9. ECOLOGY

9.1. Introduction 9-2
9.2. Methodology 9-3
9.3. Baseline Conditions 9-3
9.4. Change in Effects 9-3
9.5. Cumulative Effects 9-5
9.6. Summary 9-5
9.7. Statement of Significance 9-6

9. Ecology

9.1. Introduction

9.1.1. This Chapter does not repeat the information set out in *Chapter 9: Ecology* of the Shepherds' Rig EIA Report (November 2018) where that information remains valid in the context of the reduced number of turbines now proposed as the Revised Development (**AEI Figure 4.1**). As such, the Additional Environmental Information (AEI) supplements Chapter 9 of the EIA Report (November 2018) and should be read in conjunction with it.

9.1.2. In response to the EIA Report (November 2018), no objections were raised by consultees in relation to ecology as detailed in AEI Table 9.1

AEI Table 10.1: Post-Submission Consultation Responses

Organisation	Consultee Comments	Response to Consultee
Scottish Natural Heritage (SNH) 20th March 2019	SNH indicated that they were content with the conclusions in the EIA Report (November 2018) and that there should not be significant ecological effects.	An updated assessment is presented in this chapter of the AEI layout indicates that there are no significant ecological effects.
Marine Scotland Science (MSS) 25th February 2019	Marine Scotland Science welcomed the appointment of an Ecological Clerk of Works (ECoW); the development of a North American signal crayfish Construction Biosecurity Plan (CBP), and the consideration of fish movements in the design of culvert crossings. MSS recommended that the developer establishes an integrated monitoring programme as a means of ensuring proposed mitigation measures are effective in protecting brown trout populations.	An updated assessment is presented in this chapter of the AEI layout indicates that there are no significant ecological effects of aquatic species and habitats. As surface water monitoring measures are detailed in Chapter 13: Hydrology, which includes regular pre-construction and construction phase water monitoring of surface watercourses, these are considered sufficient safeguards to protect brown trout.
Scottish Environment Protection Agency (SEPA) 25th February 2019	Scottish Environment Protection Agency (SEPA) welcomed the development of a North American signal crayfish CBP, but recommended that appropriate mitigation and good practice measures should be implemented to protect sensitive habitats, as well as groundwater dependent terrestrial ecosystems, with such measures facilitated by the Site ECoW.	An updated assessment is presented in this chapter of the AEI layout indicates that there are no significant ecological effects of aquatic species and habitats. SEPA recommended mitigation measures were included as embedded mitigation within in the EIA chapter and remain appropriate in the context of the AEI.

9.1.3. The principles of the EIA Report (November 2018) remain valid and appropriate and have not been reassessed for this AEI, unless otherwise stated.

9.2. Methodology

9.2.1. This section takes into account the legislation, policy and guidance referred to in the EIA Report (November 2018).

9.2.2. The baseline information relied upon in order to make an assessment of the effects of the Revised Development is that information which has been provided in the EIA Report (November 2018). To ensure consistency of approach, the same significance criteria and assessment methodology as referred to in the EIA Report (November 2018) has been followed. Taking into account the relevant policy and guidance, baseline information, and assessment criteria, an assessment is presented below which details the effect of the Revised Development layout, as shown on **AEI Figure 4.1**.

9.2.3. Bat Survey guidelines were updated January 2019[1]; however, surveys were carried out in accordance with the most appropriate guidelines available at the time. The site has low suitably to support bats as well as sufficient robust data sets demonstrating low levels of recorded bat activity. As such, the changes in guidance have no implications on the accuracy and robustness of the assessment carried out within the EIA Report. No comments were received from consultees regarding bats or the survey methods used.

9.3. Baseline Conditions

9.3.1. With no further fieldwork carried out, the baseline remains as described within Section 9.6 of the EIA Report (November 2018).

9.4. Change in Effects

9.4.1. No significant ecological effects on any Important Ecological Features (IEFs) were identified within the EIA Report (November 2018) for the construction, operation on decommissioning of the Proposed Development, either alone or in combination with other developments. As such, ecological effects were determined to be not significant in relation to the EIA Regulations. Embedded mitigation and good practice measures were proposed to further reduce the low magnitude effects during the construction phase and to reduce the likelihood of legal offences.

Construction

9.4.2. Construction effects would be similar to those described within the EIA Report (November 2018). The extent of the wind farm is reduced, which in turn would reduce the scale and magnitude of spatial effects. As such, the effects identified both on IEFs and non-IEFs within the EIA Report (November 2018) remain unchanged, with the exception of habitats. As part of the baseline conditions, no habitats were assessed to be IEFs in the EIA Report. However, to

[1] Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) (2019): *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.*

appropriately inform the AEI, the habitat loss calculations as presented in Table 9.9 of Chapter 9, have been updated for the Revised Development and are presented in AEI Table 9.2.

AEI Table 9.2: Comparison of Habitat Loss between Proposed and Revised Development

Ecological Feature	Evaluation Rationale
Coniferous woodland – plantation (A1.2.2)	A total of 12.6 hectares (ha) of this habitat will be lost as a result of the Revised Development (turbines layout and related infrastructure), which represents 73.9% of the total area of habitat loss. This represents a 34% reduction in Coniferous plantation woodland habitat loss as a result of the Revised Development (compared to 19.0 ha assessed within the 2018 EIA Report).
Felled plantation woodland (J5)	A total of 3.1 ha of this habitat will be lost as a result of the Revised Development (turbines layout and related infrastructure), which represents 18.2% of the total area of habitat loss. This represents a 14% reduction in felled plantation woodland habitat loss (compared to 3.6 ha assessed within the 2018 EIA Report).
Marsh/marshy grassland (B5)	A total of 0.2 ha of this habitat will be lost as a result of the Revised Development (crane hardstanding and access tracks), which represents 1.20% of the total area of habitat loss. This represents an 82% reduction in marshy grassland habitat loss (compared to 1.14 ha assessed within the 2018 EIA Report).
Bare ground (J5)	A total of 0.8 ha of this habitat will be lost as a result of the Revised Development (turbines layout and related infrastructure), which represents 4.7% of the total area of habitat loss. This represents a 38% reduction in bare ground habitat loss (compared to 1.3 ha assessed within the 2018 EIA Report).
Dry heath/acid grassland-dry heath mosaic (D5)	A total of 0.34 ha of this habitat will be lost as a result of the Revised Development (turbines layout and related infrastructure), which represents 2.0% of the total area of habitat loss. This represents a 48% reduction in Dry heath/acid grassland-dry heath mosaic habitat loss (compared to 0.65 ha assessed within the 2018 EIA Report).
Quarry (I2.1)	A total of <0.00 ha of this habitat will be lost as a result of the Revised Development (turbines layout and related infrastructure), which represents <0.00% of the total area of habitat loss, and <0.00% of the total area of the Site. This represents a 99.99% reduction in quarry habitat loss (compared to 0.7 ha assessed within the 2018 EIA Report).

9.4.3. In total, an estimated 17.04 ha of habitats will be directly impacted by the Revised Development, equating to 2.2% of habitats recorded within the Site. Of this overall loss, the majority (73.5%) will consist of coniferous plantation woodland, with the next greatest lost being felled conifer plantation (18.4%).

No further habitat types, beyond those shown in the EIA Report are predicted to be lost.

9.4.4. When comparing the level of habitat loss calculated from the Proposed Development layout presented in the 2018 EIA Report (23.0 ha) with the Revised Development within this AEI (17.1 ha), the difference in habitat represents a 26% reduction. When comparing the loss between habitats, no loss was increased for any habitats; however, magnitude of the reduction varied between from 6% (felled plantation woodland) to 99.99% (Quarry). This reduction will result in a notably lower impact on more sensitive habitats; marshy grassland (82% reduction in loss), and dry heath /acid grassland mosaic (48% reduction in loss).

9.4.5. As such, the magnitude and the significance of potential construction effects on IEFs remain the same as those presented in EIA Report, and the construction phase impact assessment from the EIA Report (November 2018) remains unchanged as a non-significant effect. Although habitats are not IEFs, the magnitude of construction phase impacts has been reduced. Whilst this is not significant in the context of EIA, it does represent a notable benefit to biodiversity for the Revised Development as compared to the Proposed Development detailed in the EIA Report.

Operation

9.4.6. The primary operational effect of the Proposed Development identified within the EIA Report (November 2018) was restricted to accidental mortality or injury to bats in flight, through direct collision with moving turbine blades. Due to the reduction in the number of turbines within the Revised Development (**AEI Figure 4.1**), the magnitude of any operation effect is likely to be marginally reduced.

9.4.7. In light of the above, the operational impact assessment from the EIA Report (November 2018) remains unchanged which identified collision risk as a non-significant effect.

9.5. Cumulative Effects

9.5.1. The cumulative effects identified within the EIA Report (November 2018) would remain unchanged. The predicted in-isolation effects are considered to have no potential to contribute to cumulative effects. As such, the cumulative impact assessment within Section 9.10 the EIA Report (November 2018) remains valid which identified cumulative effects as non-significant.

9.6. Summary

9.6.1. The Revised Development, particularly the reduction in number of turbines from 19to 17and the reduction in land-take and habitat loss (including a notably lesser impact on more sensitive habitats; marshy grassland, and dry heath /acid grassland mosaic) will result in a reduction in the magnitude of effects on ecological receptors overall. The assessment of significance of effects remains unchanged from that outlined within the EIA Report (November 2018)

which concluded that there will be no significant effects in terms of the EIA Regulations.

9.7. Statement of Significance

9.7.1. Effects on ecology associated with the Revised Development are considered to be not significant. This represents no change to the conclusions outlined in the EIA Report (November 2018).