

**RECORD OF THE HABITATS REGULATIONS ASSESSMENT UNDERTAKEN
UNDER REGULATION 61 OF THE CONSERVATION OF HABITATS AND
SPECIES REGULATIONS 2010 AND REGULATION 25 OF THE OFFSHORE
HABITATS REGULATIONS FOR AN APPLICATION UNDER THE PLANNING ACT
2008**

***Project Title:* EAST ANGLIA ONE OFFSHORE WIND FARM – NON MATERIAL
CHANGE**

Date: 23 March 2016

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Introduction

Background

- 1.0 This is a record of the Habitats Regulation Assessment (“HRA”) that the Secretary of State for Energy and Climate Change has undertaken under the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations) and the Offshore Marine Conservation (Natural Habitats & c.) Regulations 2007 (the Offshore Habitats Regulations) in respect of the non-material change (“the change application”) to the Development Consent Order (“DCO”) for the East Anglia ONE Offshore Wind Farm and its associated infrastructure (the “Project”). For the purposes of these Regulations the Secretary of State is the competent authority.
- 1.1 The Applicant has submitted a request to the Secretary of State for a non-material change to be made to the East Anglia ONE Offshore Wind Farm Order 2014 (the “2014 Order”) under the powers in section 153 and Schedule 6, to the Planning Act 2008.
- 1.2 The 2014 Order was made by the Secretary of State on 16 June 2014. Development consent was granted for the construction and operation of an offshore wind turbine generating station in the North Sea, a minimum of 43km off the coast of Suffolk, comprising up to 240 wind turbines with a gross electrical capacity of up to 1200MW and associated offshore and onshore infrastructure. The requested changes of relevance to this HRA are to vary the 2014 Order to include the option to construct a 750MW windfarm with a High Voltage Alternating Current (“HVAC”) transmission system. For the offshore works the changes are a reduction in the number of wind turbine generators from a maximum of 240 to 150, a reduction in the number of offshore platforms (collector and converter stations) from 5 to 2 and a reduction in the number of offshore export cables 4 to 2.
- 1.3 In England and Wales, offshore energy generating stations with a capacity greater than 100 MW constitute nationally significant infrastructure projects (“NSIPs”) and applications for consent are subject to the requirements of the Planning Act 2008. The Project constitutes an NSIP as it has a generation capacity of up to 1200MW, and the change application has a capacity of 750MW.
- 1.4 The Secretary of State’s conclusions on habitats and wild birds issues contained in the HRA report for the Project dated 28 May 2014 (“the 2014 HRA”) are relevant to the change application. As the change application is within the same development footprint as the Project, and therefore will have potential impacts on the interest features of the same European sites that were assessed within the 2014 HRA. The impacts on those sites have not been reassessed in this HRA.
- 1.5 This HRA contains the Secretary of State’s conclusions of the potential impacts of the change application on habitats and wild birds within three proposed European Sites: Hamford Water potential Special Protection Area (pSPA), the Outer Thames potential Special Protection Area (pSPA) and the Southern North Sea possible Special Area of Conservation (pSAC). These sites

were not assessed within the 2014 HRA report for the Project as they were only proposed in January 2016 and therefore were not known about during the consideration of the 2014 HRA. Assessment of the potential impact of the Project on the three proposed European sites will be undertaken through a Review of Consents under Regulation 63 of the Habitats Regulations and Regulation 27 of the Offshore Habitats Regulations if the pSPAs are formally classified by the Secretary of State and become Special Protection Areas (SPAs) and if the pSAC is submitted to the European Commission for inclusion in the Natura 2000 network and becomes a candidate Special Area of Conservation (cSAC). The impact of the Project is not therefore considered as part of this HRA.

Habitats Regulation Assessment (HRA)

- 1.6 Council Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and Council Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) aim to ensure the long-term survival of certain species and habitats by protecting them from adverse effects of plans and projects.
- 1.7 The Habitats Directive provides for the designation of sites for the protection of habitats and species of European importance. These sites are called Special Areas of Conservation (“SACs”). The Birds Directive provides for the classification of sites for the protection of rare and vulnerable birds and for regularly occurring migratory species. These sites are called Special Protection Areas (“SPAs”). SACs and SPAs are collectively termed European sites and form part of a network of protected sites across Europe. This network is called Natura 2000.
- 1.8 In the UK, the Habitats Regulations transpose the Habitats and Birds Directives into national law as far as the 12nm limit of territorial waters. Beyond territorial waters, the Offshore Habitats Regulations serve the same function for the UK’s offshore marine area. The change application covers areas within and outside the 12nm limit so both sets of Regulations apply. They are collectively referred to as the Habitats Regulations for the purposes of this HRA.
- 1.9 Regulation 61 of the Habitats Regulations and Regulation 25 of the Offshore Habitats Regulations provide that:

...before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site,[the competent authority] must make an appropriate assessment of the implications for that site in view of that site’s conservation objectives.
- 1.10 The change application is not directly connected with, or necessary to, the management of a European site or a European marine site. The Habitats Regulations require that, where the project is likely to have a significant effect (“LSE”) on any such site, alone or in-combination with other plans and projects, an appropriate assessment (“AA”) is carried out to determine whether or not the project will have an adverse effect on the integrity of the site in view of that

site's Conservation Objectives. In this document, the assessments as to whether there are LSEs, and, where required, the AAs, are collectively referred to as the HRA.

1.11 In January 2016 the Joint Nature Conservancy Council (JNCC) launched a consultation on the Southern North Sea pSAC for harbour porpoise. In January 2016, Natural England (NE) also launched a consultation on two pSPAs: Hamford Water pSPA and the Outer Thames pSPA. As a matter of government policy, proposed European Sites are treated as if they have been formally designated or classified from the point that they are pSACs or pSPAs¹

1.12 The HRA takes account of mitigation measures which are secured by requirements and conditions.

1.13 This report should be read in conjunction with the following documents:

Submitted with the change application:

- East Anglia One Offshore Windfarm-HVAC Option Assessment. Environmental Report: <http://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010025/3.%20Post%20Decision%20Information/Non%20Material%20Change/Application/East%20Anglia%20ONE%20HVAC%20Environmental%20Report.pdf>

Submitted as part of the Examination for the Project:

- Environmental Statement (the ES), Volume 2 Chapter 11 (Marine mammals) (APP-079)
- Environmental Statement (the ES) Volume 2 Chapter 12 (APP-081)
- EAOL – Marine Mammals Technical Clarification Note (REP-216)
- EAOL - Statement of Common Ground with Joint Nature Conservation Committee and Natural England (offshore) (REP -236).
- Plus other documents submitted during the Examination, available at <http://infrastructure.planninginspectorate.gov.uk/projects/eastern/east-anglia-one-offshore-windfarm/?ipcsection=docs>

1.14 The key information in these documents is summarised and referenced in this report.

¹ National Planning Policy Framework (paragraph 118): www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

Likely Significant Effects Test

- 2.0 Under Regulation 61 of the Habitats Regulations and Regulation 25 of the Offshore Regulations the Secretary of State must consider whether a development will have a LSE on a European site, either alone or in combination with other plans or projects. A LSE is, in this context, any effect that may be reasonably predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated, but excluding trivial or inconsequential effects. An AA is required if a plan or project is likely to have a significant effect on a European site, either alone or in combination with other plans or projects.
- 2.1 The purpose of this test is to identify LSEs on the three European sites that may result from the change application and to record the Secretary of State's conclusions on the need for an AA and her reasons for including activities, sites or plans and projects for further consideration in the AA. For those features where a LSE is identified, these must be subject to an AA. This review of potential implications can be described as a 'two-tier process' with the LSE test as the first tier and the review of effects on integrity (AA) as the second tier.
- 2.2 This section addresses this first step of the HRA, for which the Secretary of State has considered the potential impacts of the change application both alone and in combination with other plans and projects on each of the interest features of the; Southern North Sea pSAC, Hamford Water pSPA and the Outer Thames Estuary pSPA, to determine whether or not there will be a LSE.

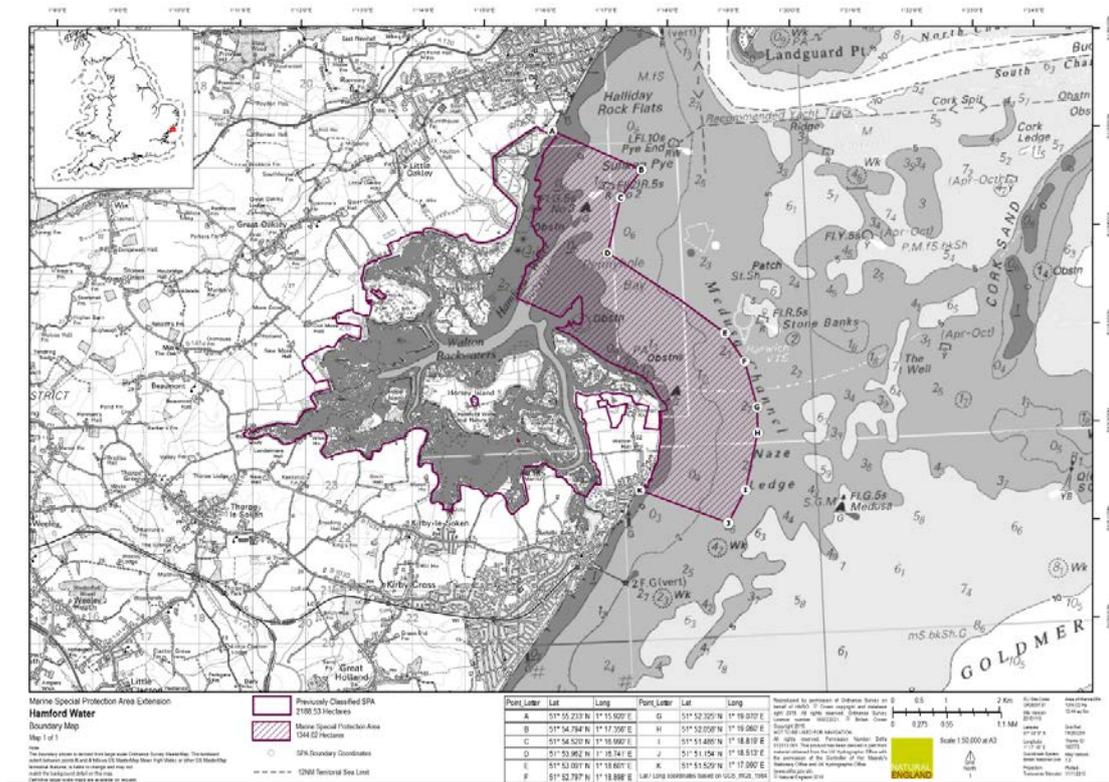
Likely Significant Effects

- 2.3 The Secretary of State has considered the potential construction and operational impacts of the change application on all relevant interest features of the three sites listed above in paragraph 2.2 to determine whether there will be LSE in the context of the Habitats Regulations. The Secretary of State recognises that powers are in place for decommissioning effects to be addressed fully by the relevant authorities, prior to decommissioning and in light of more detailed information on decommissioning processes and environmental conditions at that time. The Secretary of State therefore considers that it is reasonable not to include a detailed discussion on decommissioning impacts in this report and notes that decommissioning is not a barrier to the change application being granted.

Hamford Water pSPA

- 2.4 The proposal currently being consulted on by NE is for a marine extension to the existing Hamford Water SPA, to include marine foraging areas for little tern (*Sternula albifrons*). The current SPA is used by little terns for nesting and feeding. Results from recent surveys have shown that little terns also forage within areas adjacent to the current SPA, and these are the areas being considered for protection. The recommendation by NE is to extend the current boundary by approximately 1.8km out to sea, and to extend the alongshore boundary to the north and south. Figure 1 is a map showing the draft boundary extensions.

Figure 1 Hamford Water SPA draft extensions (NE consultation documents January 2016)



2.5 LSE on the interest features of the existing Hamford Water SPA were assessed for the Project, with a conclusion of no LSE, which was not disputed by any parties. The potential impact was considered to be from the offshore cable route. The ornithological surveys undertaken by the Applicant did not record any little terns within the development boundary, with a patchy distribution at low densities along the offshore cable corridor (APP-081). These surveys are relevant to the change application, as it is within the same development boundary and offshore cable corridor.

2.6 NE in their response to the Secretary of State’s consultation on the change application advised that there will be no LSE on the interest features of the marine extension to the existing Hamford Water SPA.

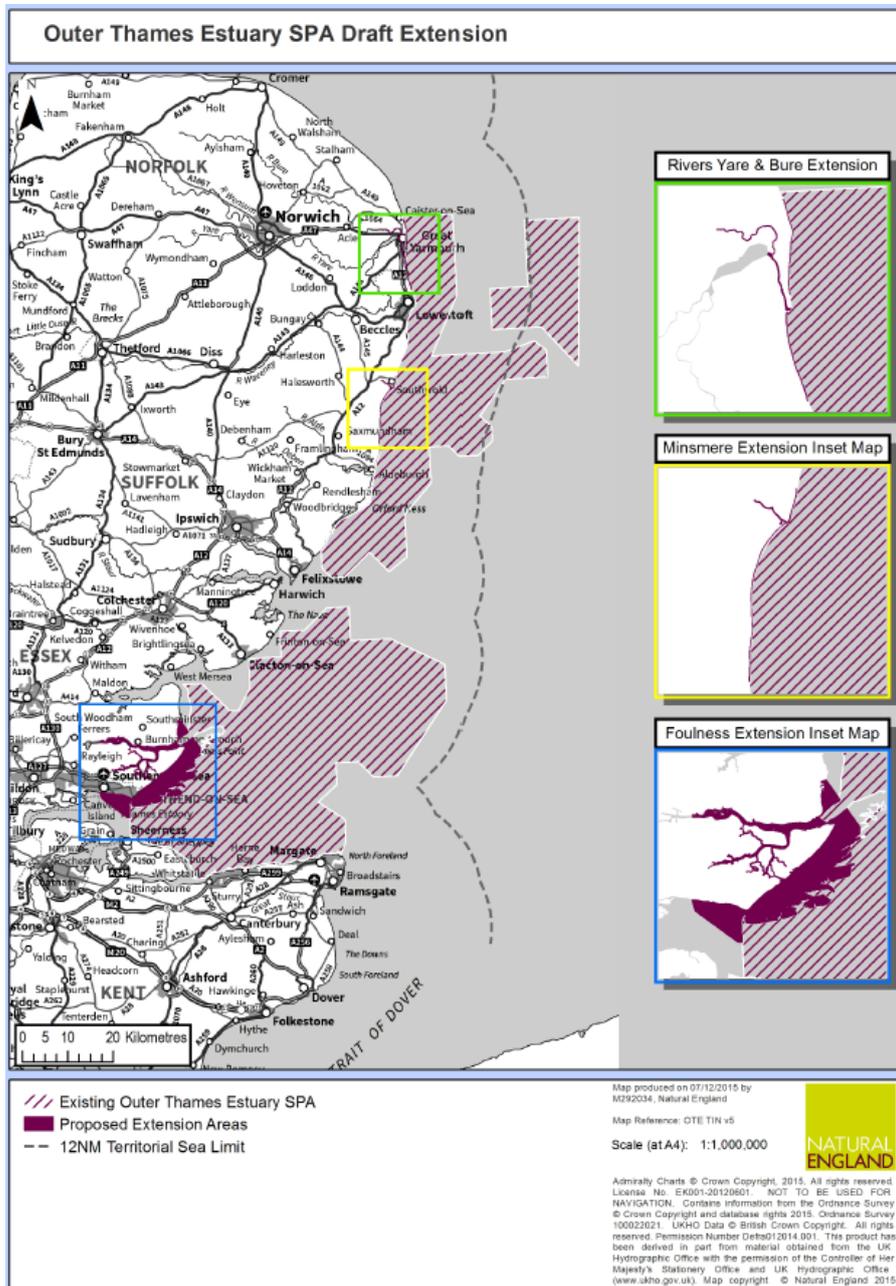
2.7 The Secretary of State concludes that there will no LSE from the change application on the marine extension to the existing Hamford Water SPA, and therefore an AA is not required for this site. This is because there were no little terns found within the development boundary and there were only low densities of them along the offshore cable route.

Outer Thames Estuary pSPA

2.8 NE is proposing to extend the boundary of the existing Outer Thames Estuary SPA and add little tern (*Sternula albifrons*) and common tern (*Sterna hirundo*) as interest features. The extension will provide protection for little and common tern foraging areas, enhancing the protection already afforded to their feeding and nesting areas in the adjacent coastal SPAs (Foulness SPA, Breydon Water SPA and Minsmere to Walberswick SPA). The surrounding

marine environment of the coastal SPAs in an important foraging ground during the breeding season. A map showing the location of the proposed extensions is shown in Figure 2.

Figure 2 Outer Thames Estuary SPA draft extension (NE consultation documents January 2016)



2.9 LSE on the existing Outer Thames Estuary SPA interest features were assessed during the examination for the Project, with the conclusion of no LSE. This assessment was only against non-breeding red throated diver, as this was the only interest feature of the SPA at that time.

2.10 The surveys undertaken by the Applicant for the Project did not record any little terns and only 8 common terns within the development boundary. It was stated by the Applicant that little terns from Minsmere to Walberswick SPA and common terns from Foulness SPA could potentially forage over the offshore cable route. The Applicant's ES states that there is no evidence to suggest the cable route is an important foraging area in itself so any affect is likely to be on a

very small proportion of the suitable habitat within foraging range (APP-081). These surveys are relevant to the change application as it is within the same development boundary and cable corridor route.

- 2.11 NE in their response to the Secretary of State's consultation on the change application advised that there will be no LSE on the interest features of the Outer Thames Estuary pSPA.
- 2.12 The Secretary of State concludes that there will be no LSE from the change application on the proposed little and common tern features of the Outer Thames Estuary pSPA, and therefore an AA is not required for this site. This is because no little terns and very few common terns were found within the development boundary and because the offshore cable route is not an important foraging area for these species.

Southern North Sea pSAC

- 2.13 JNCC is proposing a possible SAC for harbour porpoise (*Phocoena phocoena*) within the Southern North Sea. The JNCC consultation documents identify activities, the pressures associated with them and the impacts they cause, that could present a risk to the site achieving favourable conservation status, these include: anthropogenic underwater sound caused by pile driving which could cause mortality, internal injury and disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding and socialising), and death and injury by collision from shipping. As both of these activities are associated with the change application, the Secretary of State concludes that there could be a LSE on the Southern North Sea pSAC and an AA is needed.

Appropriate Assessment

Test for Adverse Effect on Site Integrity

- 3.0 The requirement to undertake an AA is triggered when a competent authority, in this case the Secretary of State, determines that a plan or project is likely to have a significant effect on a European site either alone or in combination with other plans or projects. Guidance issued by the European Commission states that the purpose of an AA is to determine whether adverse effects on the integrity of the site can be ruled out as a result of the plan or project, either alone or in combination with other plans and projects, in view of the site's conservation objectives (European Commission, 2000).
- 3.1 The purpose of this AA is to determine whether or not adverse effect on the integrity of the features of the Southern North Sea pSAC can be ruled out as a result of the change application alone or in combination with other plans and projects in view of the site's conservation objectives and using the best scientific evidence available.
- 3.2 If the competent authority cannot ascertain the absence of an adverse effect on integrity within reasonable scientific doubt, then under the Habitats Regulations, alternative solutions should be sought. In the absence of an acceptable alternative, the project can proceed only if there are imperative reasons of overriding public interest ("IROPI") and suitable compensation measures identified. Considerations of IROPI and compensation are beyond the scope of an AA.

Conservation Objectives

- 3.3 Guidance from the European Commission indicates that disturbance to a species or deterioration of a European site must be considered in relation to the integrity of that site and its conservation objectives (European Commission, 2000). Section 4.6.3 of that guidance defines site integrity as:
- ...the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified.*
- 3.4 Conservation objectives outline the desired state for a European site, in terms of the interest features for which it has been designated. If these interest features are being managed in a way which maintains their nature conservation value, they are assessed as being in a 'favourable condition'. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation (English Nature, 1997).
- 3.5 There are no set thresholds at which impacts on site integrity are considered to be adverse. This is a matter for interpretation on a site-by-site basis, depending on the designated feature and nature, scale and significance of the impact. Conservation objectives have been used by the Secretary of State to consider whether the change application has the potential for having an adverse effect on integrity, either alone or in combination.

Southern North Sea pSAC

- 4.0 The Southern North Sea pSAC is large, covering an area of 36,958km² stretching from the central North Sea north of the Dogger Bank southwards to the Strait of Dover. As the pSAC is currently being consulted on this area may change. The qualifying feature of the site is harbour porpoise (*Phocoena phocoena*). The northern part of the site is recognised as important for porpoises during the summer season, whilst the southern part is more important during the winter (JNCC consultation documents 2016).
- 4.1 The draft conservation objectives for the pSAC are in Table 1, as the pSAC is currently being consulted on these may change.

Table 1 draft Conservation Objectives for Southern North Sea pSAC (JNCC consultation documents 2016)

Conservation Objectives	<p>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.</p> <p>To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:</p> <ol style="list-style-type: none"> 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.
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- 4.2 For the Southern North Sea pSAC the harbour porpoise population needs to be maintained rather than restored. Maintain implies that, based on existing understanding, the feature is regarded as being in favourable condition and will, subject to natural change, remain in this condition after the site is designated (JNCC consultation documents, 2016).
- 4.3 It is estimated (based on the SCANS-II survey which took place in July 2005 only) that the pSAC supports approximately 18,500 individuals (95% Confidence Interval: 11,867 - 28,899) for at least part of the year, as seasonal differences are likely to occur, and represents approximately 19% of the population within the UK part of the North Sea Management Unit (MU)². The JNCC advice is that it should be noted that because this estimate is from a one-month survey in a single year it cannot be considered as a specific population number for the site. They therefore advise that it is not appropriate to use site population estimates in any assessments of effects of plans or projects e.g. HRAs, as these need to take into consideration population estimates at the MU level, to account for daily and seasonal movements of the animals. As a wide-ranging species, the animals within the site cannot be considered isolated in relation to the rest of the population.

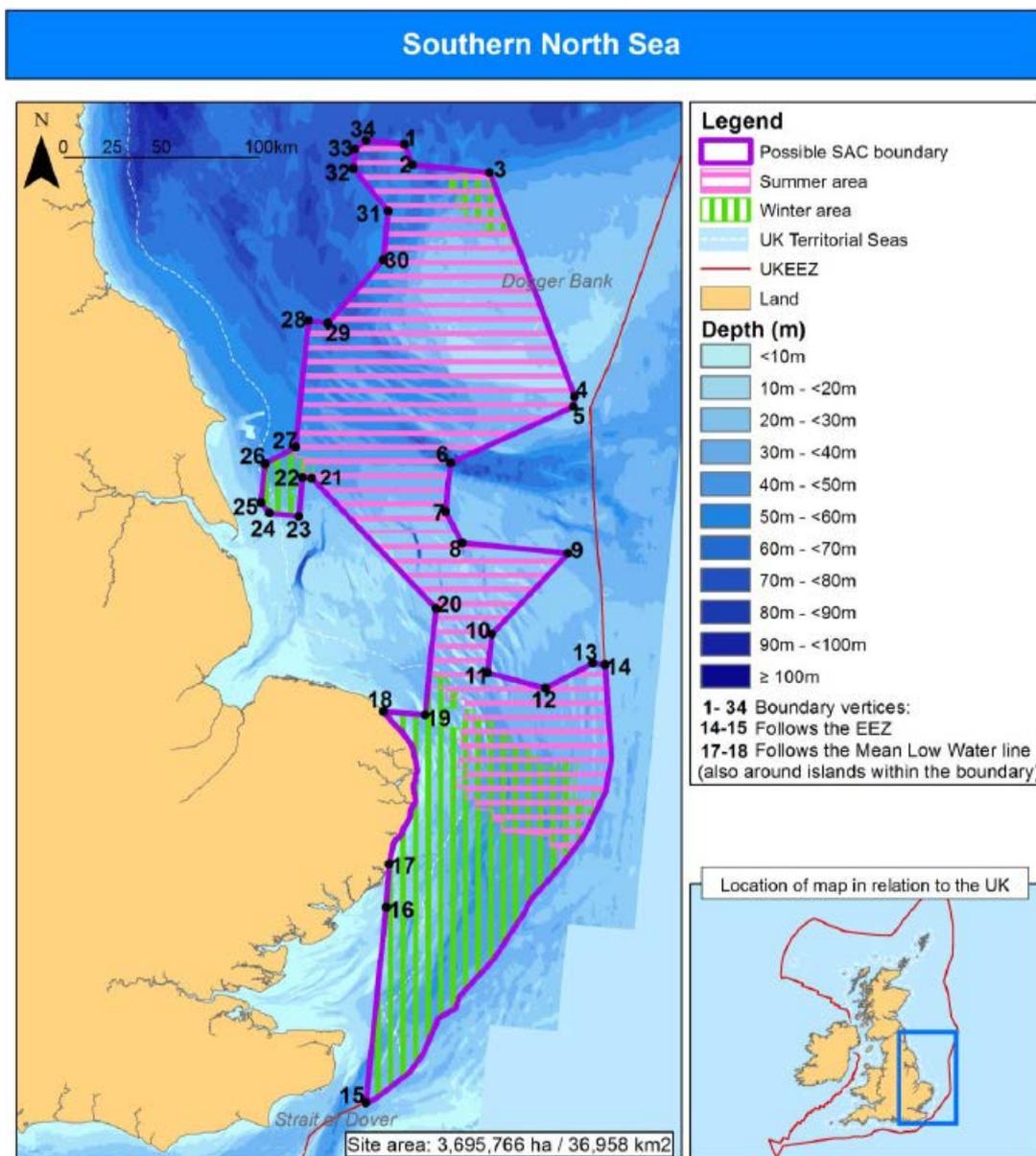
² Management Units - UK waters have been divided into three Management Units (MUs) identified by the Interagency Marine Mammal Working Group (IAMMWG): the North Sea (NS), the Celtic and Irish Seas (CIS) and West Scotland (WS). These MUs align with the UK parts of the Assessment Units proposed for the harbour porpoise by the International Council for the Exploration of the Sea (ICES) in their advice to OSPAR. The Management Units were selected to combine what is understood about the ecology of harbour porpoise with the practicality of managing human activities.

Animals within the site are part of the wider MU population (JNCC consultation documents, 2016).

4.4 Harbour porpoise are the most abundant cetacean in UK waters. They forage over very large areas (up to 11,289 km²; Johnstone et al, 2005), feeding on a wide range of fish species, typically small shoaling species from demersal or pelagic habitats such as whiting and sand eels (Santos and Pierce, 2003; Santos et al, 2006). In addition to site specific protection within the pSAC, Harbour porpoise are protected from “deliberate killing” and “deliberate disturbance...particularly during the period of breeding, rearing, hibernation and migration” (Habitats Directive, article 12(1)(a) and (b)) (Dogger Bank SoS HRA, 2015).

4.5 The location of the pSAC and its seasonal importance is shown in Figure 3.

Figure 3 Boundary of Southern North Sea pSAC (JNCC consultation document January 2016).



- 4.6 The East Anglia One windfarm development site is located within the southern, winter area of the pSAC. The JNCC advise that the seasonality in harbour porpoise distribution should be considered in the assessment of impacts and proposed management. Activities within the site should be managed to ensure harbour porpoise have 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. (JNCC consultation documents, 2016).
- 4.7 The ES (APP-079) for the Project considered the following as the main potential impacts to harbour porpoise. These are relevant to the consideration of potential impacts from the proposed change application on the pSAC:
- Potential injury, noise disturbance and displacement as a result of foundation installation activities and vessel movements during construction
 - Potential collisions with construction and maintenance vessels
 - Changes to feeding habitat and prey distribution during construction and operation
 - Potential in-combination noise disturbance and displacement impacts from other nearby offshore windfarms, dredging activities and seismic surveys.
- 4.8 The Applicant assessed each of these possible impacts against the worst case scenario, which is a maximum of two simultaneous piling operations for the duration of construction at opposite ends of the East Anglia ONE Wind Farm Site with a maximum hammer energy of 900kJ (REP-216).
- 4.9 The Applicant's Environmental Report for the change application states that 'the worst case scenario in all instances is unchanged [from the Project] and the potential impacts associated with the proposed changes to the project design are of no greater significance than those identified in the existing assessment (comprising the Environmental Statement, Supplementary Environmental Information and ornithological technical assessments). Offshore, this is primarily on account of the fact that no changes are proposed to the boundaries of the windfarm or the offshore export cable corridor, whilst there would be a reduction in the number of wind turbines, offshore platforms and export cables installed'. The Secretary of State therefore concludes that the information within the ES for the Project can be used to inform this AA.
- 4.10 The Applicant's ES (APP-079) predicts that noise impacts due to foundation installation activities for the turbines are likely to be the most significant construction impact on harbour porpoise, in terms of both injury and behavioural responses.
- 4.11 The results from the Applicant's jacket foundation modelling in the ES (APP-079) predict that mortality of harbour porpoise would be unlikely to occur, except in very close proximity to the pile or during prolonged exposure close to the pile, this is thought to be unlikely as the animal would move away from the noise source. Assuming that soft start procedures are used, the Applicant concluded that instantaneous auditory injury would be unlikely to occur beyond 50m from the pile. Soft start procedures are part of the Applicant's embedded mitigation, see paragraph 4.38.
- 4.12 The sound levels from the piling will be loud enough to result in permanent injury to harbour porpoise if they are within 50m (or 400m for the met mast monopile) when piling starts using the

embedded soft start procedure, therefore the Applicant considered the potential impact of injury to be of moderate significance, which could be mitigated through a Marine Mammal Mitigation Protocol (MMMP). This will be delivered through requirement 36 of the DCO.

- 4.13 The Applicant predicted a possible avoidance area of up to 1124km² for a single piling operation. If piling operations occur at alternate ends of the consented Project site, at the same time, the Applicant predicted that the overall avoidance area for harbour porpoise would be increased to up to 1433km² at full piling pressure, which is 3.88% of the Southern North Sea pSAC. This represents the worst case piling scenario at the Project site. This worst case scenario is still relevant for the change application, as the configuration for the 750MW wind farm is not known, but it will be within the footprint of the consented Project.
- 4.14 The Applicant calculated the population percentage impacts using the SCANS II North Sea harbour porpoise population, and densities derived from site specific aerial surveys, for the worst case piling scenario. They predicted that 0.58% (0.81% using site specific aerial surveys) of the North Sea biogeographic population would be displaced, assuming a 100% displacement of all animals from the impact area. Assuming that only 50% of animals are displaced, then this would represent 0.29% (0.405% using site specific aerial surveys) of the North Sea population (REP-216).
- 4.15 The Applicant states that although the area from which harbour porpoise may be displaced from is relatively large (1433km²), the number of individuals likely to be displaced is a small proportion of the North Sea population. In reality the area affected at any particular time by piling activity would change as the construction progresses, which would mean that the areas subjected to displacement impacts would change throughout the construction period.
- 4.16 JNCC currently advise that the availability of supporting habitat is used as the mechanism to assess the impacts of a project on the pSAC. This is because harbour porpoise are a mobile species and long term studies would be required to detect a change in site abundance (personal comment JNCC). They also advise that the seasonal importance of different parts of the pSAC should be taken into account when making assessments.
- 4.17 The change application is located within the winter area of importance which is 13,280km² in total. The Applicant's modelled worst case avoidance area for harbour porpoise is 1433km² which is 11% of the winter area.
- 4.18 The footprint of the change application can be assumed to be less than the consented project due to the fewer number of turbines, therefore the 11% figure is over precautionary, and the actual area of temporary habitat loss would be smaller than this.
- 4.19 The Applicant predicts that piling would take place continuously over a 17month period for the Project. As the change application is for fewer turbines, it can be assumed that the length of piling operations would also be reduced. Piling is also very unlikely to be continuous over the winter period due to weather conditions and the need to move the piling vessel between foundation locations.

- 4.20 The Applicant's ES (APP-079) states that harbour porpoise are predicted to return to the area after the end of the jacket piling installation and therefore the displacement impacts are considered to be temporary, and that the impacts to the harbour porpoise population due to displacement are predicted to be not significant.
- 4.21 The ES predicts that the noise impacts of construction and support vessels on harbour porpoise during construction are very unlikely to result in physiological damage and no impacts are predicted.
- 4.22 The Applicant also identified that there is a potential impact to harbour porpoise as a result of collisions with vessels during construction and maintenance, however the risk of this is predicted to be very low, and the Applicant therefore predicts the risk of impact to be not significant. This is because collisions between vessels and marine mammals are very rare and in a UK context and are not predicted to affect the harbour porpoise population.
- 4.23 Changes to functional habitats and prey numbers during construction were identified by the Applicant as potential impacts to harbour porpoise. Increases in suspended sediment concentrations during the construction phase could result in reduced visibility and secondary effects on prey species in the immediate area of the activity. No significant impacts were identified for either adult fish or fish eggs and larvae from the predicted suspended sediment elevations, which are predicted to be low above background levels and only temporary. Therefore the Applicant has predicted that the impacts to harbour porpoise from them will not be significant. Wind turbine installation could displace fish species that are sensitive to noise impacts, the modelling undertaken by the Applicant shows that demersal fish will be displaced 1 to 2km around the development site and pelagic fish 2 to 4km. These areas are small compared to the foraging ranges of harbour porpoise, and are temporary in nature. Therefore the impacts to harbour porpoise are considered to not be significant by the Applicant.
- 4.24 Impacts to harbour porpoise from underwater noise during the operation of the windfarm are not considered to be significant by the Applicant, as the noise levels are predicted to be close to ambient noise levels.
- 4.25 NE and JNCC's advice during the examination for the Project was that the impacts on marine mammals alone are not likely to be significant, providing that a MMMP is developed with agreement from the statutory nature conservation bodies (SNCBs) and that mitigation is carried out as described (REP-236). See paragraphs 4.38 and 4.39 below for details of proposed mitigation.
- 4.26 NE and JNCC's advice was given in relation to the North Sea biogeographic management unit and not in relation to the pSAC. However the advice contained within the pSAC consultation documents is that the impacts for HRA purposes should continue to be assessed on the population level scale, due to the mobile nature of harbour porpoises.
- 4.27 Based on the best available information at the time of this AA, the Secretary of State concludes that there will be no adverse effect on integrity alone on the Southern North Sea pSAC from the proposed change application. This is because:

- The predicted area of avoidance and therefore temporary loss of available habitat to harbour porpoise from the Applicant's modelling for the Project is only 11% of the available winter habitat. The area of avoidance for the change application is likely to be less than this as the change is for fewer turbines.
- The piling is very unlikely to be continuous during the winter months due to adverse weather conditions.
- The duration of the piling for the Project is predicted to be 17 months, it is likely to be less for the change application which is for fewer turbines. The piling is planned to occur throughout the year, therefore the disturbance effects of piling in the summer months will have a reduced impact on the pSAC, as the change application is located within the area of winter importance.

In combination

- 4.28 In the ES (APP-079) for the Project the Applicant identified that there could be in-combination impacts from potential noise disturbance and displacement impacts from other nearby offshore windfarms, dredging activities and seismic surveys, occurring either simultaneously or consecutively with piling operations during the construction of the Project. In-combination underwater noise impacts are not predicted during the operational phase. These in-combination impacts are relevant for the change application currently being assessed.
- 4.29 The Applicant modelled the potential in-combination impacts on harbour porpoise with Galloper windfarm which is approximately 25km from the East Anglia ONE offshore windfarm development area. The modelled area of avoidance for the Project and Galloper was 2726km², which is 20% of the winter importance area of the pSAC. It would be less for the change application as it is for fewer turbines and therefore within a reduced footprint. Construction on Galloper has already started and piling is planned for summer 2016 and 2017. It is therefore unlikely that the change application and Galloper would be piling simultaneously. The piling for Galloper is proposed to be outside of the winter season, which is when the part of the pSAC that Galloper and East Anglia ONE development area are located in, is thought to be of importance to harbour porpoise.
- 4.30 The only other proposed windfarm within the southern winter importance area for harbour porpoise in the pSAC is East Anglia Three, this is currently going through the consenting process, and is not predicted to commence piling until 2020. It is therefore also unlikely that East Anglia Three would be piling simultaneously with the change application.
- 4.31 The northern part of the East Anglia ONE offshore windfarm development area, is in close proximity to the southern end of the harbour porpoise summer area of importance of the pSAC. There could potentially be other offshore windfarms piling simultaneously with the change application within this area. Therefore consideration of the impacts of the change application, in combination with other plans and projects within this area, would need to be considered as part of the MMMP, which will be secured as part of requirement 36 of the varied DCO.

- 4.32 In-combination effects with dredging and seismic surveys were also considered by the Applicant in their ES (APP-079); however their magnitude of effect in-combination with the Project were considered to be negligible. This is because seismic surveys in proximity to the East Anglia One project site are likely to occur infrequently and the underwater noise from dredging is relatively small.
- 4.33 For the Project NE and JNCC were able to agree that cumulatively, East Anglia One Wind Farm is unlikely to have a population level impact on harbour porpoise within the North Sea MU (REP-236). This advice was given prior to the Southern North Sea pSAC being proposed.
- 4.34 In their response to the Secretary of State's consultation on the change application, NE stated that they agree with the Secretary of State's consideration that the proposed change application will have a LSE on the Southern North Sea pSAC Harbour Porpoise population in-combination with other plans or projects. They however believe that the MMMP which is already secured within the deemed Marine Licence of the 2014 Order is sufficient. They state that *'to date we have worked with East Anglia ONE Ltd to progress a draft MMMP which we have agreed (with both the developer and the MMO) will be updated closer to the time of construction. That review will take into account the Southern North Sea pSAC management measures once they are agreed; plus any developments in mitigation technology or techniques which may have occurred in the intermediate time. Natural England views this as a pragmatic and appropriate approach to marine mammal mitigation at East Anglia ONE offshore wind farm'*.
- 4.35 JNCC in their response to the change application stated that they broadly agree with the Secretary of State's proposed wording for a requirement in the varied DCO to protect the Southern North Sea pSAC which will be included as requirement 36 of the varied DCO.
- 4.36 The MMMP which is currently secured as condition 11(f) within the deemed Marine Licence of the 2014 Order, has to be in line with JNCC guidelines for minimising acoustic disturbance to marine mammals. The Secretary of State considers that the JNCC guidelines do not include provisions to ensure that there will be no adverse effect on the integrity of the Southern North Sea pSAC from the change application in combination with other plans and projects, and therefore a new requirement should be added to the varied DCO to ensure that there is no adverse effect on the integrity of the pSAC.
- 4.37 The Secretary of State concludes that it is not possible to accurately predict at the time of undertaking this AA what other plans and projects could be acting in-combination with the change application when piling for the turbine foundations commences. Therefore the Secretary of State recommends that a requirement will be included in the varied DCO that the MMMP ensures that there is no adverse effect on the integrity of the interest features of the site. This would be through determining the level of underwater noise that will be occurring within the pSAC when a definite programme of piling for the change application is known, and proposing mitigation, if necessary, which will ensure that there is no adverse effect on integrity on the features of the pSAC. This will be secured through requirement 36 of the varied DCO.

Mitigation measures

4.38 The Applicant has proposed embedded mitigation measures in relation to the Project, which are relevant to the change application, to offset the greatest impact to harbour porpoise, which is underwater noise impacts from piling of foundation structures, causing potential injury and displacement. These are:

- To only use pin piles (apart from one monopile for the met mast), which will reduce the peak noise levels and the area over which noise levels would be experienced, and
- To use soft start procedures as per JNCC guidance on minimising the risk of disturbance and injury to marine mammals from piling noise (JNCC, 2010).

4.39 Additional mitigation is through the development of a MMMP which would be agreed with the MMO and DECC, in consultation with Natural England, whose purpose would be to minimise the risk of injury or disturbance to marine mammals during piling operations and to ensure that the level of underwater noise, in-combination with the change application, will not have an adverse effect on the integrity of the pSAC. This has been secured through requirement 36 of the varied DCO.

Conclusion

4.40 The Secretary of State has undertaken an AA of the effects of the proposed change application in respect of the Southern North Sea pSAC's Conservation Objectives listed in Table 1. The Secretary of State has used the advice set out in the consultation documents for the pSAC, the advice from NE and JNCC, the information within the Applicant's application documents for the change application and the information contained in the Examination documents for the Project to inform her assessment. **The Secretary of State has assessed the potential for adverse effect on the integrity of the Southern North Sea pSAC from the proposed change application alone and in-combination with other plans and projects, and is satisfied that requirement 36 of the DCO is sufficient mitigation, and concludes that there will be no adverse effect on the integrity of the harbour porpoise feature of the Southern North Sea pSAC.**

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