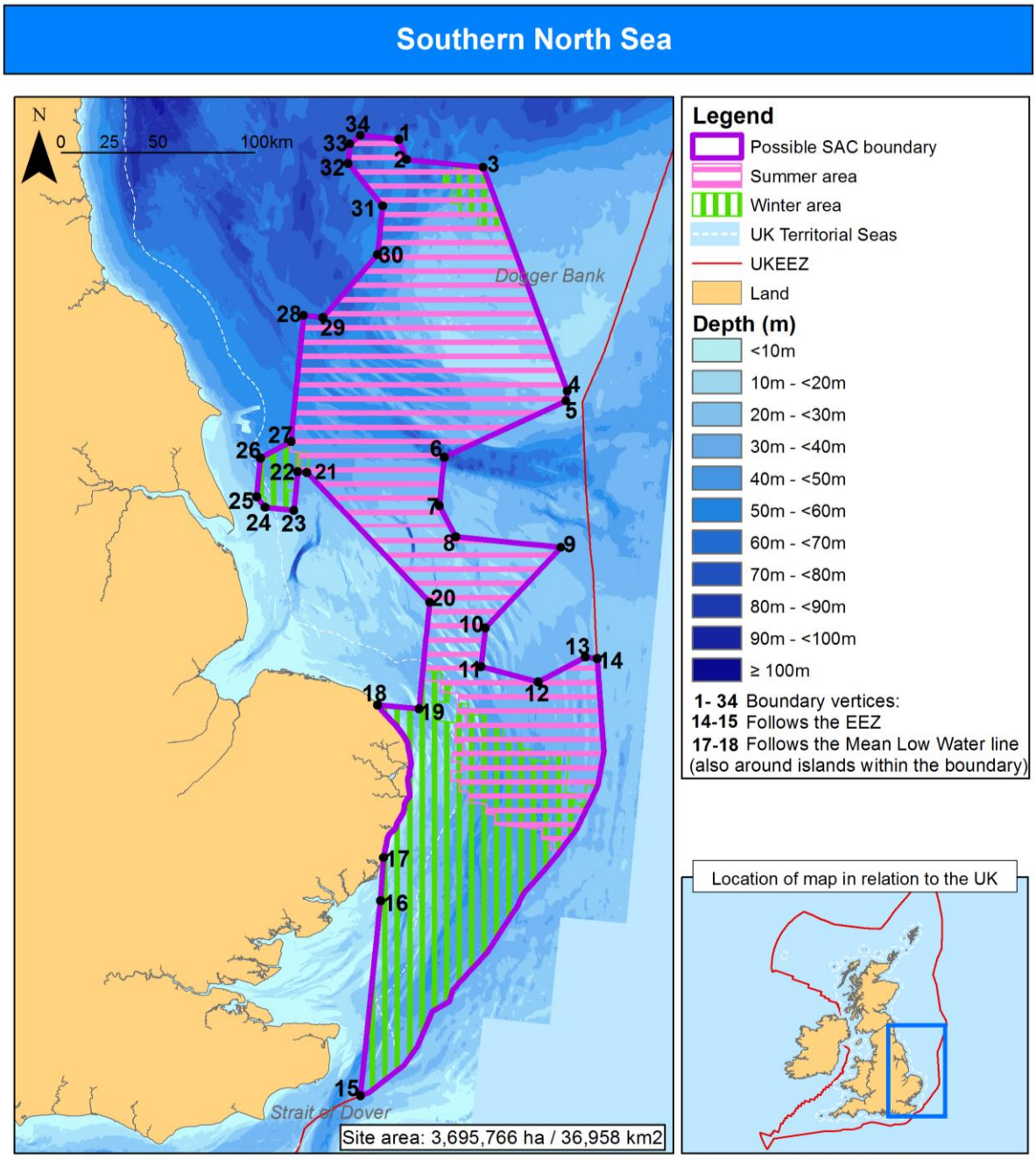
This Conservation Objectives document includes both a statement of the actual Conservation Objectives and supplementary advice with regard their intent and interpretation specific to the site. The Objectives have been set taking account of European Commission guidance (EC, 2012). Further guidance on their specific application to certain casework will also be provided at a later stage.

3.3 The Southern North Sea pSAC Conservation Objectives

The Southern North Sea pSAC is the largest of the possible SACs proposed for the conservation of harbour porpoise (Figure 2). The qualifying feature of the site is the Habitats Directive Annex II species:

- harbour porpoise (*Phocoena phocoena*)

Seasonal differences in the relative use of the site have been identified based on the analyses of Heinänen and Skov (2015) which shows that harbour porpoise occur in elevated densities in some parts of the site compared to others during summer and winter (Figure 2).The seasonality in porpoise distribution should be considered in the assessment of impacts and proposed management.



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3	55° 24' 03.2'' N	01° 45' 17.6'' E	12	53° 04' 11.8'' N	02° 38' 38.6'' E	21	53° 54' 05.6'' N	00° 39' 29.7'' E	30	54° 56' 28.6'' N	00° 59' 18.7'' E
4	54° 25' 05.4'' N	02° 37' 56.9'' E	13	53° 12' 19.1'' N	02° 59' 22.3'' E	22	53° 54' 0.3'' N	00° 35' 04.2'' E	31	55° 09' 56.9'' N	00° 58' 38.1'' E
5	54° 22' 23.6'' N	02° 37' 58.3'' E	14	53° 12' 19.0'' N	03° 04' 57.1'' E	23	53° 43' 17.2'' N	00° 35' 41.1'' E	32	55° 20' 23.2'' N	00° 39' 10.7'' E
6	54° 03' 07.5'' N	01° 43' 06.7'' E	15	51° 04' 38.9'' N	01° 39' 44.1'' E	24	53° 42' 60.0'' N	00° 22' 03.6'' E	33	55° 25' 46.4'' N	00° 38' 51.5'' E
7	53° 49' 40.4'' N	01° 43' 32.5'' E	16	51° 59' 04.9'' N	01° 38' 08.0'' E	25	53° 45' 35.5'' N	00° 17' 20.7'' E	34	55° 28' 33.4'' N	00° 43' 26.4'' E
8	53° 41' 38.9'' N	01° 52' 54.2'' E	17	52° 10' 54.3'' N	01° 37' 11.0'' E	26	53° 56' 22.0'' N	00° 16' 38.8'' E			
9	53° 41' 57.7'' N	02° 42' 50.7'' E	18	52° 52' 51.4'' N	01° 26' 06.8'' E	27	54° 02' 03.1'' N	00° 30' 01.3'' E			

Figure 2: The Southern North Sea possible Special Area of Conservation for harbour porpoise showing summer and winter areas.

The Conservation Objectives for the site are:

To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise.

To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:

1. The species is a viable component of the site.

2. There is no significant disturbance of the species.

3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

These Conservation Objectives are common across all sites proposed for this species to ensure coherence across the network (EC, 2012). These Conservation Objectives are based on considerations of the ecological requirements of the species within the site, yet their interpretation is contextualised in their contribution to maintaining FCS at a wider scale (EC, 2012). With regard the Southern North Sea site, harbour porpoise need to be maintained rather than restored. Maintain implies that, based on our existing understanding, the feature is regarded as being in favourable condition and will, subject to natural change, remain in this condition after designation.

1. The species is a viable component of the site:

Harbour porpoises are considered to be a 'viable component' of the site if they are able to survive and live successfully within it. The Southern North Sea site has been selected primarily on the basis of its long-term, preferential use by harbour porpoise in contrast to other areas of the North Sea. The implication is that this site provides good foraging habitat and it may also be used for breeding and calving. However, because the number of harbour porpoise using the site naturally varies, there is not an exact number of animals within the site above which the species is viable or below which it will become unviable.

For that reason, the intent of this objective is to minimise the risk posed by activities within the site to the species viability. Activities that kill, injure or significantly disturb harbour porpoise have the potential to affect species viability within the site.

The harbour porpoise is a European Protected Species (EPS) listed on Annex IV of the Habitats Directive and as such is protected under Article 12 from deliberate killing (or injury), capture and disturbance throughout its range. However, the relevant/competent authorities are reminded of these provisions and their application to the site as an integral part of the species' range. The Habitats Directive Article 12 guidance[5] proposes the following definition of deliberate: "*deliberate actions are to be understood as actions by a person who knows, in the light of the relevant legislation that applies to the species involved, and the general information delivered to the public, that his action will most likely lead to an offence against a species, but intends this offence or, if not, consciously accepts the foreseeable results of his action*".

The meaning of 'deliberately injure' should be taken from the definition under regulations 41(1)(a) and 39(1)(a) of the Conservation (Natural Habitats *etc*.) Regulations 1994 and its

[5] http://ec.europa.eu/environment/nature/conservation/species/guidance/pdf/guidance_en.pdf

amendments consolidated in The Conservation of Habitats and Species Regulations 2010 for England and Wales

The disturbance under Article 12(1)(b) must be deliberate and not accidental. The definition of 'deliberate disturbance' is given in 39(1)(b) of Offshore Marine Conservation (Natural Habitats, *etc*.) Regulations 2007 (Offshore Marine Regulations, OMR, as amended in 2009 and 2010). It is an offence under these Regulations to deliberately disturb EPS in such a way as to: a) impair their ability to survive, to breed or reproduce, or to rear or nurture their young or b) to affect significantly the local distribution or abundance of that species. Further guidance as to the interpretation of and what constitutes 'deliberate' and 'significant disturbance' is given in the JNCC EPS guidance[6]. These definitions of types of disturbance are for the purposes of assessing the need for an EPS licence and apply throughout UK waters.

Bycatch of harbour porpoise in fishing nets is not deliberate but incidental killing. Article 12 (4) of the Habitats Directive applies and states that Member States '*shall establish a system to monitor the incidental capture and killing of the species listed on Annex IV (all cetaceans). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned*'. Consideration must be given to the effect of bycatch on the conservation status of harbour porpoise at the population level. The impacts of bycatch within a site contribute to impacts from bycatch outside the site and thus may affect the conservation status of harbour porpoise. Bycatch, therefore, poses a risk to the viability of the population and therefore could be deemed to affect the integrity of the site. Measures may be needed to minimise the risk of bycatch to porpoises using the site.

2. There is no significant disturbance of the species within the site

Disturbance of harbour porpoise generally, but not exclusively, originates from activities that cause underwater noise (section 4). Responses to noise can be physiological and/or behavioural. JNCC has produced guidelines to minimise the risk of physical injury to cetaceans from various sources of loud, underwater noise[7]. However, disturbance is a behavioural (non-injurious) response to noise and may lead to harbour porpoises being displaced from the area affected.

Within sites, the immediate effects of disturbance are in the loss (usually temporary) of habitat available to harbour porpoise. The Southern North Sea site has been identified on the basis of having persistent higher densities of harbour porpoises (Heinänen and Skov 2015) when compared to other areas of the UK's North Sea continental shelf which is linked to the habitats within the site that likely promote good feeding opportunities. Therefore, activities within the site should be managed to ensure access to the site; any disturbance should not lead to the exclusion of harbour porpoise from a significant portion of the site for a significant period of time. Case Work Advice Guidance in relation to various activities is being developed and expands this supplementary advice to define 'significant portion and period' in the context of impacting site integrity.

This Conservation Objective aims to ensure that the site contributes, as best it can, to maintaining the Favourable Conservation Status of the wider harbour porpoise population. As such, how the impacts within the site translate into effects on the North Sea Management Unit population are of greatest concern.

[6] http://jncc.defra.gov.uk/PDF/consultation_epsGuidanceDisturbance_all.pdf
[7] http://jncc.defra.gov.uk/page-4273

3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

The harbour porpoise is a species that is highly dependent on a year-round proximity to food sources and its distribution and condition may strongly reflect the availability and energy density of its prey (Brodie 1995 in Santos & Pierce, 2003). The densities of porpoise using the site are likely linked to the availability (and density) of prey within this site. Porpoise eat a variety of prey including gobies, sandeel, whiting, herring and sprat (which all have spawning grounds within the Southern North Sea site). However, the diet of porpoises specifically when using the site is unknown. The activity which potentially risks the achievement of this CO is commercial fishing; although environmental variability also plays a role in determining the status of fish stocks. However, currently there is no evidence to suggest that competition for prey species with commercial fisheries is having an impact on the conservation status of the harbour porpoise.

The delineation of the Southern North Sea site is based on the prediction of 'harbour porpoise habitat' within the North Sea (Heinänen and Skov 2015). Habitat, in this context, means the characteristics of the seabed and water column. Peaks in density of harbour porpoise in the Southern North Sea site vary seasonally (Figure 2). At the Management Unit scale, for both the summer and winter seasons the distribution of harbour porpoise is related to water depth and variables within the water column (Heinänen & Skov 2015). Harbour porpoise density peaked in stable stratified waters (based on vertical differences in temperature) with lower gradients of eddy activity (turbulence); higher densities were also found in areas with current speeds of 0.4-0.6m/s. The analysis indicated a preference for water depths between 30 and 50m throughout the year. In general, in both seasons, harbour porpoise preferred coarser seabed sediments (sand/gravel). How these environmental characteristics of the site influence the prey of harbour porpoise or other aspects of their life directly (e.g. breeding/calving) is currently unknown.

4 Advice on Activities

4.1 Purpose of advice

This section details the advice on human activities specifically occurring within or close to the Southern North Sea pSAC that would be expected to impact the site. Initial assessments were done at UK scale, with subsequent site level assessment detailing our understanding of impacts occurring with potential to affect harbour porpoise when using the site (Section 5 & 6). Advice is only given where pressures[8] may act at the site level and therefore, may require management if the Conservation Objectives are to be met. Wide-spread pressures may also act to affect the overall status of harbour porpoise, but such effects are not restricted to specific sites. Such pressures are best dealt with through broader measures. Alongside and in addition to the identification of the network of harbour porpoise sites, an overarching conservation strategy (DETR, 2000) has been in place for harbour porpoise since 2000. In light of a recent conservation literature review (IAMMWG *et al* 2015b), this strategy will be reviewed and updated where necessary.

The advice identifies activities with potential to affect harbour porpoise using the site (site level impacts) as well as (where possible) its supporting habitats in UK waters which may impact the species' capacity to maintain FCS. This advice should also be used to help identify the extent to which existing activities are, or can be made, consistent with the conservation objectives, and thereby focus the attention of Relevant and Competent Authorities and surveillance programmes to areas that may need management measures.

[8] See Annex A for definition of key terms

This draft advice on activities will be updated and supplemented through further discussions with the Relevant and Competent Authorities and any advisory groups formed for the site.

4.2 Background

In compiling this advice on activities, the SNCBs have considered the pressures that may be caused by human activities and the sensitivity of the qualifying feature, harbour porpoise, to those pressures. The advice is generated through a broad grading of sensitivity and exposure of the harbour porpoise to pressures associated with activities in order to gain an understanding of how vulnerable the species is to each activity at a UK level. The activities and their associated pressures to which the harbour porpoise is deemed vulnerable at UK level are then considered at site level in order to inform possible management needs necessary for the site to meet the conservation objectives. Annex A details the approach taken to identify the significant impacts on harbour porpoise from pressures, and the relative sensitivity and current exposure of harbour porpoise to those pressures at a UK wide scale.

This document is guidance only and activities and their management will be considered in the context of Habitats Regulations Assessments/Appropriate Assessment and where applicable through other environmental assessment processes (e.g. EIA).

5 Activity assessments at UK scale

The assessments have been carried out using all available evidence as of November 2015. As further information becomes available, assessments may be subject to alteration in line with the new evidence to support the change, and further improving the understanding of the vulnerability of harbour porpoise to activities occurring in UK waters. This advice is made without prejudice to any assessment that may be required for specific proposals to be considered by a Relevant Authority. The level of any impact will depend on the location, timing and intensity of the relevant activity. This advice is provided to assist and focus the Relevant Authorities in their consideration of the management of these activities.

The harbour porpoise is a wide-ranging species and occurs throughout the UK Continental Shelf area (JNCC, 2013). It does occur in deeper waters but in very low densities, and perhaps only seasonally. As a predominantly shelf species, it is exposed to a wide range of pressures, that are both ubiquitous (e.g. pollution) and patchy (e.g. bycatch) in nature, and the list of anthropogenic activities leading to these pressures is long. Based on current available information, the activities with the most notable impact on UK harbour porpoise are shown in Table 1.

The definitions of the pressures as applied within harbour porpoise SAC advice can be found in Annex B

Activities which currently pose a low risk to porpoises at the UK level (Annex A, Table A2) have not been considered in this advice. The exposure to the pressures associated with these activities is currently very limited and poses no significant threat to the maintenance of harbour porpoise FCS. Non-anthropogenic impacts are also not considered, such as attack and predation from other marine mammal species, that have the potential to impact harbour porpoise populations.

The full list of assessed activities and key references can be found in Annex A, Table A3. Updates to the assessments will occur as more evidence becomes available.

Table 1: Key activities and the relative risk of impacts on harbour porpoise throughout UK waters. Those pressures ranked 'high' are known to have the greatest impact relative to other pressures on the population of UK harbour porpoises.

Activities	Pressures	Impacts	Current relative level of impact
Commercial fisheries with bycatch of harbour porpoise (predominantly static nets)	**Removal of non-target species**	• Mortality through entanglement/bycatch	High
Discharge/run-off from land-fill, terrestrial and offshore industries	**Contaminants**	• Affects on water and prey quality • Bioaccumulation through contaminated prey ingestion • Health issues (e.g. on reproduction)	High
Shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	**Anthropogenic underwater sound**	• Mortality • Internal injury • Disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising)	Medium
Shipping, recreational boating, tidal energy installations	**Death or injury by collision**	• Mortality • Injury	Medium/Low
Commercial fisheries (reduction in prey resources)	**Removal of target species**	• Reduction in food availability • Increased competition from other species • Displacement from natural range	Medium

Removal of non-target species (harbour porpoise bycatch)

Bycatch of harbour porpoise in fishing gear is one of the most significant anthropogenic pressures impacting on the population. The relevant commercial fisheries with harbour porpoise bycatch are certain bottom set nets. The areas where bycatch is of greatest concern is off southwest England and the southern North Sea. Mitigation of bycatch through the use of acoustic deterrent devices ('pingers') is required under EU Regulation 812/2004[9] on setnet vessels of 12m or over. However, smaller set net vessels (<12m) comprise the majority of the fleet and are the major source of harbour porpoise bycatch in UK waters. Where the bycatch/risk of bycatch within porpoise SACs threatens the sites' integrity, mitigation maybe required.

Contaminants

The latest evidence (Law *et al* 1992-2005 & 2009; Law *et al* 2008; ASCOBANS, 2011; Murphy *et al* 2015) shows that there is still a significant pollution issue for at least some cetacean species in European waters, which includes harbour porpoise and organochlorines (e.g. Polychlorinated biphenyls [PCBs]). Monitoring and investigation will continue to be important, and research in this field should not remain focused on 'old' compounds and

[9] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:150:0012:0031:EN:PDF

contaminants. Careful consideration is required to ensure we also monitor historical contaminant impacts as well as any current or emerging issues.

Anthropogenic underwater sound

Harbour porpoise use sound for foraging, navigation, social activities and predator detection. Changes in underwater noise therefore have the potential to interrupt these behaviours. The peak frequency of echolocation pulses produced by harbour porpoise is 120–130 kHz, corresponding to their peak hearing sensitivity although hearing occurs throughout the range of ~1 and 180 kHz (Southall *et al* 2007). A range of activities emit sound that falls within the hearing sensitivities of porpoise, including shipping, pile driving, Acoustic Deterrent Devices and military activities. The exact frequency, intensity and longevity of the sound will determine the response. The impact on the porpoise is also mediated through individual behaviour, and perhaps quality of its immediate habitat, at the time of exposure.

Death or injury by collision

Post-mortem evidence indicates that few collisions between harbour porpoise and vessels occur and is not a significant pressure for this species.

Research surrounding wet renewables shows potential risk of harbour porpoise collision with sub-marine turbines, although there is no evidence of such collisions to date.

Removal of target species (harbour porpoise prey)

Porpoise diet within UK waters includes a wide variety of fish and they will generally focus on the most abundant local species (De Pierrepont *et al* 2005; Camphuysen *et al* 2006). The predominant prey type in general appears to be whiting, gobies and sandeel, although shoaling fish such as mackerel and herring are also taken. In the north-east Atlantic, a long term shift from predation on clupeid fish (mainly herring) to predation on sandeels and gadoid fish, possibly related to the decline in herring stocks since the mid-1960s has been observed. Porpoise diets overlap extensively with diets of other piscivorous marine predators (notably seals) and many of the main prey species are also taken by commercial fisheries, although porpoises tend to take smaller fish than those targeted by fisheries (Santos and Pierce 2003).

6 Site specific considerations: Southern North Sea pSAC

6.1 Sensitivity of harbour porpoise to existing activities within or impacting on the site

The Southern North Sea site spans territorial and offshore waters and covers a large geographical area. A summary of the site can be found in the Selection Assessment Document[10]. Precise information on many activities within the boundary is not currently available due to lack of targeted data collection to date. Assessing exposure carries certain assumptions about the spatial extent, frequency and intensity of the pressures associated with marine activities. Therefore site based exposure and resulting current level of impact has not been assessed at this stage.

[10] SAC Selection Assessment Document:

http://jncc.defra.gov.uk/pdf/SouthernNorthSeaSelectionAssessmentDocument.pdf

Table 2 is an overview of activities occurring within or in proximity to the Southern North Sea site to which the harbour porpoise has a current level of impact risk of High or Medium at UK level (Table 1) and therefore may require further consideration concerning options for management. This was derived from spatial data as GIS layers and a review of the literature, and includes all available data at time of writing.

Management measures are the responsibility of the relevant regulatory bodies, which consider the SNCBs' advice and hold appropriate discussions with the sector concerned, but the scale and type of mitigation is decided by the Regulators. Where consent is required and the activity (if considered a plan or a project) is likely to significantly affect a European Marine site, Article 6(3) of the Habitats Directive requires that an Appropriate Assessment is carried out. Assessments under Article 6(3) of the Directive are often referred to in the UK as "Habitat Regulations Assessments" (HRA). The HRA is a case-specific assessment made in view of the Conservation Objectives for the affected site. Each HRA requires case-specific, unbiased advice from the SNCB but is the responsibility of the regulatory body concerned.

In 2012 the UK Government adopted a revised approach to the management of fishing activities within European marine sites (EMS) in England. The revised approach is designed to ensure the consistency of the management of fishing activities with Article 6 of the Habitats Directive. Risk based prioritisation of managing the fishing activities of UK and non UK vessels has been applied to relevant European marine site features and sub features within the UK 12nm territorial limit. For EMS outside of 12nm, or sites outside 6nm where there are access rights for other Member States, management measures designed to ensure adequate protection are to be proposed to and agreed by the European Commission in accordance with the Common Fisheries Policy (CFP).

Table 2: Activities occurring within/near to the Southern North Sea site to which the harbour porpoise is considered sensitive.

Activities	**Pressure**	**Comment on current level of activity**	**Management considerations**
Commercial fisheries (with harbour porpoise bycatch)	Removal of non-target (bycatch) species	UK registered vessels >12m: Negligible effort of Vessel Monitoring System (VMS) registered vessels using static net gears within the site[11] UK registered vessels <12m: current exposure is unknown EU registered vessels: higher effort of static net setting than UK vessels with two concentrated areas. Effort in the south east appears to have increased between 2009 and 2013.	Where management measures are required, the development of these would be undertaken via discussion with fishing interests and fishery managers and informed by any detailed information about fishing activity that can be made available. Detailed measures, if required, will be developed by the relevant regulator (European Commission/MMO/IFCA/Defra) The use of pingers as a mitigation measure is required on static nets deployed by vessels >12m in length in specified areas through EU Regulation 812/2004. Through derogation, this part of the UK fleet currently utilise the DDD. Because bycatch most often occurs in bottom set nets deployed from vessels <12m, and the use of pingers

[11] The fisheries data are aggregated VMS data collected between 2006 and 2013.

			is not mandatory under Regulation 812/2004, one option for management could be to extend the pinger requirement to further vessels. The risk of bycatch from this sector in the context of the Conservation objectives of the site will need to be established . Such a requirement may have a seasonal component. However, further work is needed to understand the scale of disturbance that would be caused by wide-spread deployment of the different types of pinger.
Discharge/run-off from land-fill, terrestrial/ offshore industries	Contaminants	Current exposure within/near the site is unknown	This pressure cannot be managed effectively at the site level. Most of the relevant pollutants have been effectively phased out of use by action under the OSPAR Convention and, more recently, the EU (e.g. PCBs). However, their chemical stability will lead to them remaining in the marine environment for some time and, consequently, human activities such as dredging may cause the re-release of these chemicals into the environment or introduce other contaminants of which the impacts are poorly known. Any novel sources of potential contamination associated with a new plan or project may be assessed under HRA. It is recognised that further efforts to limit or eliminate PCB discharges to the marine environment may still be needed.
Shipping	Anthropogenic underwater sound	Several large ports along the East coast of England resulting in large vessel shipping routes throughout the site.	The underwater sounds created by large ships are unlikely to cause physical trauma, but could make preferred habitats less attractive as a result of disturbance (habitat displacement, area avoidance). However, additional management is unlikely to be required given current levels within the site and elevated densities of porpoises in this area.
Oil and gas drilling		Areas licensed for oil and gas extraction in the northern and central parts of the site	This is a highly regulated industry. Existing and inactive (exploratory and dry) wells and oil and gas licensed blocks occur within the suite of proposed sites and any future applications would be subject to an HRA.
Dredging and disposal		Capital dredging and disposal sites in the southern portion of the	Dredging and disposal can cause disturbance leading to physical and acoustic behavioural changes.

		site	However, the risk is considered relatively low and additional management is unlikely to be required
Aggregate extraction		Extensive existing licensed and active areas within the site	Aggregate extraction can cause disturbance leading to physical and acoustic behavioural changes. However, the risk is considered relatively low and additional management is unlikely to be required
Pile driving		Current and licensed areas for offshore wind, including construction and maintenance phases within the site	A European Protected Species (EPS) licence is already required for any construction activity which carries the risk of significant disturbance or injury As a minimum, developers are required to follow the 'Statutory Nature Conservation Agency protocol for minimising the risk of injury to marine mammals from piling noise'. (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/50006/jncc-pprotocol.pdf). A Habitats Regulations Assessment (HRA) will be considered for all new developments (coastal and marine) using pile driving within the site **or** within 26km (see Dahne *et al* 2013; Tougaard *et al* 2014) of site boundaries. If additional mitigation (to that required under EPS licence) is required, planning and management of pile driving activities may be needed within the site to ensure the Conservation Objectives are met. There is potential for a reduction or limitation of the disturbance/displacement effects by varying the schedule of piling, particularly if several developments are constructing at the same time and pile driving footprints do not overlap (i.e maximising area from which porpoise are excluded). Limited spatio-temporal restrictions may be needed. Other examples of mitigation include the use of sound dampers, methods that create a barrier to sound transfer (e.g. bubble curtains) and, more effectively, the use of alternative foundation types (e.g. gravity foundations, suction cups, floating turbines, drilling). Scheduling of activities may minimise cumulative exclusion from areas.
Acoustic (including		Seismic exploration	Some geophysical surveys within 5km of site boundary may require consent

seismic) surveys		activity occurs in the site	and be subject to HRA. Seismic surveys are likely to require an EPS licence which may specify conditions. As a minimum, it is expected that developers will adhere to the *JNCC Guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys* (updated August 2010; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/50005/jncc-seismic-guide.pdf)
Recreational boating activity		Royal Yachting Association (RYA) cruising routes across the extent of the site, focussed along the coast	Adherence to wildlife codes of conduct is already advocated (e.g the WiSe scheme http://www.wisescheme.org). No further management measures are likely to be required.
Acoustic deterrent/ mitigation devices		Unknown, no consistent areas of usage but maybe used as a mitigation tool during pile driving.	See pile driving.
Pinger devices		31 UK registered >12m setnet boats of which 4 use pingers in the area of the site. Use in North Sea on vessels under 12m is unknown but likely low.	See 'Fisheries (commercial and recreational) with harbour porpoise bycatch' The use of pingers is low/not needed in the site.
Shipping	Death or injury by collision	Several large ports along the East coast of England resulting in busy shipping routes throughout the site, with the highest level of activity in the south.	Post mortem investigations of harbour porpoise deaths have revealed death caused by trauma (potentially linked with vessel strikes) is not currently considered a significant risk and no additional management is therefore required.
Recreational boating activity		RYA cruising routes cross the site, most are coastal	See 'Shipping' (with death or injury by collision). Boats conducting recreational activity should adhere to wildlife codes of conduct (e.g the WiSe scheme http://www.wisescheme.org/).
Commercial fisheries	Removal of target (prey) species	Fisheries targeting prey species such as whiting, herring, mackerel, sandeel and sprat throughout their ranges in the North Sea, fished by UK and EU fisheries.	Commercial species are managed at the larger scale through the CFP. .

6.2 Limitations of the evidence

It is important to note that the information used to catalogue activities occurring within the site is not complete. The available data are drawn from existing monitoring programmes (e.g. the UK's bycatch of protected species monitoring and other European datasets linked to VMS monitoring of fishing vessels) but these have limitations including availability and accessibility at the time of preparing this advice. Caveats with how the data have been collected also need to be understood in order to correctly interpret the information. This can result in the use of expert judgement where sufficient evidence is lacking, but risk is implied. Below are some points to consider alongside the above table in order to ensure the information is not taken out of context:

- **Data availability**
    - Globally, the marine environment is generally far behind the evidence levels of that on land, particularly in offshore areas, mainly due to scale and cost.
    - Sensitivities surround data that has been gathered by industry, and some data are not available for use for advice and management purposes. Often these data become available eventually, but not in time to inform management decisions.

- **Fishing: Limitations of fishing Vessel Monitoring System (VMS) data**
    - VMS positional data are transmitted at approximately 2 hour intervals. There is no information transmitted regarding precise vessel activity, therefore assumptions on its activity are often made using the location of the vessel and its speed profile.
    - Fishing vessels under 12m, (and until 2013, vessels under 15m long) are not required to use the VMS, and therefore VMS data tells us nothing regarding the activity of this segment of the fleet. However, relevant data can be obtained from Association of Inshore Fisheries and Conservation (IFCAs) and will be used to develop more detailed guidance to assist with identification of any management measures.

- **Contaminants**
    - Although use of many substances that have contaminated the environment is now illegal, re-suspension or reintroduction of pollutants that were used historically occurs. It is also difficult to identify sources of contamination when dealing with highly mobile species.

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8 Annex A: Assessment process to establish the significant threats to UK harbour porpoise populations

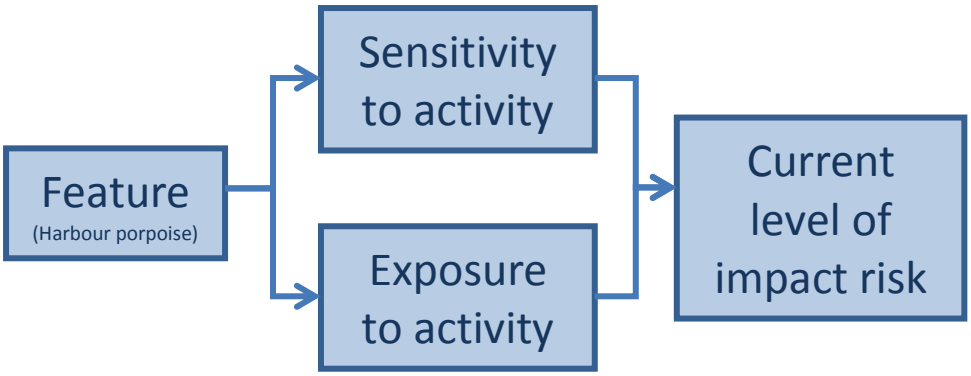
The sensitivity and vulnerability of harbour porpoise was assessed at UK level against the *pressure themes* identified by OSPAR's Intersessional Correspondence Group on Coordination of Biodiversity Assessment and Monitoring (ICG-COBAM)[12] which have been adapted slightly in order to suit the application of a highly mobile species. See Annex B for the definitions of pressures as used for the harbour porpoise assessments.

Definition of key terms

Term	Definition
Pressure theme	A group of like-pressures defined by ICG-COBAM
Sensitivity	A measure of tolerance (or intolerance) to changes in environmental conditions
Vulnerability	Vulnerability is a measure of the degree of exposure of a receptor to a pressure to which it is sensitive.
Pressure	The mechanism through which an activity has an effect on any part of the ecosystem'. The nature of the pressure is determined by activity type, intensity and distribution.
Impact	The effects (or consequences) of a pressure on a component.
Impact Risk	The current risk of impact
Exposure	The action of a pressure on a receptor, with regard to the extent, magnitude and duration of the pressure.
Activity	Human social or economic action or endeavours that may create pressures on the marine environment.

Source: jncc.defra.gov.uk/page-6515

Determining the level of impact risk of harbour porpoise to an activity



Sensitivity

Harbour porpoises were assessed as sensitive to a pressure when viability of an individual (including physiological stress, reduced fecundity, reduced growth) would be negatively affected and recovery did not take place rapidly (within weeks). The assessment incorporated expert judgement where required and adopted a single threshold to differentiate only between 'sensitive' and 'not sensitive'. The pressures that harbour porpoise are deemed sensitive to are listed in Table A1.

[12] OSPAR 20011: https://ospar.basecamphq.com/projects/6526112-icg-cobam/log

Table A1: Pressures to which harbour porpoise may be sensitive.

Pressure Theme	Pressures	Direct or Indirect impact
Pollution and other chemical changes	Contamination	Indirect – prey and habitat
	Enrichment	Indirect - habitat
Other physical pressures	Litter	Direct
	Anthropogenic underwater sound	Direct
	Barrier to species movement	Direct
	Death or injury by collision	Direct
Biological pressures	Introduction of microbial pathogens	Direct
	Removal of target species	Direct
	Removal of non-target species	Direct

Exposure

The list of pressures to which harbour porpoise is sensitive was combined with evidence of general exposure to these pressures in UK waters to get an understanding of the current level of impact risk; it combined expert knowledge on the overlap in spatial and temporal distributions of activities contributing towards a pressure and harbour porpoise densities, with direct evidence of impact as reported in the literature and from the UK Cetacean Strandings Investigation Programme[13].

Current level of impact risk

Caution was applied throughout the assessment process where there was a lack of direct evidence of exposure to an activity; a pressure to which a species was sensitive, was assumed to overlap with that species unless a case could be made to the contrary. In this sense, lack of direct evidence of exposure does not imply the species is not currently at risk. The current level of impact risk of harbour porpoise has not been assessed on a site basis due to uncertainties in exposure, driven by incomplete evidence to support the assessment at the site scale. The following level of impact scores were chosen to represent harbour porpoise vulnerability to activities within UK waters:

Scores	Criteria for overlap in space & time between pressure & species	Evidence of impact
Low	None or limited	No direct evidence in UK waters
Medium	Some	Some evidence of an impact occurring in UK waters
High	Widespread	Good evidence of a significant impact

The evidence used to assess the current level of impact is summarised in Table A3 and subsequent reference list.

Activities with a level of impact risk of 'low' have not been considered in the site assessments unless there is evidence to support a significant vulnerability despite the criteria described in the table above. This assessment, although inclusive of expert judgement in order to arrive at the assessment outcomes at UK level, provide a base from which to apply weighting to site based sensitivity assessments, using all available activity data.

[13] UK Cetacean Strandings Investigation Programme: http://ukstrandings.org/

Table A2: Full assessment of level of impact of activities on harbour porpoise in UK waters.

Activities	**Pressures**	**Impacts**	**Current level of impact risk**
Commercial fisheries with bycatch (predominantly static nets)	Removal of non-target species	• Mortality through entanglement/bycatch	High
Discharge/run-off from land-fill, terrestrial and offshore industries	Contaminants	• Affects on water and prey quality • bioaccumulation through contaminated prey ingestion • health issues (e.g. on reproduction)	High
Noise from shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	Anthropogenic underwater sound	• Mortality • Internal injury • disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising)	Medium
Shipping, recreational boating, renewable energy installations	Death or injury by collision	• Mortality • Injury	Medium/ Low
Commercial fisheries, bycatch	Removal of target species	• Reduction in food availability • increased competition from other species • displacement from natural range	Medium
Agriculture, aquaculture, sewage	Nutrient enrichment	• Affects on water quality • increased risk of algal blooms may present health issues	Low
Agriculture, aquaculture, sewage	Organic enrichment	• Affects on water quality • increased risk of algal blooms may present health issues	Low
Waste disposal - navigational dredging (capital, maintenance)	Physical change (to another seabed type)	• Changes in availability of prey species	Low
Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Water flow (tidal current) changes - local	• Changes in location of prey species Displacement of harbour porpoise	Low
Terrestrial and at-sea 'disposal'	Litter	• Mortality through entanglement Ingestion	Low
Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Barrier to species movement	• Habitat inaccessible potential physiological effects	Low
Sewage	Introduction of microbial pathogens	• Increased risk of disease	Low

Table A3: Evidence used to assess exposure to each pressure to which harbour porpoise is considered sensitive.

Example activities linked to each pressure are listed.

Key activities linked to pressures	Pressures	Evidence		Key references
		Spatial overlap (species & pressure)	Post-mortem examination	
Discharge/run-off from land-fill, terrestrial and offshore industries	**Contaminants**		✓	Jepson *et al* 2005; Deaville & Jepson, 2011; ICES, 2015a; Van De Vijver *et al* 2003; Law *et al* 2012; Pierce *et al* 2008; Murphy *et al* 2015.
Agriculture, aquaculture, sewage	**Nutrient enrichment**	✓	✓	Craig *et al* 2013
Agriculture, aquaculture' sewage	**Organic enrichment**	✓		Craig *et al* 2013
Terrestrial and at-sea 'disposal'	**Litter**	✓	✓	Deaville and Jepson, 2011
Marine renewable energy	**Electromagnetic changes**	✓		WGMME, 2012, ICES 2015a
Shipping, drilling, dredging, pile driving, military sonar, seismic surveys	**Anthropogenic underwater sound**	✓		Deaville & Jepson, 2011; Stone & Tasker, 2006; Stone, 2015; Jepson *et al* 2005; Fernandez *et al* 2005; Würsig & Richardson, 2009; WGMME, 2012.
Bridges, tunnels, dams, installations	**Barrier to species movement**	✓		WGMME., 2012; ICES 2015a
Shipping, recreational boating, renewable energy devices	**Death or injury by collision**	✓	✓	Deaville & Jepson, 2011; Dolman *et al* 2006; ICES 2015a
Sewage	**Introduction of microbial pathogens**		✓	Harvell *et al* 1999; Gulland and Hall, 2007; Van Bressem *et al* 2009
Commercial fisheries	**Removal of target species**		✓	Simmonds and Isaac, 2007; OSPAR QSR 2010; MacLeod *et al* 2007a, b; Thompson *et al* 2007; Santos and Pierce, 2003; Pierce *et al* 2007; ICES 2015a
Commercial fisheries with by-catch	**Removal of non-target species**	✓	✓	Deaville and Jepson, 2011; Morizur *et al* 1999; Read *et al* 2006; Northridge, S. and Kingston, A. 2010; Northridge *et al* 2013; ICES 2015b

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9 Annex B: Definitions of Pressures as applied within harbour porpoise SAC Advice on Activities

Pressures	Definition in the context of harbour porpoise advice
Removal of non-target species	The removal of species not targeted by the fishery; in this case the bycatch (and probable mortality) of harbour porpoise
Contaminants	Introduced material capable of contaminating harbour porpoise, prey or habitat important to harbour porpoise, with a negative impact directly or indirectly on porpoises
Anthropogenic underwater sound	Introduced noise in a frequency with the potential to cause injury or displace harbour porpoise from their natural range
Death or injury by collision	Introduction of physical objects; mobile or immobile, that may collide with or result in potential collision of harbour porpoise resulting in injury or mortality
Removal of target species	Removal of harbour porpoise prey, resulting in increased competition amongst porpoise and other species, and/or displacement from their natural range