ScottishPower Renewables

Euchanhead Renewable Energy Development

Additional Environmental Information
Chapter 8: Ecology

November 2025

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Abbreviations

AEI	Additional Environmental Information
CEMP	Construction Environmental Management Plan
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
FWPM	Fresh Water Pearl Mussel (Margaritifera margaritifera)
GFT	Galloway Fisheries Trust
HMP	Habitat Management Plan
LWS	Local Wildlife Sites
NDSFB	Nith District Salmon Fisheries Board
PMP	Peat Management Plan
SEPA	Scottish Environment Protection Agency

8. Ecology

8.1. Introduction

SLR Consulting has been commissioned by the Applicant to undertake an update of the ecology assessment contained within the 2020 Euchanhead Renewable Energy Development Environmental Impact Assessment (EIA) Report. An updated assessment for ornithology is presented separately in **Chapter 9** of this Additional Environmental Information (AEI) report.

This updated ecology assessment addresses the following changes since the Euchanhead Renewable Energy Development Section 36 (S36) application was made in 2020:

- The removal of Turbines No.20 and No.21;
- The reduction in turbine blade tip height of Turbines No.9, No.10, No.11. No.18 and No.19, from 230m to 200m; and
- The updated cumulative situation in the surrounding area.

This AEI Chapter supplements **Chapter 8: Ecology** of the 2020 Euchanhead Renewable Energy Development EIA Report (from herein referred to as the 'EIA Report').

The assessment methodology employed in this AEI remains the same as that set out in EIA Report **Chapter 8: Ecology**.

The following key documents should be read in conjunction with this AEI chapter:

- EIA Report Volume 2 – **Chapter 8: Ecology**;
- EIA Report Volume 3d – **Figures 8.1** to **8.7**; and
- EIA Report Volume 4a – Technical Appendices 8.2 to 8.10.

8.1.1. Superseded EIA Report Documents

The following document from the EIA Report:

- **Technical Appendix 8.1: Ecology Desk Study Report**.

Has been superseded by the following:

- **AEI Technical Appendix 8.1: Ecology Desk Study Report**.

8.2. Consultee Responses to 2020 Application

All consultation with statutory consultees regarding ecology, that was received prior to the 2020 S36 application being submitted, is outlined in the EIA Report **Chapter 8: Ecology**.

Table 8:1 summarises the relevant consultee responses to the 2020 S36 application.

Table 8:1- 2020 S36 Application Consultee Responses

Consultee	Summary of Key Issues	Response to Comments
Scottish Environment Protection Agency (SEPA) Response Date: 29 April 2022	A fish monitoring plan, including pre-construction, during construction, and post-construction surveys, should be agreed upon with relevant stakeholders.	The Applicant is willing to accept a planning condition covering the production and agreement of a fish monitoring plan, prior to construction commencing, see Section 8.7.2 and **Technical Appendix 3.1** of the EIA Report. The Applicant is also happy for SEPA to be added to the bodies to be consulted on the fish monitoring plan (in addition to NDSFB, GFT and NatureScot), if required.
Scottish Forestry Response Date: 26 November 2020	Scottish Forestry oppose the wholesale removal of woodlands, and have advised the applicant keyholing is the only permitted option. Compensatory planting will also be required when trees are removed. Formal felling approval will also be required. In relation to compensatory planting, productivity capacity should not be reduced.	Noted.
NatureScot Response Date: 16 February 2021	**Ecology & Biodiversity** NatureScot is broadly content with the various survey methods and assessment presented in Chapter 8 for protected mammals and fish. Provided the mitigation measures presented in Section 8.7.2 are in place, NatureScot believe that the development will not have any adverse impacts on protected species. In particular, a suitable Species Protection Plan and Construction Environmental Management Plan should be in place and an Ecological Clerk of Works should be appointed to oversee the works. **Bats** NatureScot agree with Section 8.7.1 Embedded mitigation – ensuring a minimum 50 m buffer between wind turbine blade tips and the closest forest edge (at its nearest point) and the precautionary measures which would be in place if the maternity roost in confirmed to prevent disturbance to the soprano pipistrelle maternity roost in The Bothy. A licensed bat worker reporting to the ECoW should monitor this.	**Ecology & Biodiversity** A suitable species protection plan and CEMP would be in place, and a suitably qualified Ecological Clerk of Works (ECoW) would be appointed to oversee the work prior to construction. Please see **Chapter 8: Ecology** of the EIA Report. **Bats** Suitable mitigation will be included and buffers have been applied to infrastructure, see Section 8.1 and **Technical Appendix 8.10** of the EIA Report.

Consultee	Summary of Key Issues	Response to Comments
Galloway Fisheries Trust (GFT) Response Date: 5 January 2021	GFT generally agrees with the mitigation measures outlined by the Applicant with regards to protection of fish species and has also specified that a pre-construction survey should be undertaken for non-native species.	Suitable good practice measures, a suitable fish monitoring plan and CEMP would be in place, and a suitably qualified ECoW would be appointed to oversee the work prior to construction, see Section 8.7.2 and **Technical Appendix 3.1** of the EIA Report.
Nith District Salmon Fishery Board (NDSFB) Response Date: 12 December 2020	NDSFB stated that it has been appraised about the Euchanhead proposals from a very early stage and has worked extensively with ScottishPower Renewables consultants, SLR Consulting Limited for some time now on this project. NDSFB has no concerns with the contents of the EIA as they relate to the aquatic environment within their area of jurisdiction and accordingly has no objections.	No response required.

8.3. Design Amendments

The amendments to the 2020 S36 application Site Layout are detailed in **AEI Chapter 2: Site Description and Design Evolution**. The key amendments with regards to ecology are:

- The removal of Turbines No.20 and No.21, as well as the access tracks associated with these turbines; and
- The reduction in turbine blade tip height of Turbines No.9, No.10, No.11. No.18 and No.19, from 230m to 200m.

These design amendments have not been made as a result of feedback from consultees regarding the assessment presented in EIA Report **Chapter 8: Ecology**.

8.4. Changes to Baseline Conditions

Habitats

A desk-based assessment using aerial imagery to compare habitats between 2020 (see **AEI Figure 8.8**) and, the most recent data available, 2023 (see **AEI Figure 8.9**) was undertaken. The only changes across the site since 2020 are in relation to the active forestry, which includes areas of felled woodland and regrowth. This can be seen most notably to the north eastern, central and south eastern areas of site. No changes were noted to any important habitats identified in the EIA report.

The 2020 habitat maps (**Figure 8.2.1**, **Figure 8.2.2** of the EIA report) have not been updated to reflect these changes as the only changes relate to areas mapped as coniferous plantation or recently felled plantation, both of which were identified as having less than local value in the EIA Report.

Fauna

An updated desk study has been undertaken and is appended to this report (see **AEI Technical Appendix 8.1**). The desk study did not indicate any significant change in baseline findings from the previous desk study undertaken to inform the EIA Report, such as protected species not previously recorded.

8.5. Assessment of Design Amendment Effects

The methodology of the ecological impact assessment is described in full in **Chapter 8: Ecology** of the EIA Report and has been replicated, where relevant, to assess the ecological impacts of the design amendments.

The assessment presented in the EIA Report considered effects during construction and operation, including: permanent and temporary habitat loss/ change, disturbance to fauna, pollution effects and collision (bats only). The assessment in the EIA Report focused on important ecological receptors (i.e. those with a value of Local level or above, potential GWDTEs or legally protected species, for which there was potential for significant effects). These comprised:

- non-statutory designated sites (Glenmaddie Wood Local Wildlife Site (LWS), Afton Uplands Provisional LWS and Galloway and Southern Ayrshire Biosphere reserve);

- blanket bog, wet modified bog, dry modified bog, wet heath, dry heath, marshy grassland (M25), calcareous grassland, flushes and springs;
- watercourses with good or above fish habitat; and
- otter, pine marten, water vole, red squirrel, reptiles, bats, fresh water pearl mussel (FWPM) and fish.

The EIA Report concluded no significant impacts were anticipated for any habitats with the exception of M18 Blanket bog, where predicted losses (direct and indirect) to a regionally important habitat would result in a significant negative effect due to the potential loss of up to a quarter of the only area of this habitat on the Site.

A Habitat Management Plan (HMP) was proposed to be produced, which would detail measures to compensate for the significant loss of 0.19 ha of M18 blanket bog and the non-significant loss of just under 13 ha of other peatland habitats associated with the proposed Development and provide additional biodiversity enhancement. A Draft HMP is provided in **Technical Appendix 8.8** of the EIA Report. The Draft HMP outlines proposals for the restoration of bog habitat within an area of 23 ha of peatland currently situated beneath coniferous plantation forestry.

Following the employment of a range of mitigation measures, including pre-construction surveys, the employment of an ECoW, 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. The EIA Report proposed the details of construction mitigation measures would be provided in a Construction Environmental Management Plan (CEMP). An Outline CEMP is included as **Technical Appendix 3.1** of the EIA Report.

The design amendments are limited to the removal of two turbines, associated tracks leading to these turbines and the reduction of five turbine heights and no other changes to the proposed Development layout have been made. The design amendments will either have no effect or will slightly reduce the magnitude of most ecological impacts identified in the EIA Report as the footprint of the proposed Development has been reduced. An updated assessment of habitat loss for the revised scheme is presented below. For all other receptors and impact pathways identified in the EIA Report, no significant changes to the assessments presented in the EIA Report for disturbance to fauna, pollution effects and collision (bats) are likely, and the previous assessments are considered to remain valid. Mitigation and compensation proposals also remain unchanged from those presented in the EIA Report, including those within the Draft HMP (**Technical Appendix 8.8** of the EIA Report) and Outline CEMP (**Technical Appendix 3.1** of the EIA Report). The updated assessment below is therefore limited to consideration of habitat loss during construction.

8.5.1. Construction Effects

Habitats

EIA Report **Chapter 2: Site Description and Design Evolution** includes proposed dimensions of all permanent and temporary features of the proposed Development and Section 8.3 of this AEI chapter describes the amendments to the design. Permanent features of the

proposed Development consist of turbines, crane pads, access tracks and substation compound. Temporary features of the proposed Development consist of the construction compound and borrow pit(s).

Habitat loss figures presented in the EIA Report have been updated to reflect the amendments to the scheme. To allow direct comparison, impacts relating to habitat loss are categorised using the same approach followed in the EIA Report, using the same habitat mapping provided in the EIA Report, as follows:

- direct habitat loss: this includes habitats present under the footprint of the proposed Development, including access tracks, turbine bases, crane pads, substation compounds and borrow pits.
- indirect habitat loss: indirect loss has been calculated for peatland habitats which lie within 10m of the direct habitat loss areas; the allowance of 10m is to allow for drying effects and vegetation changes due to construction works. For other habitats an allowance of temporary loss of 5m is included to allow for possible temporary loss due to damage during construction.

Habitat loss calculations, for all habitats of local or greater value, based on the proposed Development layout originally proposed, are detailed in Table 8.8 of the EIA Report. The design amendments would result in a reduction of overall habitat loss. **Table 8:2** below shows the changes in direct and indirect loss, where they have changed from the initial assessment, for all habitat types. Where appropriate, it also includes an updated assessment of the significance of effects. All habitat types unaffected by the design amendments are excluded from **Table 8:2** below and the assessment provided in Table 8.8 of the EIA Report remains unchanged.

Table 8:2– Changes to Habitat Loss Resulting from the Proposed Design Amendments

Community or Habitat Code	Community or Habitat Name	Conservation Status	Value	Area (ha)	Total Direct Change to Habitat Loss(ha)[1]	Total Indirect Change to Habitat Loss (ha)	Total Change to Habitat Loss (ha)	Total Remaining Loss (ha)	Assessment (2020)	Updated Assessment (2025)
A1.2.2	**Coniferous Woodland Plantation (including newly planted Coniferous Woodland Plantation)**	None	**Less than Local value**	**1489.10**	**0**	**0**	**0**	Not included in EIA Report habitat loss calculation.	Not assessed due to less than local value.	Not assessed due to less than local value.
A4.2	**Recently-felled Coniferous Woodland**	None	**Less than Local value**	**515.75**	**-1.01**	**-2.12**	**-3.13**	Not included in EIA Report habitat loss calculation.	Not assessed due to less than local value.	Not assessed due to less than local value.
B1.1	**Unimproved Acid Grassland**	LBAP	**Less than Local value**	**266.05**	**-0.87**	**-1.59**	**-2.46**	Not included in EIA Report habitat loss calculation.	Not assessed due to less than local value.	Not assessed due to less than local value.
U5	Nardus stricta-Galium saxatile grassland	SBL, Not Annex 1 except where species rich U5c. U5c is H6230:	**Less than Local value**	105.80	-0.24	-0.21	-0.45	Not included in EIA Report habitat loss calculation.	Not assessed due to less than local value.	Not assessed due to less than local value.

[1] *Values of 0 indicate that the habitat is present within the footprint of the amendments but are of less than 0.01 ha.*

Community or Habitat Code	Community or Habitat Name	Conservation Status	Value	Area (ha)	Total Direct Change to Habitat Loss(ha)[1]	Total Indirect Change to Habitat Loss (ha)	Total Change to Habitat Loss (ha)	Total Remaining Loss (ha)	Assessment (2020)	Updated Assessment (2025)
		Species-rich Nardus grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe) * (U5c was recorded near flushed areas)								
U6	Juncus squarrosus-Festuca ovina grassland community	SBL, Not Annex 1	**Less than Local value**	55.70	-0.63	-1.38	-2.01	Not included in EIA Report habitat loss calculation.	Not assessed due to less than local value.	Not assessed due to less than local value.
E1.6.1	**Blanket Bog**	LBAP		**116.33**	**-0.02**	**-0.12**	**-0.14**	**9.65**	Assessed by NVC community (below)	Assessed by NVC community (below)
M17	Scirpus cespitosus – Eriophorum vaginatum blanket mire community	H7130 – Blanket Bog	Local value	16.69	-0.02	-0.12	-0.14	2.88	This habitat is frequent on the Site and in the wider area,	Previous Assessment Unchanged

Community or Habitat Code	Community or Habitat Name	Conservation Status	Value	Area (ha)	Total Direct Change to Habitat Loss(ha)[1]	Total Indirect Change to Habitat Loss (ha)	Total Change to Habitat Loss (ha)	Total Remaining Loss (ha)	Assessment (2020)	Updated Assessment (2025)
									loss is small compared to the extent onsite and is considered low and not significant.	
E1.8	**Dry modified bog**	Only SBL or Annex 1 where associated with blanket bog.		**31.19**	**-0.23**	**-0.83**	**-1.06**	**0.38**	Assessed by NVC community (below)	Assessed by NVC community (below)
M20	Eriophorum vaginatum blanket & raised mire	LBAP, SBL & Annex 1.	Local value	21.32	-0.23	-0.831	-1.06	0	Loss is small in extent and is considered low and not significant.	Previous Assessment Unchanged

The EIA Report concluded no significant impacts were anticipated for any habitats with the exception of M18 Blanket bog, where predicted losses (direct and indirect) to a regionally important habitat would result in a significant negative effect due to the potential loss of up to a quarter of the only area of this habitat on the Site.

The results of the reduction of infrastructure on site will have a small positive outcome for other habitat types, including locally important blanket bog and dry modified bog (see **Table 8:2** above). Losses of these habitat types were not considered to be significant in the EIA Report and the changes highlighted in **Table 8:2** do not change the original assessment.

All other changes to the habitat loss figures relate to habitats of less than local value, which were scoped out of detailed assessment in the EIA Report.

Compensation for Loss of Peatland Habitats

As highlighted previously, compensation for the significant loss of M18 blanket bog and the non-significant loss of other bog habitats, and additional biodiversity enhancement, will be provided by the measures outlined in the Draft HMP (**Technical Appendix 8.8** of the EIA Report). The Draft HMP outlines proposals for the restoration of bog habitat within an area of 23 ha of peatland currently situated beneath coniferous plantation forestry.

Since the submission of the EIA Report in 2020, new guidance relating to peatland habitats has been published by NatureScot (NatureScot, 2023). The new guidance indicates a compensation ratio of approximately 1:10 for peatland habitat lost to peatland habitat restored, plus an additional 10% to provide enhancement. However, in this case it is argued that the new guidance should not apply, as it was not in place at the time the original application was made. Furthermore, without the lengthy delays in receiving specific consultation responses, it is unlikely to have been in place at the time the application should have been determined.

It is noted that in its original consultation letter dated 16 Feb 2021 (Ref: CDM161148), NatureScot stated:

"Given the size of the proposed development and the relatively small impact on nationally important 'carbon rich soil, deep peat and priority peatland habitat', NatureScot would not object to this application on National Interest grounds of peat and peatland."

8.6. Cumulative Assessment

Chapter 8: Ecology of the EIA Report details the results of the cumulative assessment undertaken at that time. Since the time of submission, the following updates have been identified to the other developments included in Table 8.9 of the EIA Report. These include changes to the status of projects included in the original cumulative assessment, e.g. projects previously listed as 'In Planning' now having been 'Consented', and the addition of new proposed projects. An updated table of cumulative sites is provided in **Table 8:3**.

Table 8:3: *Cumulative Renewable Energy Developments (Under Construction, Consented or in Planning) Within 10km of the Site (1st June 2025)*

Name	Status (in 2020 EIA Report)	Status (1 June 2025)	Distance (nearest turbine)
Sanquhar II	In Planning	Consented	Adjacent
Lorg	Consented	Consented	Adjacent
Manquhill	Not included	Consented	3.6km
Cornharrow	In Planning	Consented	4.3km
Pencloe	Consented	Under Construction	5.3km
Shepherds Rig	In Planning	Consented	7.6km
Troston Loch	Not included	Consented	8.7km
Glenmuckloch	Consented	Consented	9.0km
Enoch Hill	Not included	Under Construction	9.4km
Lethans + Extension	Consented + Not included	Consented	9.4km
Windy Standard 3	In Planning	Consented	9.9km
Lorg (2022)	Not included	In Planning	Adjacent
Appin	Not included	In Planning	Adjacent
Sandy Knowe Extension	Not included	In Planning	3.8km
Herds Hill	Not included	In Planning	3.9km
Windy Standard 1 Repowering	Not included	In Planning	4.3km
Cloud Hill	Not included	In Planning	4.4km
Rowancraig	Not included	In Planning	5.2km
Pencloe Extension	Not included	In Planning	5.3km
Enoch Hill 2	Not included	In Planning	8.3km
Quantans Hill	Not included	In Planning	9.5km

For the developments for which the only change since the EIA Report is a change to their status (i.e. 'Consented' instead of 'In Planning') the cumulative assessment presented in Table 8.9 of the EIA Report, which was based on the assumption that all other developments would go ahead, remains unchanged. **Table 8:4** below considers the potential cumulative effects for the newly proposed projects listed in **Table 8:3**, using the same assessment methodology detailed in Section 8.7.5 of the EIA Report and drawing on information provided in the EIA Reports for the relevant developments (see References section).

Table 8:4: Cumulative effects for Additional Developments Proposed since Submission of the 2020 EIA Report

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
Manquhill	Consented	**No cumulative effect** – no calcareous grassland identified.	**No cumulative effect** – no blanket bog, flush or spring habitats will be affected.		**No cumulative effect** - fish were scoped out of detailed assessment.	**No cumulative effect** – not within Provisional Afton LWS.	Cumulative effects are possible, although meaningful assessment is impossible. Following the implementation of the proposed mitigation measures there is no potential for significant residual effects at Euchanhead and therefore the possibility of significant cumulative effects due to Euchanhead is very low.
Troston Loch	Consented	**No cumulative effect** – no calcareous grassland identified.	NVC communities associated with blanket bog, wet modified bog and acid flush were recorded. There will be a small loss of 0.18 ha of wet modified bog, which is assessed as not significant. Some cumulative effects are likely, it is considered that these will be of **low magnitude** and **not significant** given the small extent of habitat loss involved.		Surveys identified the presence of brown trout *Salmo trutta* in several locations and Atlantic salmon *Salmo salar* in one location. No significant effects were identified following the implementation of embedded	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					mitigation measures. The site drains into different sub-catchments of the Rivers Dee and Nith and therefore **significant cumulative effects are unlikely**.		
Enoch Hill	Consented	**No cumulative effect** – no calcareous grassland identified.	NVC communities associated with blanket bog and acid flush were recorded. There will be a loss of blanket bog and flush habitat, although this is assessed as not significant. Some cumulative effects are likely, it is considered that these will be of low magnitude and not significant given the relatively small extent of habitat loss involved.		Surveys identified the presence of brown trout in several watercourses and Atlantic salmon in one watercourse. No significant effects were identified following the implementation of embedded mitigation measures. The site drains into different sub-catchments of the River Nith and therefore **significant cumulative**	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					effects are unlikely.		
Lethans Extension	Consented	**No cumulative effect** – a small area of calcareous grassland habitat was identified but will not be affected.	NVC communities associated with blanket bog and acid flush were recorded. There will be a loss of blanket bog and flush habitat, although this is assessed as not significant. Some cumulative effects are likely, it is considered that these will be of low magnitude and not significant given the relatively small extent of habitat loss involved.		Surveys identified one watercourse of district value and three watercourses of local value. No significant effects were identified following the implementation of embedded mitigation measures. The site drains into different sub-catchments of the River Nith and therefore **significant cumulative effects are unlikely**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.
Lorg (2022)	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities that are principally associated communities with blanket bog and acid flush were recorded. Some of these intersect with proposed infrastructure so habitat loss is assumed. No significant effects on habitats are predicted.		The Proposed Development straddles two catchments: the Nith and the Dee catchment. Cumulative effects possible if construction	Largely within the Provisional Afton Upland LWS, layout avoided important vegetation communities, including upland mire, montane heath and species-	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
			Some cumulative effects are likely, it is considered that these will be of **low magnitude** and **not significant.**		periods coincide, but likely to be **low magnitude** and **not significant** following the implementation of embedded mitigation.	rich grassland communities. Cumulative effects are therefore likely, although loss of important habitats is small and/or off-set through habitat restoration.	
Appin Wind Farm	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities that are principally associated with blanket bog and acid flush were recorded, for both the Site and Access Route. However, effects are predicted to be not significant. Some cumulative effects are likely, it is considered that these will be of **low magnitude** and **not significant** given the small extent of habitat loss involved.		The proposed site is located downstream of Shinnel Water (part of the larger Scar Water catchment) and the Water of Ken. It is concluded that watercourses through the Site were of limited value for fish fauna and not suitable for freshwater pearl mussel. Impacts to fish were considered to be scoped out by employing mitigation measures.	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					Cumulative effects are possible but are **not likely to be significant** with all proposed mitigation in place**.**		
Sandy Knowe Extension	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities associated with blanket bog, modified bog and flush/spring were recorded. There will be a loss of blanket bog and flush habitat, assessed as significant at a local level, although this will be offset by proposed peatland restoration. Some cumulative effects are likely, it is considered that these will be of low magnitude and not significant given the relatively small extent of habitat loss involved and the mitigation/compensation proposed.		Surveys identified the presence of brown trout in several watercourses and Atlantic salmon in the wider area. No significant effects were identified following the implementation of embedded mitigation measures. The site drains into different sub-catchments of the River Nith and therefore **significant cumulative effects are unlikely**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.
Herds Hill	In Planning	**No cumulative effect**, no calcareous grassland identified.	There will be no loss of blanket bog or wet modified bog. There will be a small loss of 0.287 ha of dry		The development is proposed for adjacent to the Kello Water	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
			modified bog. This is assessed as being low, and of minor significance. Some cumulative effects are likely, it is considered that these will be **low** and **not significant** given the small extent of habitat loss involved.		containing migratory salmonids there is a possibility of a negative impact on the population due to silt and other water pollutants. The development has two main water crossings over the Thwarter Burn and Quintin's Burn although the crossings are near the upper reaches of the watercourses and they are small and mainly wet flushes. The project assessed the impacts to all watercourses to be low and not significant with mitigation in place. Cumulative effects are possible but are **not likely to be significant** with all		

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					proposed mitigation in place.		
Windy Standard 1 Repowering	In Planning	**No cumulative effect**, no calcareous grassland identified.	**No cumulative effect** - NVC communities associated with blanket bog, wet modified bog and acid flush were recorded but loss will be limited to 0.01 ha of wet modified bog and therefore habitats were scoped out of the assessment.		No watercourses will be directly affected and no significant effects were identified following the implementation of embedded mitigation measures. The site drains into different sub-catchments of the River Nith and therefore **significant cumulative effects are unlikely**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.
Cloud Hill	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities that are principally associated with blanket bog and acid flush were recorded. Some of these intersect with proposed infrastructure, although habitat loss is assessed as minor adverse and not significant. Some cumulative effects are likely, it is considered that these will be of **low** and **not significant** given the small extent of habitat loss involved.		Impacts to all watercourses were assessed to be low and not significant with mitigation in place. Cumulative effects are possible if construction periods coincide but following the	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					implementation of mitigation cumulative effects are likely to be of **low magnitude and not significant**.		
Rowancraig	In Planning	**No cumulative effect**, no calcareous grassland identified.	**No cumulative effect** – NVC communities that are principally associated with blanket bog and acid flush were recorded. However, the habitats were scoped out of further assessment.		It was concluded that salmonid species of fish were present along the study areas of the Euchan Water, but not the connected watercourse of Bushy Sike. Cumulative effects are possible if construction periods coincide but following the implementation of mitigation cumulative effects are likely to be of **low magnitude and not significant**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
Pencloe Extension	In Planning	**No cumulative effects** – small pockets of calcareous grassland habitat were recorded in mosaic with acid grassland but no impacts were described.	Infrastructure is located within modified bog habitat (NVC community M20). The loss of modified bog (wet and dry modified bog combined) was assessed as significant at a County level but offset by proposed peatland restoration set out in an Outline HMP. Areas of flush were found to be too small to map. Therefore, due to small extent, any resulting effect would therefore be considered not significant. Some cumulative effects are likely, it is considered that these will be **low** and **not significant** once proposed compensation is taken into account.		The proposed Development has no crossing points of watercourses and given the distance of infrastructure from any watercourses, the impacts were assessed to be low and not significant. The site drains into different sub-catchments of the River Nith and therefore **significant cumulative effects are unlikely**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.
Enoch Hill 2	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities that are principally associated with wet modified bog and acid flush were recorded. There will be a small (approximately 0.2 ha) loss of modified bog and flush habitat, although this is assessed as not significant. Some cumulative effects are likely, it is considered that these will be of **low magnitude and not significant**		Effects on fish were assessed to be low and not significant with embedded mitigation in place. The site drains into different sub-catchments of the River Nith and therefore **significant**	**No cumulative effect** – not within Provisional Afton LWS.	As above.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
			given the relatively small extent of habitat loss involved.		**cumulative effects are unlikely**.		
Quantans Hill	In Planning	**No cumulative effect**, no calcareous grassland identified.	NVC communities that are principally associated with blanket bog, wet modified bog and flush were recorded. The development will result in loss or change to blanket bog, wet modified bog and flush habitats, although the losses are assessed as not significant. Habitat loss would also be offset by proposed habitat restoration and management. Some cumulative effects are likely, it is considered that these will be of **low magnitude and not significant** given the relatively small extent of habitat loss involved and once proposed compensation is taken into account.		Surveys identified the presence of brown trout in several watercourses and Atlantic salmon in one location downstream of the site. No significant effects were identified following the implementation of embedded and additional mitigation measures. The site drains into different sub-catchments of the River Dee and therefore **significant cumulative effects are unlikely**.	**No cumulative effect** – not within Provisional Afton LWS.	As above.
Overall summary/ assessment		Pencloe Extension and Lethans Extension are the only other developments where	Most of the other proposed wind farm developments would involve the loss of at least some bog and flush habitats. However, losses are typically small and at some sites		All of the other wind farm developments have potential to undergo	Only one of the other wind farm developments, Lorg (2022), overlaps the Afton	Meaningful assessment is impossible. However, following the implementation of the

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
		calcareous grassland was recorded and no loss of calcareous grassland at either site was predicted. Therefore, **no cumulative effects** on calcareous grassland are likely in relation to the other developments considered in this updated assessment.	losses would be offset through habitat creation/ restoration. None of the other projects would affect bog or flush habitats that are directly linked to bog and flush habitats affected by the proposed Development. On the basis of the above, **no significant cumulative effects** on bog or flush habitats are likely in relation to the other developments considered in this updated assessment.		construction at the same time as the proposed Development and therefore present a possibility for cumulative impacts on fish, where the developments are located in the same sub-catchments. This applies to the other developments at Lorg (2022), Appin, Herds Hill, Cloud Hill and Rowanscraig. However, all include mitigation and monitoring to reduce the risk of impacts to fish. The likelihood of all sites undergoing construction simultaneously is low, and in addition mitigation across all sites is expected to be sufficient to prevent significant cumulative effects.	Uplands provisional LWS. Loss of important upland habitats is small and/or offset through habitat restoration. Therefore, **no significant cumulative effects** on the Afton Uplands provisional LWS are likely in relation to the other developments considered in this updated assessment.	proposed mitigation measures there is no potential for significant residual effects at Euchanhead and therefore the possibility of significant cumulative effects due to Euchanhead is very low.

Development (windfarm)	Status	Impacts to calcareous grassland	Impacts to blanket bog	Impacts to flushes and springs*	Impacts to fish	Impacts to Provisional Afton Upland LWS	Impacts to bats
					Therefore, **no significant cumulative effects** on fish habitats are likely in relation to the other developments considered in this updated assessment.		

8.7. Summary of Changes to the Significance of Effects

As a result of the changes to the proposed Development there would be no changes to the effects as assessed and presented in **Chapter 8: Ecology** of the EIA Report. Therefore, with the implementation of good practice measures and the implementation of the proposed HMP (including peatland habitat restoration), no significant negative effects are predicted.

8.8. Conclusion

This chapter has reviewed the changes to the layout of the proposed Development and described how these would have no change on the assessment of the effects of the proposed Development on ecological receptors.

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