

Norfolk Boreas Offshore Wind Farm Clarification Note Ecological Enhancements

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Glossary of Acronyms

BAP	Biodiversity Action Plan
CWS	County Wildlife Site
FWAG	Farming and Wildlife Advisory Group
kV	kilovolts
NBP	Norfolk Biodiversity Partnership
NPP	Norfolk Ponds Project
NWT	Norfolk Wildlife Trust
SAC	Special Area of Conservation
UKHPI	UK Habitat of Principal Importance

Glossary of Terminology

Ducts	A duct is a length of underground piping, which is used to house electrical and communications cables.
Onshore cable route	The up to 35m working width within a 45m wide corridor which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.
Onshore project area	The area of the onshore infrastructure (landfall, onshore cable route, accesses, trenchless crossing zones and mobilisation areas; onshore project substation and extension to the Necton National Grid substation and overhead line modifications).
Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.

1 Introduction

1. Following Issue Specific Hearing 2 on Environmental Matters and Habitat Regulations Assessment held on Thursday 14th November 2019 an action was identified by the Examining Authority for the Applicant to produce a post-hearing note to signpost in the application documents where opportunities for ecological enhancement measures are identified and where the determining factors for selection of ecological enhancements are provided.
2. This note identifies the opportunities for ecological enhancements considered within the application, how these have been selected and signposts the relevant application documentation.

2 Ecological Enhancement Included within the Application

2.1.1 Substation Landscape Mitigation

3. Planting has been proposed at the onshore project substation which has been designed to replace, improve and enhance existing ecological connections around the onshore project area. The locations for landscape planting have in part been selected to ensure that ecological connections which run North-South and East-West across the onshore project area between larger blocks of habitat (e.g. woodland blocks) are improved, to improve the overall ecological connectivity of habitat surrounding the onshore project area. Specifically, the following enhancements are proposed:
4. *Under Scenario 1, mitigation planting would be implemented as part of the Norfolk Vanguard project along the western site boundary and along the southern site boundary, to the west of Lodge Farm. On the western boundary, this would comprise the existing hedgerow, with a 7m band of nurse woodland and 7m band of core woodland, potentially set on an earth bund up to 2m in height with a band of understorey planting on the western side and band of species rich grassland on the eastern side. Planting along the southern boundary would comprise a 10m band of nurse woodland and 10m band of core woodland, with 3m species rich grassland on either side.*
5. *The extent of mitigation planting incorporated into the design as part of Norfolk Boreas, under Scenario 1, is presented on Environmental Statement (ES) Figure 29.9 (APP-492). Planting would comprise a mix of nurse woodland and core woodland based on indigenous woodland species. The woodland bands would be set along the boundaries and would enclose a broad band of species rich grassland in the east and north-east of the site.*

6. *Scenario 2 planting would comprise bands of nurse woodland and core woodland down the western field boundary and also the closer range western edge of the permanent footprint. Species rich grassland would fill the north-west corner of the site adjacent to Necton Wood.*
7. *Woodland planting would be introduced to the south of the onshore project substation, both extending west and east of Lodge Farm and offset to accommodate the onshore 400kV cable route that would egress the onshore project substation along this boundary. The woodland planting would wrap around the eastern edge of the permanent footprint and extend to enclose the north-east corner, where an area of species rich grassland is proposed. On the northern boundary, planting would be limited to hedgerows over the onshore cable route and an easement of 6 to 10m either side. Scenario 2 mitigation planting is presented in ES Figure 29.19 (APP-503).*
8. These proposals are provided in the following locations within the Application:
 - Section 22.7.5.10, ES Chapter 22 Onshore Ecology (APP-235); and Section 9.2.3.2, and Section 9.7.3.3, Outline Landscape and Ecological Management Strategy (REP1-020).
 - Section 6.5.1.1 and Section 6.5.2.1, Outline Landscape and Ecological Management Strategy (REP1-020).
9. The proposed planting at the onshore project substation is shown on:
 - ES Figure 29.9 (APP-492); and
 - ES Figure 29.19 (APP-503).

2.1.2 Hedgerow Planting

10. It is proposed that hedgerows located within the onshore project area which are removed for construction are replanted to an improved ecological standard, one that aligns with the Norfolk Biodiversity Partnership (NBP)'s guidance of hedgerow planting (NBP, 2009). It has been proposed that this enhancement applies to all hedgerows directly affected by the project, as a UK Habitat of Principal Importance (UKHPI). Specifically, the following enhancements are proposed:
11. *Replanting will follow guidance within the Norfolk hedgerow Biodiversity Action Plan (BAP), i.e. species composition for north-east Norfolk (if on an existing line, and that line is straight: mostly hawthorn, with blackthorn, field maple; if curving or on a roadside or parish boundary: hawthorn, with blackthorn, field maple and occasional crab apple, hazel, spindle, ash and holly) (NBP, 2009). Ground flora planting designed to encourage insect biomass will be included. Where possible, future hedgerow management will include allowing standard trees to develop and hedges will be*

double-planted with 2m grassland strips on both sides so there is always a leeward side to forage.

12. These proposals are provided in the following locations within the Application:
- Section 22.7.5.5, ES Chapter 22 Onshore Ecology (APP-235); and Section 9.2.3.2, Outline Landscape and Ecological Management Strategy (REP1-020)

2.1.3 Watercourse Crossings

13. The potential for environmental enhancements to water bodies directly affected by the project as part of the reinstatement process have been considered as part of the Application.
14. Where possible, localised improvements to the geomorphology and in-channel habitats will be considered where they are crossed using open cut techniques to install the ducts (under Scenario 2) or where temporary culverts are required for the access (both scenarios). The type and nature of the enhancements will be dependent on the specific crossing locations and will be confirmed when the scheme and programme for each watercourse crossing, diversion and reinstatement is developed, in accordance with dDCO Requirement 25. Note that any enhancements to directly affected watercourses would be limited to within the Order Limits. Examples of the enhancements which will be considered are outlined below:
15. *Bank reprofiling: It may be possible to reinstate the banks to a more varied profile that better reflects the natural conditions of the watercourse. For example, steeply graded banks could be set back slightly to create a shallower or multi-stage profile, which is able to support a greater range of marginal and riparian habitats. This type of enhancement may not be suitable for use in some artificial drainage channels, particularly where they are closely managed for flow conveyance and land drainage purposes. Some bank reprofiling techniques will also require additional land take, particularly where channel capacity means that reprofiled banks need to be “pulled back” from the existing channel.*
16. *Narrowing of over-wide channels: Where watercourses have been enlarged by historical management activities, they can become over-wide with low energy flows and extensive fine sedimentation. The disturbed banks could therefore be narrowed through the use of targeted reprofiling, whereby the existing bank material is redistributed to create a shallower bank that encroaches into the channel to create a more focussed low-flow channel without reducing overall channel capacity. Alternatively, a similar effect could be achieved through the installation of gravel, brushwood or earth berms at the bank toe if there is sufficient channel capacity.*
17. *Reinstatement of suitable bed substrate: A high proportion of the channels in the onshore project area have a naturally coarse substrate that is frequently obscured by extensive deposits of fine sediments. It may be possible to undertake “gravel washing” to remove silts before the bed is reinstated, or import fresh gravels of a similar grain size distribution to the*

natural bed materials. However, the effectiveness of this technique may be limited in reaches where the supply of fine sediment from upstream sources is very high. Furthermore, this option would not be appropriate for use in channels which have a naturally fine-grained substrate.

18. *Installation of sediment traps and in-channel habitat enhancements: In watercourses with a high fine sediment load, it may be desirable to locally widen and deepen the channel. This would create a natural “sediment trap” by locally slowing flows and encouraging increased sedimentation. This could also be combined with planting of in-channel vegetation to help stabilise these deposits. This type of enhancement may not be appropriate in channels that are managed for flow conveyance and land drainage purposes.*
19. *Marginal planting: Targeted planting of in-channel and marginal vegetation, particularly on reprofiled banks, could help to rapidly establish new vegetation communities and stabilise reprofiled banks. This type of enhancement may not be suitable for use in artificial drainage channels that are managed for flow conveyance and land drainage purposes, and care would be required to ensure that any planted species are suitable for the channel conditions and representative of local aquatic vegetation communities.*
20. There proposals are provided in the following locations within the Application:
 - Section 20.7.1.13 and Table 20.22 of ES Chapter 20 Water Recourses and Flood Risk and Section 11.1.5.1, Outline Code of Construction Practice (REP1-018).

2.1.4 Wendling Carr CWS

21. It is proposed that the onshore project area within Wendling Carr County Wildlife Site (CWS) be managed in line with the site’s management proposals. This will include removal of young (pioneer) species of the adjacent broadleaved woodland, to ensure that the grazing meadow habitat is maintained. Enhancement has been proposed within this site boundary as the project will be giving rise to temporary direct effects on the CWS during construction. Specifically, the following enhancements are proposed:
22. *Following advice received by Norfolk Wildlife Trust (NWT) (during the Norfolk Vanguard Evidence Plan Process), the management proposals for Wendling Carr CWS have been taken into account when considering mitigation. The management proposals for the site state that control of the young (pioneer) species of the broadleaved woodland parcel on the site should be prevented from establishing within the grazed meadow where possible. Methods other than grazing should be used to achieve this.*
23. *Under Scenario 2, a pre-construction botanical survey of Wendling Carr CWS will be undertaken at the optimum time of the year. Following the botanical survey and consultation with NWT, if required, manual clearance of any pioneer woodland*

species establishing themselves within the meadow would be undertaken within the grazed meadow prior to construction of the running track.

24. These proposals are provided in the following locations within the Application:

- Section 22.7.5.2, Chapter 22 Onshore Ecology (APP-235); and Section 8.1.3.1, Outline Landscape and Ecological Management Strategy (REP1-020).

2.1.5 Bat Habitats

25. In addition to the enhancement measures outlined above, for those hedgerows located within the study area for Paston Great Barn Special Area of Conservation (SAC), it is proposed that hedgerows outside the areas to be removed are allowed to become overgrown to improve their habitat value. These hedgerows have been selected for enhancement in this way due to their value as providing habitat for barbastelle bats of the Paston Great Barn SAC. Specifically, the following enhancements are proposed:

26. *Subject to landowner permissions prior to construction, the 16 hedgerows that are important for foraging and commuting bats would be left to become overgrown either side of the section to be removed prior to construction. Hedgerows would be allowed to become overgrown within the onshore cable route width, therefore at each hedgerow a total of up to 22m will be left to become overgrown in this manner. This would be undertaken to improve the quality of the surrounding hedgerow as a resource for commuting and foraging bats (Bat Conversation Trust, 2015).*

27. These proposals are provided in the following locations within the Application:

- Section 22.7.5.1.3, Chapter 22 Onshore Ecology (APP-235) and Section 7.2.3.1, Outline Landscape and Ecological Management Strategy (REP1-020).

28. The hedgerows which are subject to this mitigation are shown on:

- Figure 9.5 in Section 9.1.2.2, Information to Support Habitats Regulations Assessment Report (APP-201).

2.1.6 Great Crested Newt Habitats

29. The project has retained the option to deliver great crested newt mitigation using Natural England's 'New Licensing Policies', which include the option of on and offsite site habitat enhancement as an alternative to mitigation. This has been included within the draft great crested newt licence submitted to Natural England, for which a Letter of No Impediment was obtained. The selection and design of enhancements will be agreed following post-consent surveys. Specifically, the following enhancements are proposed:

30. *Natural England's new licensing policies (Policies '1' and '2') which have been in place since December 2016 (Natural England, 2016) allow for the opportunity to undertake habitat creation or restoration both onsite and offsite (i.e. away from the development site boundary), subject to landowner consent, as an alternative to trapping, translocating and excluding newts, provided it can be proven that this action is more likely to improve the conservation status of the species, and that other criteria set out in the policies can be met. Following these discussions, the project has included the option of using alternative approaches to delivering great crested newt mitigation under Natural England's new licensing policies alongside the 'traditional' approach. At this stage, only the principles of such an alternative approach have been proposed. In summary, these are:*
- *Breeding ponds: Where direct impacts on confirmed breeding ponds (of any population size) are anticipated, traditional mitigation methods including fencing and trapping (ring-fencing) will be undertaken. However, rather than recreating the ponds within the onshore project area, it is proposed that habitat enhancement / pond restoration measures are undertaken within 500m of those breeding ponds affected. Further surveys will be required to support this approach;*
 - *Terrestrial habitats: Where direct impacts upon terrestrial habitats are anticipated, it is recommended that unless a medium or high population has been recorded, or the pond is located within 50m of the onshore project area, exclusion fencing is not required. Where this is identified, instead habitat enhancement / pond restoration measures are undertaken within 500m of those breeding ponds affected. Further surveys will be required in order to support this approach; and*
 - *The location of all offsite mitigation will be identified in partnership with the Norfolk Ponds Project (NPP) and Norfolk Farming and Wildlife Advisory Group (Norfolk FWAG). Where habitat creation is considered, the location of 'ghost pond' sites will be considered (Alderton et al., 2017).*
31. These proposals are provided in the following locations within the Application:
- Section 22.7.5.13, ES Chapter 22 Onshore Ecology (APP-235) and Section 9.10.3.4, Outline Landscape and Ecological Management Strategy (REP1-020).

3 References

Alderton, E., Sayer, C.D., Davies, R., Lambert, S.J., Axmacher, J.C. (2017) Buried alive: Aquatic plants survive in 'ghost ponds' under agricultural fields. *Biological Conservation*, Volume 212, Part A, August 2017, Pages 105-110

Bat Conservation Trust (2012) Landscape and urban design for bats and biodiversity.

Bat Conservation Trust (2015). Bat Conservation Trust (2016). National Bat Monitoring Programme: Annual Report 2015.

Natural England (2016) Wildlife licensing: comment on new policies for European protected species licences. Consultation outcome. December 2016 [Updated January 2017].

Norfolk Biodiversity Partnership (NBP) (2009). Norfolk Biodiversity Action Plan - Hedgerows