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Introduction

9.1 **Chapter 9** of the Environmental Impact Assessment (EIA) Report assesses the potential impacts of the application layout of the Proposed Development on ornithology.

9.2 This Supplementary Environmental Information (SEI) Chapter evaluates the effects of the revised layout of the Proposed Development on ornithology. It supplements **Chapter 9** of the EIA Report which should be read in conjunction with this chapter and associated EIA **Technical Appendices 9.1 to 9.6**.

9.3 **Confidential SEI TA9.3** (Collision Risk Modelling Update) accompanies this chapter, providing an updated assessment of the potential risk of collision of key ornithological species as a result of the revised layout of the Proposed Development. The technical appendix has been made confidential as it contains confidential ornithology data provided to the Applicant by Vattenfall (collected for the neighbouring Edinbane Repowering Wind Farm) under a confidentiality agreement. The confidential ornithology data is presented on SEI Figures 9.25, 9.2.6 and 9.2.7 within **SEI TA9.2.**

Consultee Responses to EIA Report

9.4 **Table 9-1** includes a summary of the ornithology specific points raised by consultees in relation to the application layout of the Proposed Development and subsequent post submission consultation process, and where these are addressed in this Chapter.

Table 9-1: Consultee Responses

Consultee	Summary of Key Issues	Responses to Comments
NatureScot **12 April 2024**	**White-tailed and golden eagle collision risk** NatureScot was concerned that the collision risk for white-tailed eagle is particularly high compared to most wind energy proposals, which would add significantly to a growing cumulative collision risk at a national level. NatureScot advised that due to issues over viewshed coverage of the Balmeanach Turbines T1 and T2 locations, either another year of vantage point survey work is carried out encompassing all of the proposed turbine locations, or that T1 and T2 are dropped from the proposal. In addition, the cumulative collision risk assessment and population modelling should be updated to reflect the most up to date and available collision risk estimates for all wind farms in NHZ6 including the nearby Glen Ullinish II and Ben Aketil Repowering proposals. NatureScot advised that the recommendations for white-tailed eagle with regards to cumulative collision risk	The issues raised were discussed further in a meeting (08 August 2024) with NatureScot. NatureScot confirmed that any further information that could be provided in relation to the survey data collected in this area would help to give more confidence that the survey coverage of the area surrounding T2 is sufficient to form an accurate estimate of the likely collision risk of key species, including white-tailed eagles and golden eagles, arising from the proposed Balmeanach Wind Farm. Therefore, it was proposed to also consider data from Ben Sca Redesign 2023 surveys and Edinbane Repowering 2023 surveys, in relation to coverage of Balmeanach T1 & T2 locations. It was acknowledged that the viewshed coverage from Ben Sca Redesign VP2 at 12m surface offset does not extend fully to the east and south of T2, although at 40m offset this area is covered, and it was considered unlikely that any eagle flights would have been missed from being recorded during the survey within this very small area, since the flights recorded from

Consultee	Summary of Key Issues	Responses to Comments
	assessment and population modeling should also apply to golden eagle. **Golden eagle habitat loss** In addition, NatureScot recommended that the cumulative assessment of foraging habitat loss is updated to reflect the most up to date development footprints of all proposed wind farms in NHZ6 including the nearby Glen Ullinish II and Ben Aketil Repowering proposals.	VP2 are generally shown to be flying through all height bands. Examination of Edinbane Repowering survey data, obtained by the Applicant from Vattenfall (provided in **SEI TA9.2** as confidential information), showed that in relation to Balmeanach T2, whilst not fully covered at 12m offset, there is only a very small gap in coverage at 20m offset when considering all viewsheds combined, and it is considered unlikely that any eagle flights would have been missed during the survey within this small area. A range of collision risk modelling (CRM) results were presented using a variety of turbine options/ datasets/ periods of analyses. All these points were confirmed in writing in a letter to NatureScot dated 24 September 2024. Figures showing viewsheds and eagle flight data from Edinbane & Balmeanach are provided in **Confidential SEI TA9.2.** A summary of the CRM analyses is provided in this report and in **Confidential SEI TA9.3.** Regarding golden eagle habitat loss, information from the Glen Ullinish II proposal is considered in the Cumulative Effects section. No specific Golden Eagle Terrain (GET) modelling is available for the Ben Aketil Repowering proposal.
NatureScot **17 December 2024**	**White-tailed eagle** NatureScot consider that the applicants have now demonstrated that there is sufficient recent vantage point data covering turbines T1 & T2 if the 2023 data from the Ben Sca Redesign and the 2023 Edinbane Repowering survey data sets are used. This supplements the 2020-2022 data set used for the other turbines. NatureScot advise that removing turbine T1 would be likely to significantly reduce the collision risk from this proposal.	Turbine 1 (T1) has been removed from the Proposed Development layout, as detailed in this SEI Report.
RSPB **15 December 2023**	**White-tailed and golden eagle impact and mitigation** RSPB was concerned that the impacts for white-tailed and golden eagles were underestimated in isolation and cumulatively, and that consequently the	A response was provided to RSPB in a letter dated 27 June 2024. A summary of responses is below. • It is recognised by NatureScot that avoidance rates for use within the Band model are inherently precautionary and this,

Consultee	Summary of Key Issues	Responses to Comments
	amount of mitigation was understated. RSPB requested the submission of the following to review their position: • A revised cumulative assessment for both eagle species to include the recently submitted Ben Aketil repowering and extension and Glen Ullinish II wind farms. • A Population Viability Analysis (PVA) for both eagle species to be undertaken by calculating and presenting both the counterfactual of population growth rate and population size metrics after 10 years of operation, alongside those after 40 years (in a model without density dependence). • Information on Golden Eagle nest locations, which should be requested from the Ben Aketil developer. Furthermore, for the white-tailed eagle, RSPB had the following recommendations: • Reduce the number of turbines, for example T1 and T2 or T3 and T5. • Consider further ways to reduce collision risk, for example, painting a blade black on each turbine to reduce collision risk, and monitor, as per recent research. And for both eagle species to revise the Outline Habitat Management Plan (OHMP) to include actions to provide foraging habitat away from the proposed turbine array.	in effect, means that estimates of collision mortality derived by the Band model will always be overestimates. • In terms of the cumulative assessment of collision mortality for eagles in NHZ 6, this was recently revised as part of the ornithology assessment undertaken for the Ben Sca Redesign Wind Farm application. This assessment has subsequently been superseded by the SEI Report for the revised layout of the Ben Sca Redesign Wind Farm (SLR, 2025). • The PVA undertaken for the impacts of the Proposed Development on white-tailed eagles was undertaken by Natural Research Projects Ltd. (NRP). NRP consider that models based on the counterfactual approach are most relevant to the marine environment and that their models with density dependence use generous values for the carrying capacities, with the value for white-tailed eagles based on an RSPB authored report to SNH (now NatureScot) (Samson *et al*. 2016). Nonetheless, all of the NRP population models include summary data that can be used by others to calculate counterfactual ratios. NatureScot have not objected to the methodology used for the PVA. • To SLR's knowledge, there are no golden eagle breeding locations in the local area, and it was requested that RSPB check the documentation. It was subsequently confirmed by RSPB that the information presented in the EIA Report was correct. • Further information on design changes, mitigation and HMP measures are provided in this chapter.
RSPB **16/08/2024**	RSPB welcomed the additional information provided in response to requests for: • a revised cumulative assessment for both eagle species • a Population Viability Analysis (PVA) for both eagle species using a counterfactual of population growth rate and population size, and • further information on Golden Eagle nest locations. However, RSPB were concerned that the updated cumulative assessment for	With regard to the cumulative assessment, this has been updated again for this SEI Report (Cumulative Effects section). The contribution of Balmeanach and Ben Sca Redesign proposals to the cumulative collision mortality rates for eagles have both decreased, due to design amendments to both schemes. It should be noted that collision mortality calculations are not available for the Edinbane Repowering scheme as the project is still at Scoping. Rates for the operational Edinbane Wind Farm have been used in the meantime.

Consultee	Summary of Key Issues	Responses to Comments
	both eagles increased significantly compared to figures presented in the EIA Report. RSPB had concerns regarding the modelling methods and outputs for Population Viability Analyses (PVA) and suggested that the counterfactual ratios of population size (CPS) and growth rates (CPGR) are calculated and that density dependance should not be used in PVA analyses as the carrying capacity and the effects of density dependence on population growth rates are unknown and it is difficult to measure. RSPB acknowledged that this results in unrealistic predicted population growth, which is shown as much higher than could reasonably be expected. RSPB therefore recommended modelling results without density dependance after 10 years as this would allow outputs to be calculated before the population sizes become unrealistically high. RSPB carried out analyses showing that the PVA without density dependence predicted a much larger reduction of white-tailed and golden eagles over 30 and 40 years respectively. RSPB expressed a concern that there was still not sufficient mitigation for both eagle species and repeated the recommendations from their consultation letter dated 15 December 2023.	It is noted that RSPB provided PVA outputs using methods without density dependence, For the purposes of this report, the model undertaken by NRP (with density dependence) is still used, for the reasons outlined above. Further mitigation and enhancement is proposed, with the Applicant being committed to a range of measures (**SEI TA8.5: OHMP).**

Design Amendments

9.5 As described in **Chapter 2: Site Design** and **Chapter 3: Description of the Development** of this SEI Report, the key design amendments which have been made to the Proposed Development as a result of the consultation and further discussion in relation to ornithology includes:

- removal of Turbine 1 (T1), associated track to T1 and associated foundation and crane hardstanding to reduce predicted collision risk of white-tailed eagles and golden eagles; and
- update to the OHMP.

9.6 The other design amendments would not affect the effects on ornithology so are not considered further.

Revised Figures

9.7 In order to update the graphic information previously issued with the EIA Report, a series of revised figures have been produced for the SEI as follows, which supersede the relevant EIA Figures:

- **SEI Figure 9.1.1**: Site Location and Statutory Designated Sites Within 20km
- **SEI Figure 9.1.2a-b**: Ornithology Survey Areas
- **SEI Figure 9.1.3:** White-Tailed Eagle Flight Lines Year 1
- **SEI Figure 9.1.4**: Other Raptor Flight Lines Year 1
- **SEI Figure 9.1.5**: Golden Eagle Flight Lines Year 1
- **SEI Figure 9.1.6**: Waterfowl and Wader Flight Lines Year 1
- **SEI Figure 9.1.7**: White-Tailed Eagle Flight Lines Year 2
- **SEI Figure 9.1.8**: Hen Harrier Flight Lines Year 2
- **SEI Figure 9.1.9**: Golden Eagle Flight Lines Year 2
- **SEI Figure 9.1.10**: Wader Flight Lines Year 2
- **SEI Figure 9.3.1**: White-Tailed Eagle Flight Lines (Ben Sca Data 2018/19)
- **SEI Figure 9.3.2**: Hen Harrier Flight Lines (Ben Sca Data 2018/19)
- **SEI Figure 9.3.3**: Golden Eagle Flight Lines (Ben Sca Data 2018/19)
- **SEI Figure 9.3.4**: Golden Plover Flight Lines (Ben Sca Data 2018/19)

9.8 The following confidential figures have also been produced to support this chapter:

- **Confidential SEI Figure 9.2.1**: Red-Throated Diver Flight Lines and Record 2020
- **Confidential SEI Figure 9.2.2**: White-Tailed Eagle Data 2020 & 2022
- **Confidential SEI Figure 9.2.3**: Hen Harrier Data 2018 to 2022
- **Confidential SEI Figure 9.2.4**: Raptor Study Group White-Tailed Eagle Data
- **Confidential SEI Figure 9.2.5**: Ornithological Viewshed Coverage T2
- **Confidential SEI Figure 9.2.6**: T2 Flight Lines - Eagles
- **Confidential SEI Figure 9.2.7**: T2 Flight Activity - Other Species

Assessment of Design Amendment Effects

9.9 The following effects considered in the EIA Report have been reassessed as a result of the design amendments.

Collision Risk Effects

9.10 The effects of the removal of T1 from the Proposed Development have been assessed using survey data collected from the 2020 to 2023 as agreed with NatureScot.

9.11 The predicted collision risk results for white-tailed eagle and golden eagle are summarised in **Table 9-2** and **Table 9-3**.

Table 9-2: Eagle Collision Risk for Revised Turbine Layout (using 2020-2022 data)

Species	Dataset/ period of analysis	Turbines covered	Modelled collisions per year
White-tailed eagle (95% avoidance)	Balmeanach (2020-2022)	T1 – T10	1.38
	Balmeanach (2020-2022)	T2 – T10	0.93
	Without T1, reduction of 0.45 collisions per year		-32.6%
Golden eagle (99% avoidance)	Balmeanach (2020-2022)	T1 – T10	0.15
	Balmeanach (2020-2022)	T2 – T10	0.095
	Without T1, reduction of 0.055 collisions per year		-36.67%

Table 9-3: Eagle Collision Risk for T2 (using 2023 Edinbane Data)

Species	Dataset/ period of analysis	Turbines covered	Modelled collisions per year
White-tailed eagle (95% avoidance)	Edinbane (2023)	T2	0.126
Golden eagle (99% avoidance)	Edinbane (2023)	T2	0.024

White-tailed Eagle

9.12 The updated collision risk after the removal of T1 reduces by 32.6% to 0.93, based on the 2020-22 survey data. This is re-iterated by the fact that, when considering the 2023 Ben Sca Redesign data for T1 alone, this had a rate of 0.875 (reported in **EIA Chapter 9**), due to high activity being recorded over the Ben Sca ridge, where eagles use the topography to assist soaring using thermals and updraughts. Therefore, the removal of the turbine from this area is highly likely to reduce the overall risk of collision. Nevertheless, the area as a whole is used by eagles as a commuting route due to the connectivity of important supporting habitats as it links nesting and roosting sites to coastal feeding areas.

9.13 Based on the Edinbane 2023 data, the collision rate of 0.126 for T2 alone is similar to the proportion expected, assuming an equal distribution of flights across the Proposed Development site (i.e. 0.126 is 13.5% of 0.93, the collision rate for all nine turbines). Based on this it is concluded that there is not a high white-tailed eagle collision risk at this turbine.

9.14 Assuming a worst case scenario that the mortality would involve breeding adults, the annual predicted collision mortality rate of 0.93 represents 0.4% of the national breeding population (244 adults in 2017[1]), 1.2% of the NHZ 6 population (78 adults), and 1.9% of the local Skye population (50 adults). Background annual mortality is 6.4% for adults (>3 years old) (Green *et al.,* 1996) (which amounts to 3.2 birds on Skye), the loss of an extra 0.93 individuals yields annual mortality of 4.13, representing a 29% increase in adult mortality. However, the background annual mortality for birds younger than three years of

[1] This was the reference population used in the EIA Report. In 2022 there was a total of 134 home ranges occupied, assumed equivalent to 268 adults (Challis, A., Beckmann, B.C., Wilson, M.W., Eaton, M.A., Stevenson, A., Stirling-Aird, P., Thornton, M. & Wilkinson, N.I. (2023). Scottish Raptor Monitoring Scheme Report 2021 & 2022. BTO Scotland, Stirling.

age is high (60.5%), therefore it is reasonable to suggest that the additional mortality of birds <3 years old would not be significant.

9.15 A total of two fatalities of white-tailed eagles have occurred within the 15 year operational life of the adjacent Edinbane Wind Farm since 2010. Since the submission of the EIA Report, a second white-tailed eagle turbine collision has been recorded in spring 2023. Previously one was killed at Edinbane in May 2016.

9.16 Population modelling undertaken by Natural Research Projects (NRP) for the application (**EIA Technical Appendix (TA) 4.4**) concluded that "*the overall effect of the levels of additional wind farm mortality modelled in this case is to reduce the year at which the population reach their carrying capacities. There is no threat to the integrity of the white-tailed eagle populations at even the highest rate of modelled mortality*".

9.17 Based on the prediction of a reduction of collision mortality arising from the revised layout of the Proposed Development, the conclusion of the **EIA Chapter 9** of no significant effects for white-tailed eagle for the NHZ and national populations is unchanged with the following caveat.

9.18 It is acknowledged that in 2022 breeding productivity in Scotland was significantly affected by Highly Pathogenic Avian Influenza (HPAI)[2]. This appears to have most significantly impacted on eagles breeding in coastal areas where eagles preyed on or scavenged infected seabirds and waterfowl. As NatureScot point out, this may require a review of the assumptions made in population modelling, and it is understood that further work is being commissioned by NatureScot to understand the implications.

Golden Eagle

9.19 The updated collision risk after the removal of T1 reduces by 36.67% to 0.095, using the 2020-22 data. This would result in the potential loss of four golden eagles over the lifetime of the Proposed Development (assumed to be 40 years).

9.20 For T2 alone, using the Edinbane 2023 data produced a collision rate of 0.024 (25.2% of the collision rate for all nine turbines, but still a very low rate).

9.21 Based on the above, and considering the information presented in **EIA Chapter 9**, it can be concluded that collision risk would be low for this species in the context of the Proposed Development. On this basis, this is not considered significant at the NHZ level. If operational displacement occurs as predicted, collision risk is likely to be lower than the numbers presented.

Other Species

9.22 Collision risk calculations have also been updated for hen harrier and golden plover, with results as follows:

- Hen harrier: reduction from 0.0352 to 0.0317. As collision risk has reduced by 0.0035 (9.9%), the conclusions of **EIA Chapter 9** are unchanged, i.e. collision impacts remain not significant for hen harrier.

[2] https://www.nature.scot/doc/naturescot-research-report-1331-analysis-scottish-raptor-monitoring-scheme-data-improve

- Golden plover: reduction from 1.7474 to 1.4298. As collision risk has reduced by 0.3176 (18.2%), the conclusions of **EIA Chapter 9** are unchanged, i.e. collision impacts remain not significant for golden plover.

Amendments to Outline Habitat Management Plan

9.23 As stated in **SEI TA8.5**, a total of 293.47ha of blanket bog habitat on the wind farm site, adjacent to the infrastructure, and to the southeast of the proposed turbine envelope was identified as having potential for restoration, increasing the total peatland restoration area to provide a restoration ratio in line with NatureScot guidance of 1:10

9.24 In addition, 19.15ha of shallow peatland habitat, wet heath, will be included in the restoration measures to compensate for the loss of 6.87ha of heath habitat and provide additional peatland enhancement. The wet heath links blanket bog habitats on the steeper slopes, providing continuous restoration across the landscape to prevent further erosion.

9.25 The Golden Eagle Terrain (GET) model run for the application layout plus 300m buffer (an area of 275ha) identified only 15ha of preferred eagle habitat (GET score 6+). It was concluded that any habitat loss and displacement impact on golden eagle would be negligible.

9.26 The 293.47ha of peatland restoration includes an open corridor from Beinn Bheag up to Ben Aketil and Ben Sca hill tops, which would lie in between the three proposed wind farms (Balmeanach, Ben Sca Redesign and Ben Aketil Repowering and Extension) (**SEI Figure 8.5.1**). The 293.47ha area includes 113ha which is >500m from any turbines (including existing adjacent wind farms), providing enhanced foraging for eagles in areas away from the turbines and extends foraging areas for eagles that were previously unavailable due to the conifer plantation. In particular the restoration area southwest of Ben Aketil summit has the potential to offer a foraging area undisturbed by turbines. In addition, the area of forest to bog restoration west of Mullach Ben Sca has the potential to provide an increase in the foraging area in the medium to long term.

9.27 The area of restoration between the Ben Sca ridge and the forest has the potential to improve foraging and breeding habitat for other moorland species, such as golden plover.

9.28 Mitigation for collision mortality impacts is outlined in **SEI TA8.5.** In summary there are commitments to the following measures:

- Carrion removal - a livestock carcass search project which is measurable and achievable, via a suitable plan to regularly identify and remove fallen stock during the lifetime of the wind farm.
- Collaboration with other renewable energy developers to ensure that a joined-up approach to wider habitat management for eagles is promoted on Skye. This will include funding for an eagle research programme to cover an agreed wider area and consider suitable mitigation strategies.

9.29 A post-consent monitoring programme will be established for the wind farm, involving:

- Collision monitoring;
- Flight activity surveys; and
- Breeding raptor surveys.

Cumulative Development Update

Cumulative Baseline

9.30 Since the submission of the application the following updates have been made to the cumulative situation and datasets available for use:

- Ben Sca Redesign SEI – amended collision risk modelling. Supersedes Ben Sca & Extension consented development.
- Ben Aketil Repowering and Extension - collision risk modelling. Supersedes Ben Aketil operational scheme.
- Beinn Mheadhonach Redesign – EIA Report. Amended collision risk modelling data supersedes that provided for the consented scheme.
- Glen Ullinish II – GET modelling, collision risk modelling and eagle population modelling. Supersedes Glen Ullinish consented scheme.
- Edinbane Repowering – scoping report. Collision risk modelling data only available for consented scheme. This is used by default until further information is available.

9.31 The sites identified at screening or scoping stage in **Table 5-1** (**SEI Chapter 5**) are not included in the cumulative assessment as there is no ornithology data or assessment available for inclusion.

Cumulative Effects

9.32 The combined effects which would result should the Proposed Development be constructed alongside the proposed Ben Sca Redesign Wind Farm, are discussed in full in **Volume 5** of this SEI Report.

9.33 The ornithology cumulative assessment presented in **EIA Chapter 9** for NHZ 6 has been reviewed and an update provided below.

Cumulative Loss of Habitat for Sub-Adult Golden Eagles

Information from Glen Ullinish II

9.34 In addition to the GET model for Balmeanach Wind Farm (**TA9.5** of the **Balmeanach EIA Report**) GET modelling has also been undertaken for the proposed Glen Ullinish II Wind Farm[3], which would be located to the east of the Proposed Development and Edinbane. This concluded that:

"Potentially, the loss of good eagle habitat arising from the construction and operation of the Proposed Development will result in a minor loss of Golden Eagle habitat which is unlikely to have a substantial negative impact on the productivity or viability of the nearest Golden Eagle ranges.

It is also unlikely that construction of the Proposed Development would lead to a substantial loss of habitat used by dispersing golden eagles."

[3] EIA TA9.5 An analysis of potential Golden Eagle habitat loss using the GET Model (Fielding, 2023).

9.35 Outputs from the GET model were used as a key constraint throughout the design process for the Proposed Development. Areas of less suitable habitat were targeted for turbine development to minimise the loss of golden eagle habitat. The immediate vicinity of the Proposed Development has relatively little good golden eagle habitat, except to the south, which was deemed not suitable for development relatively early in the design process because of the extent of good golden eagle habitat.

9.36 In terms of loss of habitat used by dispersing golden eagles, the area of good eagle habitat within 10km of the proposed Glen Ullinish II Wind Farm was assessed as ~14,000ha, with a total of more than 53,000ha of open eagle habitat within a 20km buffer. It states that "*the exclusion zone around the Proposed Development would result in a less than 1% loss of this open GET 6+ habitat (346ha from 53,000ha). Because dispersing golden eagles cover enormous areas, assessing loss at the scale of an individual's dispersal area would also lead to an inevitable trivial loss estimate*."

Conclusion

9.37 Based on the GET modelling undertaken for the Proposed Development and Glen Ullinish II, the amount of good eagle habitat (i.e. with a GET score of 6-10) that would be lost to these developments (c.15ha and 346ha respectively) is less than 1% of that available (>53,000 ha) to dispersing eagles within a 20km buffer. This is considered to be not significant in the context of the NHZ.

9.38 In addition, it is worth noting that habitat loss arising from the Proposed Development will overlap with areas of existing habitat loss from Ben Aketil and Edinbane Wind Farms plus an area of forestry.

9.39 All the other developments under consideration for the cumulative assessment for NHZ 6 lie within a 20km buffer of Glen Ullinish II, where there is a very large amount of good eagle habitat as described above. Although the precise amount of eagle foraging habitat that will be lost to the developments is difficult to quantify, the additional potential area of habitat loss is considered highly unlikely to have a significant cumulative impact.

9.40 The conclusion in **EIA Chapter 9** of no significant cumulative effect in relation to loss of habitat for sub-adult/ dispersing golden eagles remains unchanged.

Cumulative Collision Mortality for Eagles, NHZ6

9.41 The predicted cumulative collision rates for all relevant developments within NHZ 6 (Western Seaboard) is presented in **Table 9-4**.

Table 9-4: Updated Annual Cumulative Eagle Mortality for NHZ 6: Western Seaboard

Project	White-tailed eagle	Golden eagle
Balmeanach	0.93	0.095
Ben Sca Redesign	2.687	0.0834
Ben Aketil Repowering & Extension	0.512	0.129
Edinbane*	0.06	0.277
Glen Ullinish II	3.3	0.39
Beinn Mheadhonach	0.22	0.045
Total	**7.709**	**1.0194**

*Notes:

Edinbane: Collision risk modelling data only available for consented scheme. This used by default until further information is available.

Project	White-tailed eagle	Golden eagle
Edinbane: The predicted rate of 0.06 for white-tailed eagle compares with two actual fatalities in 15 years (an observed rate of 0.13). Edinbane: The predicted rate of 0.277 for golden eagle compares with an observed rate of zero.		

9.42 The predicted cumulative collision rates for eagles in NHZ 6 have increased from 3.4 to 7.7 for white-tailed eagle and from 0.8 to 1.02 for golden eagle when compared to the numbers reported in **EIA Chapter 9**. This is due to the updated information now being available for Ben Sca Redesign, Ben Aketil Repowering and Extension and Glen Ullinish II, all of which are projects at application stage and currently under consideration.

White-tailed eagle

9.43 The Population Viability Analysis (PVA) undertaken for Balmeanach Wind Farm (**EIA Report TA9.6**) and Glen Ullinish II Wind Farm (refer to Glen Ullinish II EIA Report Appendix 9.3, Muirhall Energy 2023) concluded that the overall effect of the levels of additional wind farm collision mortality modelled in this case is to reduce the year at which the population reach their carrying capacities. There is no threat to the integrity of the white-tailed eagle populations at even the highest rate of modelled mortality. Using the updated cumulative number of 7.7 the population modelling gave the following results.

9.44 The assumed NHZ 6 starting population in year 0 of the model simulation is 120 sub-adults and 78 adults. The cumulative predicted mortality of 7.8 represents 6.4% of the sub adult population, 9.9% of the adult population, and 3.9% of the entire population.

9.45 The assumed Skye population in year 0 of the model is 50 sub-adults and 50 adults. The cumulative predicted mortality of 7.7 represents 15.4% of each of the sub-adult and adult population, and 7.7% of the entire population. Note that the PVA results indicate that "*the most extreme, and ecologically unrealistic, modelled scenario was 10% adult mortality, equivalent to killing approximately 17 adults (both sexes) per year. Even this extreme scenario predicts a median year 30 population of 38 pairs, which is considerably larger than the maximum population of 30 pairs for Skye estimated by Sansom et al. (2016). The minimum modelled year 30 population was 25 pairs, which is the same as the current population.*"

9.46 For NHZ 6, with a carrying capacity of 80 pairs, the predicted impact on the white-tailed eagle population of 5% mortality, with density dependence, results in a population of 73.3 pairs after 30 years, compared with 81.4 pairs with 0% mortality. This is not considered significant, as the population will be at 91.25% of carrying capacity.

9.47 For Skye, with a carrying capacity of 40 pairs, the predicted impact on the white-tailed eagle population of 10% mortality, with density dependence, results in a population of 36.2 pairs after 30 years, compared with 40.5 pairs with 0% mortality. This is not considered significant, as the population will be at 90.5% of carrying capacity.

Golden eagle

9.48 PVA analysis of golden eagle produced for the proposed Glen Ullinish II Wind Farm (refer to Glen Ullinish II EIA Report Appendix 9.4, Muirhall Energy 2023) modelled the potential impacts of additional collision mortality modelled at two scales: NHZ 6 and Skye. Models were run with and without density dependence and with three age class mortality scenarios.

9.49 The assumed NHZ 6 starting population in year 0 of the model simulation is 222 birds of all ages (74 breeding pairs). The cumulative predicted mortality of 1.02 represents 0.46% of the entire population. The assumed Skye population in year 0 of the model is 88 birds

of all ages. The cumulative predicted mortality of 1.02 represents 1.16% of the entire population.

9.50 The most realistic scenario is that any mortality will affect both adults and sub-adults. The modelling presented for Glen Ullinish II gave the following results:

- For NHZ 6, with a carrying capacity of 118 pairs, the predicted impact on the golden eagle population of 0.5% mortality, with density dependence, results in a population of 116 pairs after 40 years, compared with 117.1 pairs with 0% mortality. This is not considered significant, as the population will be at 99.1% of carrying capacity.
- For Skye, with a carrying capacity of 48 pairs, the predicted impact on the golden eagle population of 1.5% mortality, with density dependence, this results in a population of 47.6 pairs after 40 years, compared with 48.5 pairs with 0% mortality. This is not considered significant, as the population will be at 98.1% of carrying capacity.

Cumulative Collision Mortality for Hen Harrier and Golden Plover, NHZ 6

9.51 The predicted cumulative collision rates for all relevant developments within NHZ 6 (Western Seaboard) is presented in **Table 9-5**.

Table 9-5: Updated Annual Cumulative Mortality for Hen Harrier and Golden Plover: NHZ 6

Project	Hen harrier	Golden plover
Balmeanach	0.0317	1.4298
Ben Sca Redesign	0	0.3322
Ben Aketil Repowering & Extension	0	0
Edinbane*	0.049	0
Glen Ullinish II	0.111	0.755
Beinn Mheadhonach	0	0
Total	**0.1917**	**2.517**

*Notes:

Edinbane: Collision risk modelling data only available for consented scheme. This used by default until further information is available.

Hen harrier

9.52 The updated cumulative mortality for hen harrier in NHZ6 has decreased from 0.29 in **EIA Chapter 9,** to 0.19. The conclusion of the EIA of no significant effect on the conservation status of hen harrier in the NHZ therefore remains unchanged.

Golden plover

9.53 The updated cumulative mortality for golden plover in NHZ6 has increased from 2.08 in **EIA Chapter 9,** to 2.5. This is predominantly due to the inclusion of Glen Ullinish II in the updated assessment. Whereas the consented Glen Ullinish project predicted zero mortality, Glen Ullinish II is predicting 0.755.

9.54 Assuming worst case scenario that all mortality would affect breeding adult golden plover, in the context of background annual mortality of 27% (BTO Birdfacts), (which amounts to 867 birds in the context of the NHZ 6 population of 3,212 birds), the additional annual

mortality of 2.517 birds is not considered significant for golden plover (i.e. an increase of 0.3% on background adult mortality).

9.55 The conclusion of the EIA of no significant effect on the conservation status of golden plover in the NHZ therefore remains unchanged.

Summary of Changes to the Significance of Effects

9.56 There are no changes to any of the significance of effects predicted for ornithology in **EIA Chapter 9**.

Conclusions

9.57 Due to design amendments, the collision rates for eagles, hen harrier and golden plover for the Proposed Development have all decreased from the application layout. Cumulative collision rates for white-tailed eagle are potentially high, but population modelling indicates that impacts on the NHZ and Skye populations will not be significant. Habitat loss impacts for dispersing golden eagles are predicted to be not significant, both for the Proposed Development alone and cumulatively. When considered along with the mitigation and proposed habitat enhancement measures there are no significant effects predicted for ornithology.