

8.0 Non-Avian Ecology

Introduction

- 8.1 This chapter provides a comparative assessment of the likely effects of the proposed development on non-avian ecology, compared with the previous assessment for the consented development. An assessment of the likely effects on ornithology is presented separately in **Variation Chapter 9: Ornithology**.
- 8.2 To inform this comparative assessment, habitat loss calculations have been revised to reflect the proposed changes to the consented development. Further details are provided in paragraphs 8.15-8.17.

Consented Development Effects

- 8.3 Effects on non-avian ecology arising from the consented development were discussed in **Original Chapter 8 Sections 8.6-8.9** of the ES. It is noted that the assessment presented in the ES was based on the 21 turbine layout originally proposed. Following submission of the ES the layout was subsequently reduced to a 19 turbine layout (by the removal of Turbines 1 and 2) for reasons unrelated to ecology. However, the removal of two turbines did not result in any addition to the predicted effects and it was therefore not necessary to update the assessment following the removal of two turbines.
- 8.4 The assessment presented in the Original ES considered effects during construction, operation and decommissioning, including: permanent and temporary habitat loss / change, disturbance to fauna, pollution effects and collision (bats only). The assessment focused on: habitats of nature conservation importance, notably blanket bog, flush and wet heath; Ground Water Dependent Terrestrial Ecosystems (GWDTE); and protected or otherwise notable faunal species including fish, reptiles, bats, otter *Lutra lutra* and water vole *Arvicola amphibius*. Cumulative effects were also assessed.
- 8.5 Potentially significant negative effects were identified in respect of the permanent loss of 2.6 ha and disturbance to 9.69 ha of wet heath, blanket bog and flush habitats included on Annex 1 of the EC Habitats Directive. However, a Habitat Management Plan (HMP) is proposed, which involves the restoration of up to 23.6 ha of heath and bog habitats, the widening of 28.8 ha of riparian corridors and the planting of 181.5 ha of broad-leaved woodland (further details are included in the Outline HMP provided in **Original Appendix 8.5**). The loss and disturbance of Annex 1 habitats will be greatly outweighed by the benefits arising from the HMP.
- 8.6 Following the employment of mitigation measures, including the installation of cross track drains upgradient of the area of GWDTE at risk from dewatering, the use of settlement tanks to maintain water quality and minimizing any period of dewatering during the construction of Turbine 5 and the adjacent crane hardstanding, no significant residual negative effects were predicted for any GWDTE during construction.
- 8.7 Following the employment of a range of mitigation measures, including pre-construction surveys, the employment of an Ecological Clerk of Works, the adoption of standard good practice pollution control measures, the reinstatement of habitats and specific measures aimed at avoiding harm to protected species, no significant residual negative effects were predicted for any faunal species during construction.

- 8.8 Very low levels of bat activity were recorded at the site (see **Original Appendix 8.3**) and no significant effects were predicted in relation to the potential for the operating turbines to cause injury / death of bats through collision with turbine blades and / or barotrauma. No significant effects were predicted for any other ecological receptors during wind farm operation.
- 8.9 On the basis that impacts would be of lower magnitude than those predicted during construction and would not involve any habitat loss, no significant effects were predicted during the decommissioning phase. It was noted that the need for mitigation would be determined nearer the time of decommissioning, following updated surveys and assessment.
- 8.10 No significant cumulative effects were predicted.

Baseline

- 8.11 Effects have been assessed against the baseline data presented in **Original Chapter 8** and **Original Appendices 8.1-8.4**. It is noted that baseline data for certain protected faunal species, e.g. otter and water vole, would be updated prior to construction taking place through pre-construction checks designed to inform detailed mitigation proposals.
- 8.12 Since the original development was consented there have been some changes to the cumulative baseline, as described in **Variation Chapter 7: Landscape and Visual**. However, significant changes to the cumulative assessment presented in the Original ES for the consented development are not likely. The ES considered the potential for cumulative effects in respect of hydrological impacts and operational impacts on bats only. Assuming that good practice mitigation measures would be employed at all sites, significant cumulative effects resulting from hydrological impacts are not likely regardless of any changes to the cumulative baseline. With respect to bats, given the very low levels of bat activity recorded at Pencloe a significant change to the cumulative assessment for the consented development is not likely, regardless of any changes to the cumulative baseline. On the basis of the above, an updated cumulative assessment for the proposed development is not considered necessary.

Proposed Development Effects

- 8.13 Proposed changes to the consented layout are described in **Variation Chapter 4: Project Description**. These include: an increase in the tip height of the proposed turbines from 125 m to up to 149.9 m; an increase in the length of the proposed turbine blades from around 50 m to up to 67 m; and the relocation of two of the consented turbines (T6 and T15, which have been moved to locations T1 and T2 in the original 21 turbine layout). In addition, a review of overall buildability and access has taken place and in order to accommodate the increase in blade length, amendments have been made to track alignment and routing and hardstanding size, orientation and positioning. The proposed layout is shown in **Variation Figure 4.1A** and for comparison purposes the consented layout is shown in **Variation Figure 4.1B**. The only other change from the consented development is a proposed increase in the operational life of the development from 25 years to 27 years.

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- 8.14 All other aspects of the proposed development remain unchanged, including proposals for mitigation set out in **Original Chapters 8 and 10** and the **Outline HMP (Original Appendix 8.5)**, although some of the areas given in the Outline HMP may change slightly following the proposed changes to the wind farm layout and felling / restocking plans.
- 8.15 With respect to habitat loss and disturbance, the proposed changes to the turbine layout and the amendments to track alignment and hardstandings will affect the previous calculations of habitat loss and disturbance. The figures for habitat loss / disturbance have therefore been recalculated.
- 8.16 Habitat loss / disturbance has been calculated using ArcGIS, by overlaying the proposed development layout onto National Vegetation Classification (NVC) survey data collected to inform the EIA for the consented development (see **Original Figure 8.2 and Original Appendix 8.2**). The approach used mirrors that used in the Original ES such that land required for turbine foundations, crane hardstandings, anemometry masts, access tracks and the control building and substation compound is considered to be permanently lost. Temporary habitat loss / disturbance refers to land associated with the construction compounds plus an anticipated disturbance zone of up to 10 m around all wind farm infrastructure. Changes to hydrological conditions on peatland habitats from drainage are conservatively estimated to extend to a distance of 20 m and these are included within the calculations of temporary habitat loss / disturbance. The revised calculations for loss and disturbance for each of the most important habitats present within the site, i.e. heath, blanket bog and flush, all of which are included on Annex 1 of the EC Habitats Directive, are presented in **Table 8.1**. To enable comparison with the predicted habitat loss resulting from the consented development, **Table 8.1** also shows the calculations for loss and disturbance from the original ES.

Table 8.1: Predicted Loss and Disturbance of Annex 1 Heath, Blanket Bog and Flush Habitats resulting from the Proposed Development compared with the Consented Development

Phase 1 Habitat	NVC Community	Proposed Development		Consented Development	
		Permanent Habitat Loss (ha)	Temporary Habitat Loss / Disturbance (ha)	Permanent Habitat Loss (ha)	Temporary Habitat Loss / Disturbance (ha)
D2 Wet dwarf shrub heath	M15 <i>Trichophorum cespitosum-Erica tetralix</i> wet heath	0.28	1.08	0.54	1.62
E1.6.1 Blanket bog	M17 <i>Trichophorum cespitosum-Eriophorum vaginatum</i> blanket mire	0.01	0.10	<0.01	0.02
	M19 <i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire	1.12	5.02	1.66	6.76
	M20 <i>Eriophorum vaginatum</i> blanket mire	0.17	1.00	0.10	0.24
	M19 / M20 intermediate	0.19	0.52	0.19	0.61
E2.1 Flush	M6 <i>Carex echinata-Sphagnum fallax / denticulatum</i> mire	0.12	0.40	0.11	0.44
Total (ha)		1.89	8.12	2.6	9.69

8.17 Based on the calculations shown in **Table 8.1** the loss of Annex 1 heath, bog and flush habitats is lower for the proposed development than for the consented development. Habitat loss / disturbance for the proposed development is 1.89 ha and 8.12 ha respectively which compares with loss / disturbance of 2.6 ha and 9.69 ha respectively for the consented development. The reductions in habitat loss / disturbance are primarily due to the relocation of T6 but also due to the avoidance of areas of deeper peat in the revised track alignment. On the basis of the above,

the conclusions of the previous assessment remain unchanged, i.e. habitat loss and disturbance will be greatly outweighed by the gains resulting from the implementation of the HMP.

- 8.18 Following the employment of mitigation measures, the Original ES predicted no significant residual effects in relation to GWDTE. The effects of the proposed development on GWDTE are assessed in **Variation Chapter 10: Hydrology, Hydrogeology and Geology**. The assessment presented in **Variation Chapter 10** concludes that there is little change in the potential impact on GWDTE, with two locations removed from the at-risk list and one location added, when compared with the consented development. It goes on to state that the overall effect has therefore not changed significantly from the consented development and the proposed mitigation measures also remain unchanged.
- 8.19 Following the employment of mitigation measures, the Original ES predicted no significant residual effects in relation to faunal species during construction. The proposed mitigation measures remain unchanged and the proposed changes to the consented development do not affect the previous findings. Therefore, the conclusions of the previous assessment remain unchanged, i.e. there will be no significant residual effects on faunal species during construction.
- 8.20 The Original ES predicted no significant residual effects in relation to bats during wind farm operation. This conclusion was based on the very low levels of bat activity recorded during surveys to inform the original EIA. The proposed changes to the consented development do not affect the previous findings. Therefore, the conclusions of the previous assessment remain unchanged, i.e. there will be no significant residual effects on bats during operation.
- 8.21 The Original ES predicted no significant effects during the decommissioning phase and noted that the need for mitigation would be determined nearer the time, following updated surveys and assessment. The proposed changes to the consented development do not alter the conclusions of the previous assessment, i.e. there will be no significant residual effects during the decommissioning phase.

Conclusions

- 8.22 The proposed changes to the consented development do not affect the conclusions of the previous assessment. The predicted loss and disturbance of Annex 1 heath, bog and flush habitats has been slightly reduced and will still be greatly outweighed by the benefits arising from the implementation of the HMP. There will be no significant residual effects on other habitats or non-avian faunal species resulting from the proposed development.

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