



Chapter 7: Ecology

Mid Hill Wind Farm

Invenergy Development UK Ltd

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Basis of Report

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Acronyms and Abbreviations

AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BESS	Battery Energy Storage System
BEMP	Biodiversity Enhancement Management Plan
BNG	Biodiversity Net Gain
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
DEFRA	Department for Environment, Food & Rural Affairs
DEMP	A Decommissioning Environmental Management Plan
DRAS	Decommissioning Restoration and Aftercare Strategy
ECoW	Ecological Clerk of Works
EclA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
GWDTE	Groundwater Dependent Terrestrial Ecosystem
GCN	Great Crested Newt
HRA	Habitats Regulations Appraisal
IEF	Important Ecological Feature
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
LDP2	Scottish Borders Local Development Plan
LNCS	Local Nature Conservation Site
LNR	Local Nature Reserve
LBAP	Local Biodiversity Action Plan
NBN	National Biodiversity Network
NHZ	Natural Heritage Zone
NNR	National Nature Reserve
NPF4	National Planning Framework 4
NVC	National Vegetation Classification
Outline BEMP	Outline Biodiversity Enhancement Management Plan
OGL	Open Government Licence
PARC	Priority Area of Red Squirrel Conservation
PC	Principal Contractor
PRF	Potential Roost Feature
RTC	River Tweed Commission
SAC	Special Areas of Conservation
SBL	Scottish Biodiversity List
SEPA	Scottish Environment Protection Agency



SSRS	Saving Scotland's Red Squirrels
SPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
TWIC	The Wildlife Information Centre
UK	United Kingdom
UKBAP	UK Biodiversity Action Plan



7.0 Ecology

7.1 Introduction

- 7.1.1.1 This chapter presents the findings of the assessment of the likely significant effects (as per the 'Environmental Impact Assessment (EIA) Regulations'¹) on non-avian ecology arising from the Proposed Development during construction, operation and decommissioning.
- 7.1.1.2 The objectives of this chapter are to:
- consider relevant legislation, policy and guidance;
 - describe the current baseline established from desk studies, non-avian ecological field surveys, and feedback obtained during technical engagement with stakeholders;
 - describe the assessment methodology and significance criteria used in completing the ecological impact assessment (EclA);
 - describe the potential effects, including direct, indirect and cumulative effects;
 - describe the mitigation measures proposed to address the likely significant effects;
 - in the event of the remaining residual effects are assessed to be significant, considering appropriate proposals for compensation; and
 - assess how the Proposed Development will contribute to the enhancement of biodiversity.
- 7.1.1.3 The assessment has been carried out in accordance with best practice guidance, including SNH² (SNH, 2018) and the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2024). All staff contributing to this chapter have professional experience in EclA and ecological survey and abide by the CIEEM Code of Conduct (CIEEM, 2022).
- 7.1.1.4 As interrelationships exist between the potential effects on ecology and other disciplines, reference should be made to, in particular, the following chapters of the EIA Report:
- **Chapter 2: Description of the Proposed Development;**
 - **Chapter 3: Site Selection and Design Evolution;**
 - **Chapter 7: Ornithology;** and
 - **Chapter 11: Geology, Hydrology, Hydrogeology and Peat.**
- 7.1.1.5 This chapter is supported by the following figures and appendices:
- **Figures** (provided in **Volume 3a** of the EIA Report):
 - **Figure 7.1 Ecological Designated Sites and Ancient Woodland within 5 km;**
 - **Figure 7.2 Carbon and Peatland Map 2016;**

¹ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

² Scottish National Heritage (SNH) is the former name for NatureScot.



- **Figure 7.3 National Vegetation Classification Survey Area and Survey Results;**
- **Figure 7.4 Potential Groundwater Dependent Terrestrial Ecosystems Survey Area and Survey Results;**
- **Figure 7.5 Protected Species Survey Area and Survey Results;**
- **Figure 7.5C Confidential Protected Species Survey Results;**
- **Figure 7.6 Bat Survey Area, Anabat Locations & Preliminary Bat Roost Assessment Results;**
- **Figure 7.7 Overall Risk Assessment (April – September) 2024 – Common Pipistrelle;**
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- **Figure 7.10 Overall Risk Assessment (April – September) 2024 – Nathusius' Pipistrelle;**
- **Figure 7.11 Electrofishing: Trout Presence/Absence;**
- **Figure 7.12 Electrofishing: Atlantic Salmon Presence/Absence; and**
- **Figure 7.13 Outline Biodiversity Enhancement Management Plan Areas.**
- **Technical Appendices (provided in Volume 4 of the EIA Report):**
 - **Technical Appendix 7.1: National Vegetation Classification (NVC) and Habitats Survey Report;**
 - **Technical Appendix 7.2: Protected Species Survey Report;**
 - **Technical Appendix 7.3: Bat Survey Report;**
 - **Technical Appendix 7.4: Fish Survey Report;**
 - **Technical Appendix 7.5: Outline Species Protection Plan (SPP);**
 - **Technical Appendix 7.6: Shadow Habitats Regulations Appraisal (HRA); and**
 - **Technical Appendix 7.7: Outline Biodiversity Enhancement Management Plan (Outline BEMP).**

7.1.1.6 **Confidential Annex D of Technical Appendix 7.2 and Figure 7.5C** will not be published with the EIA Report due to potential risk to protected species; however, these will be issued to Scottish Ministers, Scottish Borders Council (as Local Authority) and NatureScot.

7.2 Legislation, Policy and Guidance

7.2.1.1 **Table 7-1** presents the legislation, policy and guidance relevant to the EclA and details how their requirements have been met in the assessment.



Table 7-1 Relevant Legislation, Policy and Guidance Regarding Ecology Impact Assessment

Legislation / Policy / Guidance	Consideration within the EIA Report
<p>Scottish Government (2023). National Planning Framework 4 (NPF4)</p> <p>The intention of Policy 3 is, <i>“to protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks.”</i></p> <p>Policy 3b iv) directs that a national development must show that it enhances biodiversity.</p> <p>Policy 4 provides the policy tests relative to nature designations, including local, national and international sites, and species protected by legislation.</p>	<p>Outline biodiversity enhancement proposals are provided in Technical Appendix 7.7: Outline BEMP.</p> <p>Details of designated sites with ecological qualifying features within/with connectivity with the Site and within 5 km of the Site is set out in Section 7.5 and Table 7-7 (see Figure 7.1).</p> <p>Detailed consideration and assessment of the River Tweed SAC (underpinned by the River Tweed SSSI) and Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI and Slaidhills Moss SSSI) is set out in Technical Appendix 7.6: Shadow HRA and Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC.</p> <p>Assessment of Broadlee Moss and Loch LNCS is set out in Section 7.7.</p>
<p>Scottish Borders Local Development Plan (LDP2) (2024)</p> <p>Various policies under Environmental Promotion and Protection, including Policy EP1, EP2, EP3, EP9; and Technical Note 4 (Local Biodiversity Sites).</p>	<p>Outline biodiversity enhancement proposals are provided in Technical Appendix 7.7: Outline BEMP.</p> <p>Details of designated sites with ecological qualifying features within/with connectivity with the Site and within 5 km of the Site is set out in Section 7.5 and Table 7-7 (see Figure 7.1).</p> <p>Detailed consideration and assessment of the River Tweed SAC (underpinned by the River Tweed SSSI) and Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI and Slaidhills Moss SSSI) is set out in Technical Appendix 7.6: Shadow Habitats Regulations Appraisal and Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC.</p> <p>Assessment of Broadlee Moss and Loch LNCS is set out in Section 7.7.</p> <p>Signs of protected species recorded within the Site and wider survey area are presented in Technical Appendix 7.2: Protected Species Survey Report; and an outline SPP is included as Technical Appendix 7.5: Outline SPP.</p>



Legislation / Policy / Guidance	Consideration within the EIA Report
<p>Scottish Borders Local Biodiversity Action Plan 2018 – 2028</p> <p>Various policies under Conserving Wildlife, Habitats and Protected Places, including WH1, WH2 and WH3.</p>	<p>Outline biodiversity enhancement proposals are provided in Technical Appendix 7.7: Outline BEMP.</p>
<p>Joint Nature Conservation Committee (JNCC) (2024). UK Biodiversity Framework</p> <p>Section 3.3 summarises Scotland’s framework to environmental protection, “<i>nature is protected and restored with flourishing biodiversity and clean and healthy air, water, seas and soils.</i>”³</p>	<p>Outline biodiversity enhancement proposals are provided in Technical Appendix 7.7: Outline BEMP.</p>
<p>Scottish Government (2022). Onshore Wind Policy Statement 2022</p> <p>Target of avoiding development on, and restoration of, peatland and carbon-rich soils⁴; and conserving and enhancing biodiversity through protecting habitats and species populations⁵.</p>	<p>Impact on peatland is considered in Chapter 11.</p> <p>Outline biodiversity enhancement and habitat management proposals, including peatland restoration/enhancement, are provided in Technical Appendix 7.7: Outline BEMP.</p>
<p>Scottish Government (2022). Scottish Biodiversity Strategy to 2045. Tackling the Nature Emergency in Scotland</p> <p>Outcomes relevant to this EclA are diverse, healthy and resilient ecosystems; protecting the abundance and distribution of habitats; peatland restoration; and fisheries management⁶.</p>	<p>Outline biodiversity enhancement and habitat management proposals are provided in Technical Appendix 7.7: Outline BEMP.</p>
<p>Scottish Government (2019). The Scottish Forestry Strategy 2019 – 2029</p> <p>Relevant to this EclA is the recognition that Scotland’s forests and woodlands support a range of habitats (e.g. vascular plants and lichen) and animals (e.g. red squirrel (<i>Sciurus vulgaris</i>), pine marten (<i>Martes martes</i>) and bats)⁷.</p>	<p>Outline biodiversity enhancement and habitat management proposals, including new native woodland creation and enhancement, are provided in Technical Appendix 7.7: Outline BEMP. See also outline SPP (Technical Appendix 7.5: Outline SPP).</p>
<p>Scottish Government (2020). EU Exit: The Habitat Regulations in Scotland</p>	<p>Adopted in the EclA methodology.</p>
<p>Scottish Government (2020). Securing a green recovery on a path to net zero: climate change plan 2018 – 2032 (including update)</p> <p>Scottish Government’s nature-based solutions to combating climate change by sector, including electricity, e.g. peatland restoration⁸.</p>	<p>Peat management plan included as Technical Appendix 11.2: Stage 1 Soil and Peat Management Plan.</p>
<p>Wildlife and Countryside Act 1981</p>	<p>Adopted in the EclA methodology.</p>

³ At page 6.

⁴ At section 3.3.

⁵ At section 3.5.

⁶ At section 3.

⁷ At box 3.

⁸ At part 2.2.



Legislation / Policy / Guidance	Consideration within the EIA Report
Protection of Badgers Act 1992	Adopted in the EclA methodology.
Nature Conservation (Scotland) Act 2004	Adopted in the EclA methodology.
The Conservation (Natural Habitats, &c.) Regulations 1994. No. 2716. United Kingdom	Adopted in the EclA and shadow HRA methodology.
The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)	Adopted in the EclA and shadow HRA methodology.
Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. asp 15. Scotland	Adopted in the EclA methodology.
Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (2000)	Adopted in the EclA methodology.
Directive 2011/92/EU the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment (codification)	Adopted in the EclA methodology.
Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017	Adopted in the EclA methodology.

7.3 Consultation and Engagement

- 7.3.1.1 A scoping exercise was undertaken in August 2024 to establish the scope of the EIA including the methodology and approach to the EclA to be followed. The Scoping Report⁹ records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria being applied in the assessment to identify and evaluate the likely significant effects of the Proposed Development on ecology. A Scoping Opinion⁹ was adopted by the Scottish Ministers on 27 November 2024.
- 7.3.1.2 Further consultation relevant to the EclA was undertaken with The Wildlife Information Centre (TWIC) to gather additional data and information relating to the species, habitats and local designations present within the Site and within 5 km of the Site boundary (see **Technical Appendix 7.2: Protected Species Survey Report**).
- 7.3.1.3 Consultation to inform this chapter, including a summary of comments raised in the formal Scoping Opinion are summarised in **Table 7-2**, alongside a summary of how the Applicant’s assessment responded to this feedback.

⁹ The EIA Scoping Report and Scoping Opinion can be accessed online at the ECU website: <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005192&T=9>.



Table 7-2: Consultation Summary Table

Consultee	Summary of Response	How comments have been addressed in this chapter
Scoping Report		
Energy Consents Unit (ECU)	Any SACs where fish are a qualifying feature should be considered in line with any felling proposals.	Noted. Detailed assessment of the River Tweed SAC is included in Technical Appendix 7.6: Shadow HRA and Chapter 11: Geology, Hydrology, Hydrogeology and Peat . No felling for construction of the Proposed Development is proposed within the catchment of the River Tweed SAC.
	Standing advice from Marine Directorate - Science Evidence Data and Digital (MD-SEDD).	Fisheries surveys have been undertaken for the Proposed Development and results are presented in Technical Appendix 7.4: Fish Survey Report and shown on Figures 7.11 and 7.12 . The MD-SEDD EIA Checklist has been completed and provided with the Section 36 application for the Proposed Development.
Scottish Borders Council	Content with surveys: NVC habitats, protected species, static bat detectors and fish surveys; noting pine marten are a challenging species to survey.	NVC, protected species, static bat detectors and fish surveys were undertaken in 2024 and/or 2025, with results presented in the following technical appendices: <ul style="list-style-type: none"> • Technical Appendix 7.1: NVC and Habitats Survey Report; • Technical Appendix 7.2: Protected Species Survey Report; • Technical Appendix 7.3: Bat Survey Report; and • Technical Appendix 7.4: Fish Survey Report. Pre-construction surveys will be undertaken ahead of construction and, as set out in the SPP (see outline SPP as Technical Appendix 7.5: Outline SPP), a suitably qualified ecologist or ECoW will be present during construction to ensure the safeguarding of protected species.



Consultee	Summary of Response	How comments have been addressed in this chapter
	<p>Agree that ancient woodland will not be impacted.</p>	<p>Details on ancient woodland is provided in Section 7.5 (see also Figure 7.1).</p>
	<p>There is a discrepancy between information provided on designated sites within the ecology Scoping chapter.</p>	<p>Designated sites with ecological qualifying features and their respective distances from the Site and proposed infrastructure are presented accurately in Table 7-7.</p>
<p>NatureScot</p>	<p>The ecology surveys and assessment of impacts seem appropriate. A SPP should provide for mitigation where impacts are identified on protected species, taking into account NatureScot guidance. TWIC should be consulted to inform the EclA.</p>	<p>Results from the protected species surveys, including records provided by TWIC, are presented in Technical Appendix 7.2: Protected Species Survey Report, and outline SPP provided as Technical Appendix 7.5: Outline SPP. NatureScot guidance has been followed in the EclA.</p>
	<p>The BEMP should be detailed and implemented should the Proposed Development be granted consent. The biodiversity enhancement requirements of NPF4 should be implemented.</p>	<p>Outline biodiversity enhancement and habitat management proposals are provided in Technical Appendix 7.7: Outline BEMP.</p>
	<p>Further information should be provided on the impact of the Proposed Development on the following designated sites: Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI and Slaidhills Moss SSSI), and the River Tweed SAC (underpinned by the River Tweed SSSI). The remaining designated sites with ecological qualifying features within 5 km of the Site boundary – Branxholme Easter Loch SSSI, Allan Water, Hillhead SSSI and Ale Moor West Loch and Meadow SSSI – can be scoped out of assessment.</p>	<p>Details of designated sites with ecological qualifying features within/with connectivity with the Site and within 5 km of the Site is set out in Section 7.5 and Table 7-7 (see Figure 7.1). Detailed consideration and assessment of the River Tweed SAC (underpinned by the River Tweed SSSI) and Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI and Slaidhills Moss SSSI) is set out in Technical Appendix 7.6: Shadow HRA and Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC.</p>
<p>SEPA</p>	<p>NVC survey should be carried out and include maps showing Groundwater Dependent Terrestrial Ecosystems (GWDTE).</p>	<p>Results from the NVC and potential GWDTE surveys are presented in Technical Appendix 7.1: NVC and Habitats Survey Report and on Figure 7.3 and Figure 7.4.</p>



Consultee	Summary of Response	How comments have been addressed in this chapter
		Details of impacts on GWDTE are considered in Section 7.5 , with a detailed assessment included in Chapter 11: Geology, Hydrology, Hydrogeology and Peat .
River Tweed Commission (RTC)	50 m buffers should be used where construction is in the vicinity of watercourses. SEPA's Engineering in the Water Environment Good Practice Guide should be adopted where river crossings are required.	Details of mitigation around watercourses are included in Chapter 2: Description of the Proposed Development and Chapter 11: Geology, Hydrology, Hydrogeology and Peat . The outline SPP (Technical Appendix 7.5: Outline SPP) also details mitigation measures that will be adopted around watercourses.
	The stability of peat should be considered, and deep peat should be avoided.	Full details of the peat assessment and mitigation is included in Chapter 11: Geology, Hydrology, Hydrogeology and Peat .
	All fish species should be considered in adhering to The Salmon (Fish Passes and Screens) (Scotland) Regulation 1999, which protects species against water abstraction.	Details of mitigation around watercourses are included in Chapter 2 and Chapter 11 . The outline SPP (Technical Appendix 7.5: Outline SPP) also details mitigation measures that will be adopted around watercourses.
	Consideration should be given to any felling and the impact on habitat loss, hydrology and sediment has on fish populations.	Details of mitigation around watercourse are included in Chapter 2: Description of the Proposed Development and Chapter 11: Geology, Hydrology, Hydrogeology and Peat . The outline SPP (Technical Appendix 7.5: Outline SPP) also details mitigation measures that will be adopted around watercourses. No felling is proposed as part of the Proposed Development.
	A monitoring programme with a minimum period of 12 months should be undertaken prior to construction, with three to five years of post-development monitoring. The monitoring programme may include water quality, aquatic macro-invertebrates and fish surveys, and a pre-construction habitat survey.	It is expected a suitable monitoring programme in cognisance of relevant MD-SEDD guidance would be agreed with relevant consultees as part of the conditions of consent, if granted.



Consultee	Summary of Response	How comments have been addressed in this chapter
	<p>Cumulative impacts of other consented and proposed renewable developments in the area should be assessed.</p> <p>Site-specific mitigation measures and/or enhancement programmes to protect and/or compensate freshwater habitats should be included in the EIA Report, e.g.: avoidance of water bodies and peat; hydrological buffers; work timings; drainage schemes; pollution prevention; adherence to legislation and guidance; habitat restoration; and riparian fencing/tree planting.</p>	<p>Cumulative impacts relative to ecology are considered in Section 7.8.</p> <p>Embedded mitigation measures relevant to ecology are included in Section 7.6, including carrying out pre-construction surveys and the appointment of an ECoW to avoid disturbance to protected species and pollution effects during construction works. An outline SPP is included as Technical Appendix 7.5: Outline SPP, which includes industry standard mitigation for watercourses; and an outline Construction Environmental Management Plan (CEMP) is included as Technical Appendix 2.1: Outline CEMP, which details, <i>inter alia</i>, implementation of pollution prevention in relation to watercourses, including requirements for fish rescues on watercourses containing fish. Outline biodiversity enhancement and habitat management proposals are included in Technical Appendix 7.7: Outline BEMP.</p>
<p>Fisheries Management Scotland</p>	<p>The RTC and Tweed Foundation should be consulted with as the Proposed Development falls within their catchment.</p> <p>Together with Marine Scotland Science (MSS) guidance, Fisheries Management Scotland guidance should be adhered to.</p>	<p>The Tweed Foundation carried out the baseline electrofishing surveys to inform the EclA for the Proposed Development and their survey report is provided as Technical Appendix 7.4: Fish Survey Report.</p> <p>The RTC's Scoping Response is provided in this Table 7-2.</p> <p>Noted.</p>
<p>Hobkirk Community Council</p>	<p>The cumulative impact upon wildlife, rivers and peatland of other wind farms in the area should be assessed.</p>	<p>The cumulative impact relevant to ecology is considered in Section 7.8.</p> <p>Impact upon peatland is assessed in Chapter 11: Geology, Hydrology, Hydrogeology and Peat.</p>



Consultee	Summary of Response	How comments have been addressed in this chapter
	Any displacement of wildlife should be thoroughly assessed.	Desk-based information on protected species within 5 km ¹⁰ of the Site boundary is provided in Section 7.5 , with results of the protected species surveys undertaken for the Proposed Development included in Technical Appendix 7.2: Protected Species Survey Report . The outline SPP (Technical Appendix 7.5: Outline SPP) details how all protected species will be protected pre- and during construction activities.
Borthwickwater Landscape Conservation Group	The EIA Report should assess the potential risk to watercourses, including to spring-fed bodies and the wild breeding Atlantic salmon.	Potential effects on hydrology are assessed in Chapter 11: Geology, Hydrology, Hydrogeology and Peat and associated appendices. Results from the electrofishing surveys are provided in Technical Appendix 7.4: Fish Survey Report , with an assessment included at Section 7.5 . Detailed assessment of the River Tweed SAC (and underpinning SSSI) is set out in Technical Appendix 7.6: Shadow HRA .
	Effects on species such as otter (<i>Lutra lutra</i>), roe deer (<i>Capreolus capreolus</i>), brown hare (<i>Lepus europaeus</i>), badger (<i>Meles meles</i>), fox (<i>Vulpes vulpes</i>), mole (<i>Talpa europaea</i>), field mice (<i>Apodemus sylvaticus</i>), weasel (<i>Mustela nivalis</i>), brown rat (<i>Rattus norvegicus</i>), common vole (<i>Microtus arvalis</i>), stoat (<i>Mustela erminea</i>), red squirrel (<i>Sciurus vulgaris</i>), European eel (<i>Anguilla anguilla</i>) (as well as salmonoids in Muselee Burn), common lizard (<i>Zootoca vivipara</i>), adder (<i>Vipera berus</i>), newt (<i>Lissotriton helveticus</i>), frog (<i>Anura</i>), common toad (<i>Bufo bufo</i>) and bats (<i>Chiroptera</i>) should be assessed in the EIA Report.	Assessment of protected species are included in Section 7.5 of this chapter (see also Technical Appendix 7.2: Protected Species Survey Report for protected species survey results). The outline SPP (Technical Appendix 7.5: Outline SPP) details how all protected species will be protected pre- and during construction activities. NatureScot guidance has been adhered to in this EIA with regards to the protection of all species, including: NatureScot (2024b) NatureScot pre-application guidance, and NatureScot (2022) Developing with Nature guidance with regard to legally protected and common species.

¹⁰ Extended to 10 km for bat species; see **Technical Appendix 7.3: Bat Survey Report**.



Consultee	Summary of Response	How comments have been addressed in this chapter
Gatecheck Report		
NatureScot	An appropriate assessment carried out as part of an HRA is required to determine that the Proposed Development will not adversely affect the integrity of the Whitlaw and Branxholme SAC and the River Tweed SAC. Sufficient information should be provided in relation to the SSSIs underpinning the SACs.	Detailed consideration and assessment of the River Tweed SAC (underpinned by the River Tweed SSSI) and Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI and Slaidhills Moss SSSI) is set out in Technical Appendix 7.6: Shadow HRA and Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC.
SEPA	The updated SEPA guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems should be followed.	Noted. SEPA 2024 guidance has been followed.

7.4 Assessment Approach and Methodology

7.4.1 Scope of Assessment

7.4.1.1 This chapter takes an appropriate and topic specific approach to assessment of the Proposed Development within the parameters identified in **Chapter 2: Description of the Proposed Development**. This chapter provides a worst-case assessment for ecology and presents enough information for consultees and the decision makers to comment on and determine the application within the parameters of the Proposed Development.

Scoped into the Assessment

7.4.1.2 IEFs scoped into the assessment are detailed in **Section 7.7** and **Table 7-10** of this chapter, following consideration of desk-based information and Site-specific field survey results, and based on the professional judgement of the EIA team and experience from other relevant projects, policy and guidance or standards.

Scoped out of the Assessment

7.4.1.3 On the basis of the professional judgement of the EIA team, experience from other relevant projects, relevant guidance and feedback from consultees (**Table 7-2**), the generally common and widely distributed habitats or species which **do not** fall within the following categories were scoped out of detailed assessment:

- habitats listed in Annex I to the European Union Council Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive'), and species listed in Annex II to the Habitats Directive;
- habitats or species listed in the UK Biodiversity Action Plan (UKBAP) (JNCC, 2020) or Scottish Biodiversity List (SBL) Priority Habitats (NatureScot, 2020); and



- habitats or species protected by other legislation such as the Wildlife and Countryside Act 1981, the Nature Conservation (Scotland) Act 2004 and the Protection of Badgers Act 1992.

7.4.1.4 Further ecological features and potential effects have been scoped out of detailed assessment based on the results of desk-based study and field survey work undertaken for the Proposed Development. This is due to lack of potential significant effect at a relevant species population or habitat extent scale. Details of ecological features and effects scoped out after further data searches and post-survey are provided in **Section 7.7**.

7.4.2 Impact Assessment Methodology

7.4.2.1 This chapter considers the potential effects of construction, operation and decommissioning (including cumulatively) of the Proposed Development upon those ecological features identified during the EIA Scoping process, review of desk-based information and field surveys. Effects, both temporary and permanent, upon the following ecological features are assessed:

- designated nature conservation sites – effects include direct (i.e., derived from land-take or disturbance to habitats or protected species) and indirect (i.e., habitat fragmentation and modification, including through changes caused by impacts to supporting systems such as groundwater or overland flow);
- terrestrial habitats – effects include direct (i.e., derived from land-take) and indirect (i.e., habitat fragmentation and modification, including through changes caused by impacts to supporting systems such as groundwater or overland flow);
- aquatic habitats – effects are limited to the ecological impacts of changes in water conditions through potential pollution effects (hydrological effects are considered in **Chapter 11: Geology, Hydrology, Hydrogeology and Peat**); and
- protected species – effects considered include direct (i.e., loss of life as a result of the Proposed Development, loss of key habitat, displacement from key habitat, barrier effects preventing movement to or from key habitats, and general disturbance) and indirect (i.e., loss/changes of/to food resources, populations fragmentation, degradation of key habitat e.g., as a result of pollution).

7.4.2.2 This chapter also assesses the potential for additional cumulative effects arising from the addition of the Proposed Development to other similar cumulative developments, which are consented or the subject of a valid planning application (see **Section 7.8**). Operational and under construction developments are considered as part of the baseline. See also **Chapter 4: Approach to EIA**.

7.4.3 Study Area and Survey Area

7.4.3.1 The area within which desk-based research and field surveys were undertaken varies dependent on the ecological feature and respective search/survey requirements. Details of the extents are described in the relevant sections at **Section 7.5** of this chapter and the following technical appendices:

- **Technical Appendix 7.1:** NVC and Habitats Survey Report;
- **Technical Appendix 7.2:** Protected Species Survey Report;



- **Technical Appendix 7.3:** Bat Survey Report; and
 - **Technical Appendix 7.4:** Fish Survey Report.
- 7.4.3.2 The area in which biodiversity enhancement is proposed is described in **Technical Appendix 7.7: Outline BEMP**.
- 7.4.3.3 Hereafter in this chapter, the areas covered by field surveys are termed the 'survey area', and areas which are considered as part of the assessment process are referred to as the 'study area' – note that the study area generally equates to the Site boundary, except for designated sites, where the study area is a 5 km distance band around the Site boundary (**Figure 7.1**).

Desk Study

- 7.4.3.4 A desk study was undertaken to collate available ecological information in relation to the Proposed Development and surrounding environment. The following data sources were consulted as part of the determination of scope of baseline surveys and assessment:
- NatureScot Sitelink (NatureScot, 2025) to confirm the location and qualifying features of designated sites within 5 km of the Site;
 - National Biodiversity Network (NBN) Atlas Scotland (NBN Atlas Scotland, 2025) on ecological records within 5 km (and 10 km for bats) of the Site within the last 15 years (i.e. since 2010);
 - Ancient Woodland Inventory (AWI) (Scottish Government, 2025a) for ancient woodland within 5 km of the Site;
 - Carbon and Peatland Map (2016) (Scottish Government, 2025b);
 - Deer Distribution Survey (2023) by the British Deer Society (British Deer Society, 2023);
 - Saving Scotland's Red Squirrels (SSRS) (Saving Scotland's Red Squirrels, 2025) for local species records and Priority Areas of Red Squirrel Conservation (PARCs);
 - The Wildlife Information Centre (TWIC) for ecological records and LNCS information within 5 km of the Site;
 - SEPA Water Environment Hub (SEPA, 2023) for watercourse classifications;
 - LNCS (Scottish Government, 2025c) within 5 km of the Site;
 - any relevant Environmental Statement, EIA Report, or other technical reports from other developments or proposed developments within the local area; and
 - relevant scientific literature on protected species' distribution, habitats distribution, and conservation status etc.

Field Surveys

- 7.4.3.5 Field surveys to further establish the baseline ecological conditions were undertaken within the Site boundary, and included a further area south of the Site (reflecting earlier areas of interest), and an area south-west of the Site potentially to be considered as an alternative entrance onto the Site, from May 2024 to June 2025. The following surveys were undertaken in line with standard methodologies and best practice guidance:



- NVC surveys, incorporating Phase 1 habitat characterisation and potential GWDTE habitats (May 2024 and June 2025);
- protected species surveys, including daytime bat walkover (August 2024 and June 2025);
- bat activity surveys (April to September 2024, inclusive); and
- fisheries surveys, including electrofishing and fish habitat suitability assessment (June 2024).

7.4.3.6 Incidental records of other protected species (e.g. reptiles) or signs or features of particular importance (i.e. potential hibernacula for reptiles), notable species, or invasive non-native species (INNS) were also recorded during all ecology field surveys.

7.4.3.7 The respective survey areas are shown on **Figures 7.3 – 7.6** and **Figures 7.11** and **7.12**; and full details of survey methodologies, including species-specific legislation, guidance and survey results are provided in the following technical appendices:

- **Technical Appendix 7.1:** NVC and Habitats Survey Report;
- **Technical Appendix 7.2:** Protected Species Survey Report;
- **Technical Appendix 7.3:** Bat Survey Report; and
- **Technical Appendix 7.4:** Fish Survey Report.

7.4.3.8 Surveys for beaver (*Castor fiber*), great crested newt (GCN) (*Triturus cristatus*) and wildcat (*Felis silvestris*) were scoped out due to the Proposed Development being outwith the known species range or distribution and/or having a lack of suitable habitat. No signs of these species were recorded incidentally during field surveys.

7.4.4 Assessment Methodology

7.4.4.1 The significance of the potential effects of the Proposed Development has been assessed by professional consideration of the sensitivity of the ecological features and the spatial and temporal magnitude of the potential effects.

7.4.4.2 This assessment has been carried out following CIEEM (2024) guidance, which is in line with the EIA Regulations, and guidance on the implementation of the EU Birds and Habitats Directive (SERAD, 2001).

7.4.4.3 The assessment for wider countryside interests (i.e. unrelated to any Natura 2000 sites) involves the following process:

- identification of the potential ecological effects of the Proposed Development on ecological features (beneficial and adverse);
- considering the likelihood of occurrence of potential effects, where appropriate;
- defining the nature conservation value and conservation status of the ecological features present to determine sensitivity;
- establishing the magnitude of change associated with the potential effect (both spatial and temporal);
- based on the above information, making a professional judgement as to whether or not the resultant effect is significant in terms of the EIA Regulations;



- if a potential effect is determined to be significant, measures to avoid or reduce the effect are suggested, where required;
- considering opportunities for enhancement, where appropriate; and
- confirming residual effects after mitigation (including enhancement) and, in the event the remaining residual effects are assessed as significant, considering appropriate proposals for compensation (see CIEEM, 2024).

7.4.4.4 The assessment for Natura 2000 sites (in this chapter SACs) follows a different process with associated legislation and regulations, this is set out within **Technical Appendix 7.6: Shadow HRA** as part of the shadow HRA for the Proposed Development.

Sensitivity of Receptor

7.4.4.5 The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Proposed Development, or the sensitivity of potentially affected receptors, has been assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement of the EIA team.

7.4.4.6 Determination of the level of sensitivity of an ecological feature is based on a combination of the feature's nature conservation value and conservation status. Nature conservation value is defined on the basis of the geographic context, as shown in **Table 7-10**, which follows CIEEM (2024) guidance.

7.4.4.7 Attributing a value to an ecological feature is generally straightforward in the case of designated sites, as the designations themselves are normally indicative of an importance level. For example, an SAC designated under the Habitats Directive is implicitly of European (International) importance. In the case of species, assigning value is less straightforward as contextual information about distribution and abundance is fundamental, including trends based on historical records. This means that even though a species may be protected through legislation at a national or international level, the relative value of the population on-site may be quite different (e.g. the Site population may consist of a single transitory animal, which within the context of a thriving local/regional/national population of a species, is therefore of local or regional value rather than national or international).

7.4.4.8 Determination of the level of importance of ecosystems, habitats and species is based on professional judgement and a combination of factors, such as level of protection, rarity, conservation status, population trends, and quality/extent of the feature on-site. Published evaluation criteria (e.g. the SBL (NatureScot, 2020), JNCC on selection of biological SSSIs (JNCC, 2022) are used where relevant.

7.4.4.9 Following CIEEM (2024), it is not necessary to carry out a detailed assessment on features that are sufficiently widespread, unthreatened, and resilient to effects of the Proposed Development. However, those ecological features affected by the Proposed Development and deemed to be of at least local importance are termed IEFs and are taken forward for assessment.



Table 7-3: Approach to Valuing Ecological Features¹¹

Importance of Feature in Geographical Context	Description
International/European	An internationally designated site (e.g., SAC), or undesignated areas that meet the criteria for international designations, or qualifying species whose presence contributes to the maintenance of such a site. Species present in internationally important numbers (>1 % of biogeographic populations).
National (UK)	A nationally designated site (e.g., SSSI, or a National Nature Reserve (NNR)), or sites meeting the criteria for national designation or qualifying species whose presence contributes to the maintenance of such a site. Species present in nationally important numbers (>1 % of UK population).
Regional (Natural Heritage Zone (NHZ) or Local Authority Area)	Regionally significant and viable areas of key habitat identified in a regional Biodiversity Action Plan (BAP). Species present in regionally important numbers (>1 % of NHZ population). Areas of key habitat falling below criteria for selection as a SSSI (e.g., areas of semi-natural ancient woodland larger than 0.25 hectares (ha)).
Local	A site within the local area designated for nature conservation (e.g. Local Nature Reserve (LNR), LNCS). Areas of semi-natural ancient woodland smaller than 0.25 ha. Areas of habitat or species considered to appreciably enrich the ecological resource within the local context, e.g., species-rich flushes or hedgerows.
Negligible	Usually widespread and common habitats and species that do not meet the above criteria. Features falling below Local value are not considered in detail in the assessment process.

Magnitude of Impact

7.4.4.10 The magnitude of potential impacts refers to the level of change in the extent and integrity of an ecological feature. The following definition of ecological ‘integrity’ is found within Scottish Executive (2000), which states that,

“The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified”¹².

7.4.4.11 Although this definition is used specifically regarding European level designated sites (e.g. an SAC), it is applied to wider countryside habitats and species for the purposes of this assessment.

7.4.4.12 The magnitude of potential impact will be identified through consideration of the degree and spatial extent of change to baseline conditions predicted as a result of the Proposed Development; how the ecological features are likely to respond to

¹¹ As adapted from Hill, D., Fasham, M., Tucker, G., Shewry, M and Shaw, P. (2005). Handbook of Biodiversity Methods – Survey, Evaluation and Monitoring. Cambridge University Press, Cambridge.

¹² At page 93, paragraph 2.



the Proposed Development; the duration and reversibility of an effect; and the application of professional judgement, best practice guidance and policy/legislation. This change can occur during construction, operation or decommissioning of the Proposed Development, and effects can be beneficial, neutral or adverse.

- 7.4.4.13 Impacts are determined in terms of magnitude in space and time. There are five levels of spatial and temporal impact – these are described in **Table 7-4** and **Table 7-5** respectively.

Table 7-4: Definition of Spatial Impact Magnitude upon the IEFs

Magnitude of Impact	Definition
Very High	Would cause the loss, gain or improvement of the majority of a feature (>80 %) or would damage/enhance a feature sufficiently to immediately affect its integrity.
High	Would have a major effect on the feature or its integrity, for example more than 20 % habitat loss/damage or gain/improvement.
Medium	Would have a moderate effect on the feature or its integrity, for example between 10 and 20 % habitat loss/damage or gain/improvement.
Low	Would have a minor effect upon the feature or its integrity, for example, less than 10 % habitat loss/damage or gain/improvement.
Negligible	Minimal change on a very small scale; effects not dissimilar to those expected within a 'do nothing' scenario.

Table 7-5: Definition of Temporal Impact Magnitude upon the IEFs

Magnitude of Impact	Definition
Permanent	Impacts continuing indefinitely beyond the span of one human generation (taken here as >30 years), except where there is likely to be substantial improvement after this period in which case the category Long Term may be more appropriate.
Long Term	Between 15 years up to (and including) 30 years.
Medium Term	Between five years up to (but not including) 15 years.
Short Term	Up to (but not including) five years.
Negligible	No effect.

Significance Criteria and Identification

- 7.4.4.14 The predicted significance of potential effects is determined through a standard method of assessment based on professional judgement and available evidence, considering the sensitivity (nature conservation value and conservation status) of the IEF, and the nature and magnitude of change, in a reasoned manner.
- 7.4.4.15 A significant effect may either support or undermine biodiversity conservation objectives. Significant effects include those which result from impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)¹³.

¹³ CIEEM (2024), at section 5.25 – 5.26.



7.4.4.16 **Table 7-6** details the significance criteria that have been used in assessing the effects of the Proposed Development.

Table 7-6: Significance Criteria

Significance of Effect	Definition
Major	The effect is likely to result in a long term adverse or beneficial effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitat and species.
Moderate	The effect is likely to result in a medium term or partial adverse or beneficial effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitats and species.
Minor	The effect is likely to adversely or beneficially affect the feature at a low level by virtue of its limited duration and/or extent, but there will probably be no effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitats and species. The level of effect would be Minor and Not Significant.
Negligible	No material effect. The effect is assessed to be Not Significant.

7.4.4.17 Using the definitions in **Table 7-6**, it must be decided whether there would be any effects which would be sufficient to adversely affect the IEF to the extent that its conservation status deteriorates from that which would be expected should baseline conditions remain (i.e. the ‘do nothing’ scenario).

7.4.4.18 Major and Moderate effects are considered to be Significant within the context of the EIA Regulations.

7.4.4.19 Where adverse effects are identified, mitigation and/or compensation is considered to reduce or offset effects where possible, including avoidance or reduction through implementation of, and compliance with, best practice guidance and protected species legislation.

7.4.4.20 Residual effects are characterised as either adverse, neutral or beneficial and either Significant or Not Significant, taking account of mitigation proposals.

Potential Cumulative Effects

7.4.4.21 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated to a particular location. NatureScot guidance sets out that cumulative effects require the assessment of the effects of the Proposed Development together with other developments, projects or activities (SNH, 2018b¹⁴).

7.4.4.22 In the interests of focusing on the potential for likely significant effects, this assessment considers the potential for cumulative effects with other onshore wind farm EIA developments in the vicinity of the Proposed Development. The context in which these effects are considered is heavily dependent on the ecology of the features assessed. For example, for water vole (*Arvicola amphibius*), it may be appropriate to consider effects specific to individual catchments, should the distance between neighbouring catchments be sufficient to assume no movement of animals between them, whereas for blanket bog habitats, the region or NHZ may be the relevant spatial scale. Therefore, where it is considered necessary, an

¹⁴ Note that while this guidance focuses on ornithology, the principle applies considering cumulative impacts on non-avian ecology (similarity seen in NatureScot (2021). Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments).



assessment of cumulative effects will be made for each feature, appropriate to its ecology.

7.4.5 Limitations and Assumptions

- 7.4.5.1 Limitations exist regarding the knowledge base on how some species, and the populations to which they belong, react to impacts. A precautionary approach is taken in these circumstances, and as such it is considered that these limitations do not affect the robustness of this assessment.
- 7.4.5.2 Although the ecological surveys were undertaken during optimal survey seasons, the surveys are limited by factors which affect the presence of plants and animals, such as the time of year, migration patterns, and behaviour. The ecological surveys undertaken to inform the assessment for Proposed Development have not therefore produced a complete list of plants and animals and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future.
- 7.4.5.3 No notable limitations were experienced with regards to habitats, protected species or fish surveys. One field south-west of the Site boundary within the survey area for a potential access route could not be accessed for protected species due to livestock restrictions, however, this is not considered to be a significant limitation and lies outwith the Site boundary. The bat field surveys experienced some minor limitations due to six (out of 21) Anabat detectors failing to record data for a minimum period of ten nights during one deployment period. In addition, one Anabat detector was moved location for the summer and autumn deployment periods due to ornithological constraints (see **Technical Appendix 7.3: Bat Survey Report**). However, all bat detectors are susceptible to limitations, and the amount of static bat data collected overall greatly exceeds guidance requirements (NatureScot, 2021); for further detail see **Technical Appendix 7.3: Bat Survey Report**.
- 7.4.5.4 Whilst some general limitations have been identified, it is considered that there is sufficient information to enable a robust assessment to be taken in relation to the identification and assessment of potential effects on ecological features.

7.5 Baseline Conditions

7.5.1 Current Baseline

- 7.5.1.1 This section details the results of the desk-based study and field surveys, providing the ecological baseline for the Site and study area, and includes:
- statutory nature conservation designated sites (not including those designated for only ornithological or geological features, assessed in **Chapter 6: Ornithology** and **Chapter 11: Geology, Hydrology, Hydrogeology and Peat** respectively);
 - non-statutory nature conservation sites with local importance (i.e. LNCS) (not including those designated for only ornithological or geological features, assessed in **Chapter 6** and **Chapter 11** respectively);
 - habitats and vegetation; and
 - protected or notable species (non-avian).



Desk Study

Designated Sites

7.5.1.2 There are four statutory designations with ecological (non-avian) features within or marginally overlapping with the Site boundary: Slaidhills Moss SSSI; Whitlaw and Branxholme SAC; the River Tweed SAC; and Branxholme Wester Loch SSSI. There are a further four statutory designations with ecological (non-avian) features within 5 km of the Site boundary: the River Tweed SSSI; Branxholme Easter Loch SSSI; Allan Water, Hillhead SSSI; and Alemoor West Loch and Meadow SSSI. Details are provided in **Table 7-7** and on **Figure 7.1**.

Table 7-7: Designated Sites with Ecological (Non-Avian) Qualifying Interests within 5 km of the Site

Designated Site	Qualifying Ecological Feature	Condition of Feature (Date Monitored)	Distance from Site Boundary (km)	Negative Pressures
Slaidhills Moss SSSI	Bryophyte assemblage	Favourable maintained (22 November 2010)	Within Site boundary	Burning; over grazing; trampling
Whitlaw and Branxholme SAC	Base-rich fens	Unfavourable declining (21 January 2010)	Within and overlaps Site boundary	Invasive species (common reed, scrub); no proactive management; proactive on-site management; under grazing
	Slender green feather-moss (<i>Hamatocaulis vernicosus</i>)	Unfavourable declining (8 February 2010)		Forestry operations; invasive species (conifers); water management
	Very wet mires often identified by an unstable 'quaking' surface	Unfavourable, no change (31 March 2005)		Water management
River Tweed SAC	Atlantic salmon	Favourable maintained (24 February 2015)	Overlaps Site boundary	Agricultural operations; climate change; forestry operations; invasive species; over grazing; water management
	Brook lamprey (<i>Lampetra planeri</i>)	Favourable maintained (16 May 2019)		Water management
	Otter	Favourable maintained (26 October 2015)		Forestry operations; recreation/disturbance
	River lamprey (<i>Lampetra fluviatilis</i>)	Favourable maintained (16 May 2019)		Water management; water quality



Designated Site	Qualifying Ecological Feature	Condition of Feature (Date Monitored)	Distance from Site Boundary (km)	Negative Pressures
	Sea lamprey (<i>Petromyzon marinus</i>)	Unfavourable declining (21 May 2019)		Water management; water quality
	Rivers with floating vegetation often dominated by water-crowfoot	Unfavourable, no change (18 June 2019)		Invasive species; water management; water quality
Branxholme Wester Loch SSSI	Oligotrophic loch	Favourable declining (6 July 2016)	Overlaps Site boundary	Forestry operations
	Open water transition fen	Unfavourable declining (31 March 2009)		Invasive species; no proactive management; water management
River Tweed SSSI	Atlantic salmon	Favourable maintained (7 August 2017)	0.07	Agricultural operations; climate change; forestry operations; invasive species (North American signal crayfish); over grazing; water management
	Beetle assemblage	Unfavourable recovering (31 March 2005)		Flood defence/coastal defence works; game/fisheries management
	Brook lamprey	Favourable maintained (16 May 2019)		Water management; water quality
	Fly assemblage	Favourable maintained (8 April 2019)		Flood defence/coastal defence works; game/fisheries management; water quality
	Otter	Favourable maintained (26 October 2015)		Recreation/disturbance
	River lamprey	Favourable maintained (16 May 2019)		Water management; water quality
	Sea lamprey	Unfavourable declining (16 May 2019)		Water management; water quality
	Vascular plant assemblage	Unfavourable recovering (8 April 2019)		Under grazing
	Trophic range river/stream	Unfavourable, no change		Invasive species; water management



Designated Site	Qualifying Ecological Feature	Condition of Feature (Date Monitored)	Distance from Site Boundary (km)	Negative Pressures
		(10 June 2019)		
Branxholme Easter Loch SSSI	Base-rich loch	Favourable maintained (11 March 2014)	0.45	Forestry operations; over grazing; water management
Allan Water, Hillhead SSSI	Lowland calcareous grassland	Favourable maintained (24 September 2012)	0.61	N/A
Alemoor West Loch and Meadow SSSI	Flood-plain fen	Favourable maintained (18 December 2013)	2.39	N/A
	Vascular plant assemblage	Favourable maintained (18 December 2013)		Natural event

Ancient Woodland

7.5.1.3 The AWI shows no areas of ancient woodland within the Site (**Figure 7.1**). The closest area of ancient woodland is located 0.81 km south-west of the Site, which is classified as Ancient (of semi-natural origin). There are several other small areas of ancient woodland within 5 km of the Site located to the south and east of the Site boundary, the majority of which are classified as Ancient (of semi-natural origin), with some classified as Long-Established (of plantation origin). No areas of ancient woodland are associated with the designated sites listed in **Table 7-7**.

LNCS

7.5.1.4 The LDP2 identifies LNCS; these are areas identified by Scottish Borders Council to safeguard biodiversity and geodiversity of at least local importance (NatureScot, Scottish Wildlife Trust and Scottish Geology Trust, 2023).

7.5.1.5 As detailed in **Table 7-8**, there is one LNCS within the Site, Broadlee Moss and Loch LNCS; and six within 5 km of the Site: Greenbank Hill and Alemoor Dam Moss LNCS; Sea Croft and St Leonards Mosses LNCS; Winnington Moss LNCS; Barnes Loch Stobs Mire and Reservoirs LNCS; Acreknowe Reservoir LNCS; and Harden Moss LNCS (Open Government Licence (OGL)). Note that not all LNCSs within 5 km of the Site are included in the LDP2, therefore some information provided in **Table 7-8** is limited and interests are noted with 'Biodiversity' where relevant.

Table 7-8: LNCS with Ecological Qualifying Interests within 5 km of the Site

LNCS	Description	Distance from Site Boundary (km)
Broadlee Moss and Loch	Heathland, acid mire, raised bog and loch with breeding waterfowl, nationally scarce and locally rare plants and a priority butterfly	Within Site boundary
Greenbank Hill and Alemoor Dam Moss	Biodiversity	2.15



LNCS	Description	Distance from Site Boundary (km)
Sea Croft and St Leonards Mosses	Two species-rich basin mires connected by a wet ditch	2.68
Winnington Moss	Biodiversity	3.45
Barnes Loch Stobs Mire and Reservoirs	Biodiversity	4.16
Acreknowe Reservoir	Oligotrophic reservoir with fringing grassland surrounded by agricultural land	4.24
Harden Moss	Infilled lochan with a small area of open water remaining, surrounded by swamp vegetation, including nationally scarce and locally rare plants and beetles	4.93

Scottish Borders Local Biodiversity Action Plan (LBAP)

7.5.2 The purpose of the Scottish Borders LBAP is to create a framework for new and collaborative action for biodiversity (Scottish Borders Council, 2018). The LBAP has overarching aims, and the following are potentially relevant to the Proposed Development:

- ecosystem restoration;
- conserving wildlife in Scotland; and
- sustainable management of land and freshwater.

Habitats

Terrestrial Habitats

7.5.2.1 The Carbon and Peatland Map 2016 (Scottish Government, 2025b) was consulted to assess the likely classes of peatland and distribution across the Site. The map is a “predictive tool which provides an indication of the likely presence of peat on each individually mapped area, at a coarse scale”, and its purpose is “a high-level planning tool to promote consistency and clarity in the preparation of spatial frameworks by planning authorities”. The map identifies areas of “nationally important carbon-rich soils, deep peat and priority peatland habitat”, which are categorised as Class 1 and Class 2 peatlands. Areas of Class 1 peatland are “likely to be of high conservation value”, and Class 2 are “potentially high conservation value and restoration potential”.

7.5.2.2 According to this predictive tool and map (shown on **Figure 7.2**), there are no areas of Class 1¹⁵ or Class 2¹⁶ peatland within the Site, nor locally. The Site is largely made up of Class 0 Mineral Soil¹⁷, with an area of Class 4¹⁸ soils in the

¹⁵ Class 1 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

¹⁶ Class 2 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.

¹⁷ Mineral soil – Peatland habitats are not typically found on such soils (Class 0).

¹⁸ Class 4 – Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.



south-west of the Site, and a combination of Class 3¹⁹ soils, Class 5²⁰ soils and Class -2 Soil²¹ in the central area of the Site. The same classes are similarly found within 1 km of the Site boundary (**Figure 7.2**).

- 7.5.2.3** As the map is a high-level tool, detailed habitat (NVC) and peat depth (phases 1 and 2) surveys have been carried out at the Site to inform siting, design and mitigation and the detailed assessment on peatland and associated habitats. The results of the NVC surveys are discussed in **Technical Appendix 7.1: NVC and Habitats Survey Report**, and the peat depth results are discussed in **Chapter 11: Geology, Hydrology, Hydrogeology and Peat**.

Aquatic Habitats

- 7.5.2.4** Watercourses within the Site form tributaries ultimately feeding into the River Tweed. These on-site watercourses drain into the Teviot Water (Northouse Burn to Kale Water confluences) south of the Site boundary, and the Borthwick Water north of the Site boundary. The Teviot Water has been recorded by SEPA as a “heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on the drainage of agricultural land” (SEPA, 2023). The overall status of the Teviot Water was recorded as ‘Good ecological potential’ with ‘High fish ecology’ in 2023; and the overall status of the Borthwick Water was recorded as ‘Good’ in 2023, similarly with ‘High fish ecology’. Both rivers were recorded in 2023 to have ‘Good’ access for fish migration.
- 7.5.3** The Teviot Water forms part of the River Tweed SAC and River Tweed SSSI, and the Borthwick Water forms part of the River Tweed SSSI only (see **Figure 7.1** and **Table 7-7**).

Protected Species (Non-Avian)

National Biodiversity Network (NBN) Atlas Scotland

- 7.5.3.1** A search of the NBN Atlas returned records of the following protected or notable species within 5 km and 10 km (for bats species) of the Site in the past 15 years (i.e. from 2010 onwards) (NBN Atlas Scotland, 2025)²²:
- bat species: brown long-eared bat (*Plecotus auritus*); common pipistrelle (*Pipistrellus pipistrellus*); Daubenton’s bat (*Myotis daubentonii*); Natterer’s bat (*Myotis nattereri*); and soprano pipistrelle (*Pipistrellus pygmaeus*);
 - otter; and
 - red squirrel.

TWIC

- 7.5.3.2** In addition to the NBN Atlas, TWIC were consulted to obtain data for any protected, invasive or notable species within 5 km of the Site. Records of the following were provided over the past 15 years²³:
- Badger (protected species);

¹⁹ Class 3 – Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.

²⁰ Class 5 – Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.

²¹ Non-soil (e.g. loch, built up area, rock and scree) (Class -2).

²² Data licenses and providers are detailed in **Technical Appendix 7.2: Protected Species Survey Report** and **Technical Appendix 7.3: Bat Survey Report**.

²³ Details regarding data providers are detailed in **Technical Appendix 7.2: Protected Species Survey Report**.



- common lizard (protected species);
- grey squirrel (*Sciurus carolinensis*) (invasive non-native species);
- otter (protected species); and
- red squirrel (protected species).

SSRS

7.5.3.3 Other than years 2011 and 2014, sightings of red squirrel have been recorded by SSRS every year within 5 km of the Site (Saving Scotland's Red Squirrels, 2025). The majority of sightings have been recorded within the areas of woodland south of the Site, north of Teinside Lodge, and north of the Site, at Chisholme. No records by SSRS fall within the Site boundary. The Site falls within the Teviot and Rule PARC area, which is a large PARC targeted for red squirrel conservation, involving grey squirrel control and surveys.

Fish

7.5.3.4 The Proposed Development falls within the River Tweed catchment, which extends 156 km in length and covers a catchment area of 5,076 km² (River Tweed, 2025). The river and certain tributaries are known to contain important species such as Atlantic salmon, brown and sea trout, brook lamprey, sea lamprey, river lamprey and European eel.

Other Species (Non-Avian)

Deer

- 7.5.3.5 Deer are not included in this assessment from a nature conservation perspective; however, they are considered due to potential welfare issues and their potential impact on other ecological features through e.g. grazing.
- 7.5.3.6 The results of the Deer Distribution Survey suggest that roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*) and sika deer (*Cervus nippon*) are likely to be present within or have previously been recorded within the wider area of the Site (British Deer Society, 2023).

Invasive Non-Native Species (INNS)

- 7.5.3.7 INNS are a threat to biodiversity and there is a legal obligation to control their spread²⁴. The NBN Atlas search returned records of the following INNS within 5 km of the Site in the last 15 years (i.e. since 2020):
- grey squirrel;
 - Japanese knotweed (*Fallopia japonica*); and
 - rhododendron (*Rhododendron ponticum*).

Field Surveys

- 7.5.3.8 Details of field survey methodologies, including survey timings, survey area extents, and survey results are presented in the following technical appendices:
- **Technical Appendix 7.1:** NVC and Habitats Survey Report;
 - **Technical Appendix 7.2:** Protected Species Survey Report;

²⁴ Section 14 to the Wildlife and Countryside Act 1981.



- **Technical Appendix 7.3:** Bat Survey Report;
- **Technical Appendix 7.4:** Fish Survey Report;

7.5.3.9 This section summarises the baseline conditions established during these surveys.

Habitats

National Vegetation Classification (NVC) and Phase 1

- 7.5.3.10 **Technical Appendix 7.1: NVC and Habitat Survey Report** presents information on the habitat surveys and detailed descriptions of habitat types and vegetation recorded during the surveys.
- 7.5.3.11 The habitats survey results are shown on **Figure 7.3**, which display all data collected during the surveys²⁵. The survey area for habitats covered an area greater than the Site boundary, including an area south of the Site (reflecting earlier areas of interest), and an area south-west of the Site potentially to be considered as an optional abnormal load delivery route. The additional area surveyed would be assessed fully by the Applicant in the future if deemed necessary for access to the Site.
- 7.5.3.12 The habitat extents provided and discussed in this section relate only to those within the Site boundary, as these habitats form the baseline conditions and the basis for the assessment of potential effects and habitat loss, discussed further below.
- 7.5.3.13 The NVC data collected was also cross-referenced to the Phase 1 Habitat Survey Classification (JNCC, 2010) to allow a broader characterisation of habitats. The extent of Phase 1 habitat types within the survey area was calculated using the Site-specific correlation of NVC communities to their respective Phase 1 types (see **Technical Appendix 7.1: NVC and Habitat Survey Report** for full details), and their extents mapped within ArcGIS software, including within mosaic areas.
- 7.5.3.14 The NVC communities and non-NVC types, and the corresponding overarching Phase 1 habitat types, recorded during surveys are provided in **Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations of this chapter and include the proportions of particular habitat types found within the Site boundary, including those within mosaic habitats. Full descriptions of the habitats, NVC communities and associated flora of the Site and wider survey area are provided in **Technical Appendix 7.1: NVC and Habitat Survey Report**.
- 7.5.3.15 **Diagram 7-1** summarises the habitats which contribute over 1 % of the Site, which shows that the majority of the study area (29.5 %) is comprised of marsh/marshy grassland. The other more extensive habitats are unimproved acid grassland (16.2 %), bracken (13.4 %) and semi-improved acid grassland (12.6 %).
- 7.5.3.16 As detailed in **Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations the study area contains a wide variety of habitat types and mosaics. Whilst some relatively homogenous stands of vegetation occur, many of the identified communities form complex mosaics and transitional areas across the

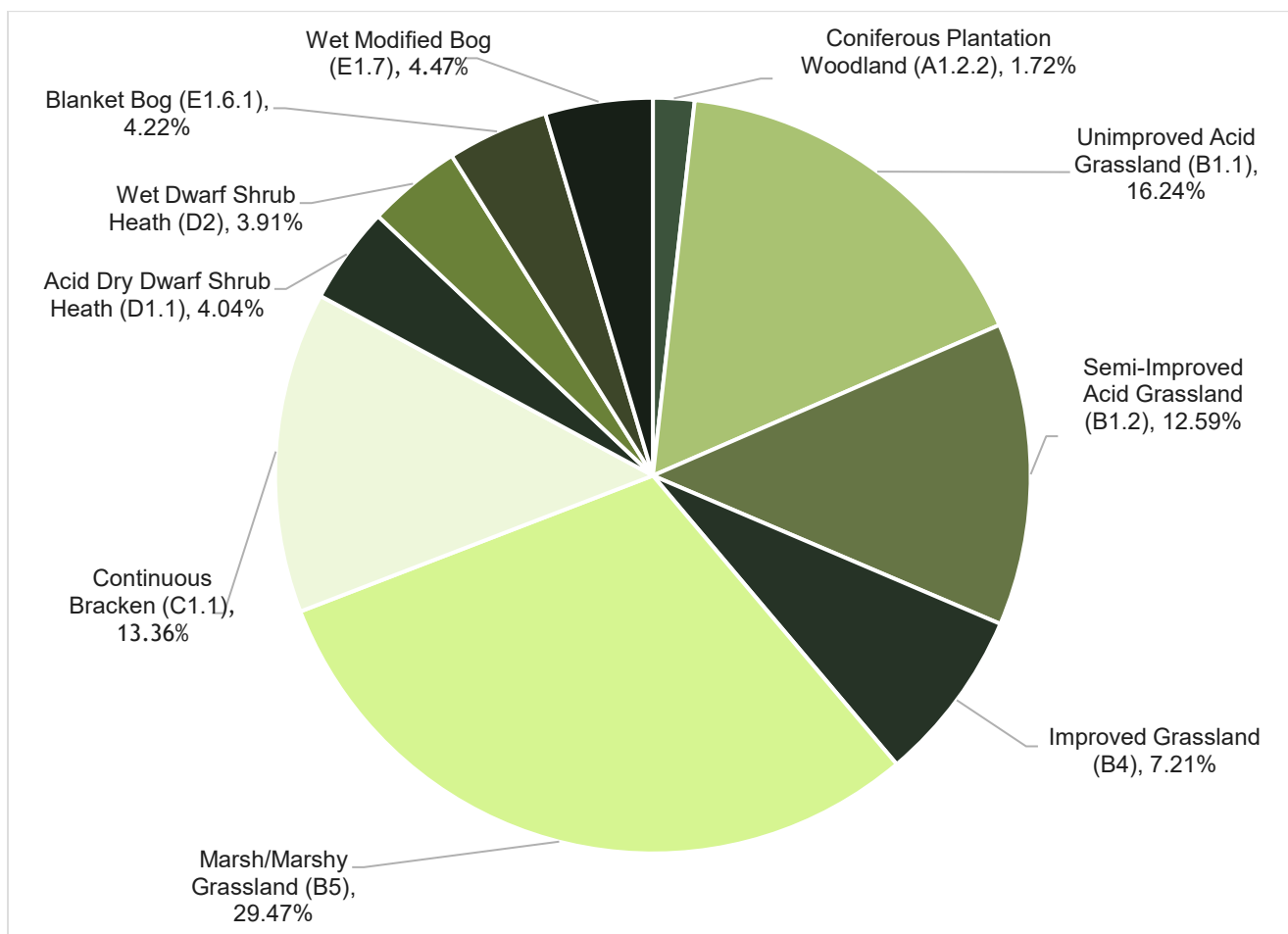
²⁵ The Phase 1 symbology shading on Figure 7.3 has been used to broadly characterise stands of vegetation based on the dominant NVC community within a particular area. The Phase 1 characterisation has been utilised to allow a broader visual representation of the habitats within the survey area. Polygons or areas where there are mosaic NVC communities have generally been assigned a single Phase 1 classification based on the dominant NVC type (despite some polygons containing multiple Phase 1 types, often in low percentages). Therefore, the Phase 1 characterisation is generally a broader overview, and the NVC data should be referred to for further detail in any specific area.



study area (see **Figure 7.3**). The habitat types that have subsequently been scoped into the assessment of effects due to their extent, nature conservation value and sensitivity are blanket bog and wet modified bog. Detailed descriptions of these habitat types are included in **Technical Appendix 7.1: NVC and Habitat Survey Report**.

7.5.3.17 The blanket bog within the Site is considered to be a modified and degraded resource. The area has a long history of intensive grazing and livestock poaching, and evidence of historical moor grip drainage and muir burning in areas. There are also a few areas with self-seeded non-native conifer trees present, which has an adverse impact on blanket bog.

Diagram 7-1: Predominant Phase 1 Habitat Types Recorded within the Site (habitat types making up <1 % of the Site are not included)



Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

7.5.3.18 The NVC results were referenced against SEPA guidance (SEPA, 2024) to identify those habitats which may be classified, depending on the hydrogeological setting, as being potentially groundwater dependent.

7.5.3.19 Potential GWDTE NVC communities recorded within the survey area are detailed in **Technical Appendix 7.1: NVC and Habitat Survey Report** and shown on **Figure 7.4**.

7.5.3.20 Potential GWDTE sensitivity has been assigned solely on the SEPA listings. However, many of the NVC communities on the list are common habitat types across Scotland and generally of low nature conservation value. Furthermore,



depending on several factors such as geology, superficial geology, presence of peat and topography, many of the potential GWDTE communities recorded may in fact be only partially groundwater fed or not dependent on groundwater. Because designation as a potential GWDTE is related to groundwater dependency and not nature conservation value, GWDTE status has not been used as criteria to determine a habitat's nature conservation value and similarly does not factor in the identification of IEFs within ecological impact assessments. There is however a requirement to consider GWDTEs, and the data gathered during the NVC surveys has been used to inform this assessment further in **Chapter 11: Geology, Hydrology, Hydrogeology and Peat**.

Annex I Habitats

- 7.5.3.21 Many NVC communities can also correlate with various Annex I habitat types listed under the Habitats Directive. The fact that a NVC community can be attributed to an Annex I type however does not necessarily mean all instances of that NVC community constitute Annex I habitat. Its Annex I status can depend on various factors such as quality, extent, species assemblages, geographical setting, and substrates.
- 7.5.3.22 NVC survey data and field observations have been compared to JNCC Annex I habitat listings and descriptions (JNCC, undated). Those habitats within the Site boundary which could be considered Annex I habitats are discussed within **Technical Appendix 7.1: NVC and Habitat Survey Report**.

Scottish Biodiversity List (SBL) Habitats

- 7.5.3.23 The SBL (NatureScot, 2020) is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The SBL identifies habitats which are the highest priority for biodiversity conservation in Scotland; these are termed 'Priority Habitats'.
- 7.5.3.24 Some of the priority habitats are quite broad and can be correlated to many NVC types. Relevant SBL Priority Habitat types and corresponding associated NVC types recorded within the survey area are summarised within **Technical Appendix 7.1: NVC and Habitat Survey Report**. These SBL Priority Habitats correspond with UKBAP Priority Habitats (JNCC, 2024).

Protected Species (Non-Avian)

- 7.5.3.25 This section outlines the results from the protected species surveys. Detailed methodologies, survey timings, survey results and the legal status of each species are included within the following technical appendices:
- **Technical Appendix 7.2:** Protected Species Survey Report;
 - **Technical Appendix 7.3:** Bat Survey Report; and
 - **Technical Appendix 7.4:** Fish Survey Report.
- 7.5.3.26 Survey results are shown on **Figures 7.5** and **7.6**, with confidential information presented on **Figure 7.5C**.

Badger

- 7.5.3.27 Twelve badger setts were recorded within the survey area. The sett classification, activity and number of holes ranged, with the majority of setts recorded with a single entrance, and the largest having seven entrances. At the time of the surveys, the majority of setts were recorded as well-used. Further details are



provided in **Technical Appendix 7.2: Protected Species Survey Report**, Confidential Annex D and on **Figure 7.5C**. Badger field signs including snuffle holes, latrines and dung were also recorded within the survey area (**Figure 7.5**).

- 7.5.3.28 The majority of badger setts recorded (11 out of 12) are located within the east of the Site. The closest sett (a single holed sett) to proposed new infrastructure (crane hardstanding) is 125 m (**Figure 7.5C**).
- 7.5.3.29 One dead badger was recorded by the side of road within the survey area.

Bats

- 7.5.3.30 This section provides a summary of the field surveys and associated results for bats. Full details of the methods, field surveys and associated results for bats are presented in **Technical Appendix 7.3: Bat Survey Report**.

Daytime Bat Walkover Survey

- 7.5.3.31 Nine features were recorded from ground level within the survey area as having potential suitability for roosting bats, i.e. a Potential Roost Feature (PRF), including two structures and seven trees (including one groups of trees). The PRF structures were assessed as having low suitability for roosting bats; and each of the trees/group of trees were assessed as PRF-I (**Figure 7.6**) (Collins, 2023).
- 7.5.3.32 Following guidance (Collins, 2023), no features were recorded with moderate or PRF-M suitability for roosting bats within 200 m plus rotor radius of a proposed turbine location; and no PRF feature recorded is within 30 m of proposed new infrastructure. As such, no additional targeted bat surveys were required.

Automated Bat Activity Surveys

- 7.5.3.33 Static bat activity surveys involved the development of 21 Anabat detectors across the Site between April and September 2024 over a period of 47 nights, covering three survey visits during spring, summer and autumn and up to 14 consecutive nights per survey visit. This resulted in 812 associated data recording nights, which is significantly more than the 330 nights as required by NatureScot *et al.* guidance (NatureScot *et al.*, 2021) for a development of the size of the 13 turbine Proposed Development; see **Technical Appendix 7.3: Bat Survey Report**. The Anabat locations are shown on **Figure 7.6**.
- 7.5.3.34 The Anabats recorded a total of seven bat species and two genus classifications, with bats recorded on 44 of the 47 nights. The total number of bat passes recorded for each species/genera across all Anabat locations is shown on **Table 7-9**.
- 7.5.3.35 Common pipistrelle and soprano pipistrelle accounted for the majority of registrations, at 50.7 % and 41.0 % respectively (**Table 7-9**).

Table 7-9: Total Number of Bat Passes for Each Species and Genus Across all Locations in 2024

Species/Species Group	No. of Registrations	Percentage of Total (%)
Common pipistrelle	12,224	50.7
Soprano pipistrelle	9,887	41.0
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	39	0.2
Brown long-eared	33	0.1
<i>Nyctalus</i> spp.	1,333	5.5



Species/Species Group	No. of Registrations	Percentage of Total (%)
<i>Myotis</i> spp.	65	0.3
Daubenton's	298	1.2
Whiskered (<i>Myotis mystacinus</i>)	18	0.1
Natterer's	223	0.9
Total	24,120	100

Quantifying Bat Activity

- 7.5.3.36 In line with NatureScot *et al.* guidance (NatureScot *et al.*, 2021), the data from the 2024 static bat activity surveys was analysed using the Ecobat tool (Mammal Society, 2017) to gain a measure of relative bat activity at the Proposed Development. The data was then evaluated to determine the overall Site risk level for each species. The guidance explains that,
- 7.5.3.37 “The tool compares data entered by the user with bat survey information collected from similar areas at the same time of year... Ecobat generates a percentile rank for each night of activity and provides a numerical way of interpreting the levels of bat activity recorded at a site across regions in Britain”.
- 7.5.3.38 The data from the Site was compared against data from within 30 days of the survey date, and within 100 km of the Site. The full Ecobat Report is provided in **Technical Appendix 7.3: Bat Survey Report**, Annex F.
- 7.5.3.39 This Ecobat analysis provides a measure of average annual Site activity based on the median (most frequent activity category and representative of the ‘typical’ bat activity levels in the Site) and maximum (unusually high levels or important peaks of bat activity) percentiles²⁶. A reference range representing the number of nights for each species that the data was compared to was also generated. A reference range of more than 200+ nights is recommended for confidence in the activity level stated by the Ecobat output.
- 7.5.3.40 Common pipistrelle and soprano pipistrelle were both attributed activity levels of Low for the median percentile, and High for the maximum percentile. Both species had high reference ranges, thus allowing these attributions to be treated with confidence. Brown long-eared, Nathusius’ pipistrelle and whiskered bat were attributed either Moderate or Moderate – High activity levels, with either Moderate – High or High for the maximum percentile. The remaining species and genus recorded (*Myotis* spp., Daubenton’s, Natterer’s and *Nyctalus* spp.) were attributed Low or Low – Moderate activity levels, and, other than *Myotis* spp., all recorded High for the maximum percentile (*Myotis* spp. recorded Low). The reference ranges for these species varied, with ranges for whiskered, Nathusius’ pipistrelle and brown long-eared below 200 (18, 44 and 188 respectively), therefore measures of the relative activity level for these species should be treated with caution.
- 7.5.3.41 As per NatureScot *et al.* guidance (NatureScot *et al.*, 2021), the following species and genus recorded during surveys are deemed to have a high collision risk: common pipistrelle, soprano pipistrelle, Nathusius’ pipistrelle and *Nyctalus* spp. All other bat species and genus recorded are categorised as low collision risk and of

²⁶ The percentile rank is attributed to one of the following five bat activity categories as defined within relevant guidance: Low (0-20 %), Low-Moderate (21-40 %), Moderate (41-60 %), Moderate-High (61-80 %) and High (81-100 %).



low population vulnerability following the same guidance. The assessment of potential risk to bat species is discussed in detail in **Section 7.7**.

Fish

7.5.3.42 Electrofishing and fisheries habitat surveys were undertaken by The Tweed Foundation in June 2024 with a total of nine watercourses on and around the Site and within the River Tweed catchment surveyed, however only eight of these were suitable for electrofishing. The electrofishing sites were located on the fringes of the Site (see **Figures 7.11** and **7.12**) due to the presence of impassable barriers to migration on the edge of/or outwith the Site boundary. Consequently, fish habitat surveys only extended into the Site on the Eildrig Burn (including tributary). Full results from the surveys are contained in **Technical Appendix 7.4: Fish Survey Report**.

7.5.3.43 Out of the eight electrofishing sites surveyed, Atlantic salmon was recorded at five sites (Teinside Burn, Wood Burn, Muselee Burn, Philhope Burn and Eildrig Burn), with the watercourses surveyed being at the upper range of Atlantic salmon distribution here and with the number of spawners varying from year to year based on flow conditions at the time of spawning. Trout were recorded at all eight electrofishing sites. European eel presence was recorded at four watercourses which drain into the Borthwick Water, and stone loach (*Barbatula barbatula*) was recorded at Muselee Burn. No other fish species, including lamprey species (due to absence of suitable habitat), were recorded during the electrofishing surveys.

7.5.3.44 Of the watercourses where Atlantic salmon were recorded, densities per 100 m² ranged from very low to high for fry (< one year old) and very low to very high for parr (> one year old). Atlantic salmon fry and parr were recorded in Teinside Burn and Eildrig Burn, fry only in Wood Burn and Muselee Burn, and parr only in Philhope Burn.

7.5.3.45 Of the watercourses where trout were recorded, numbers ranged from low to very high for both fry and parr. The majority of these contained trout fry, with Dryden Burn and Vales Burn containing trout parr only, and Wood Burn containing trout fry only. Within the context of the River Tweed, all of the surveyed watercourses are considered as primarily trout rearing areas rather than Atlantic salmon.

Otter

7.5.3.46 Three otter spraints were recorded within the survey area: two spraints were relatively fresh and one older. The spraints were recorded in the south-west of the survey area, outwith the Site boundary, at Hazelhope Burn and the River Teviot (**Figure 7.5**). No protected features for otter (i.e. holts or couches) were recorded during field surveys.

7.5.3.47 The watercourses within the Site offer limited sheltering opportunity for otter and are more suitable for commuting and occasional foraging (as food resources within these watercourses are limited).

Pine Marten

7.5.3.48 No field signs attributable to pine marten were recorded within the survey area. Areas of woodland is sparse within the Site offering limited shelter, den, foraging and hunting habitat for pine marten.

Red Squirrel

7.5.3.49 One squirrel drey was recorded in the south-west of the survey area within an area of Sitka spruce plantation, but is located 1.39 km outwith the Site boundary, where several feeding signs were also recorded (see **Technical Appendix 7.2**:



Protected Species Survey Report and **Figure 7.5**). No red squirrel sightings were recorded during the field surveys. The drey and feeding signs alone are not conclusive to determine whether the species was red or grey squirrel, and the desk-study results (**Section 7.5**) indicates that both species are present locally. However, based on the precautionary principle, it is assumed these records may be attributable to red squirrel.

Reptiles

7.5.3.50 Two common lizard sightings were recorded within the survey area: one by the River Teviot and one by Hazelhope Burn. Five features with potential for use as hibernacula were recorded within the Site boundary in the form of old sheep folds.

Water Vole

7.5.3.51 One potential water vole burrow was recorded at Rough-hope Burn, with multiple entrances with vegetation cut at 45 degree angle. As no water vole droppings were recorded, water vole presence is not conclusive as droppings are the only field sign that can be used to determine water vole presence reliably on their own (Dean *et al.*, 2016); however, based on the precautionary principle, presence is assumed based on other field signs. Another potential feeding station was recorded at Muselee Burn.

Other Species and INNS

7.5.3.52 Four mammal holes were recorded within the survey area (**Figure 7.5**). Three were recorded by watercourses and were of a size and nature that could be in use by water vole, and one was approximately 16 cm x 10 cm with fresh digging signs noted; however no distinguishing field signs were recorded to allow classification or assignment to a protected species.

7.5.3.53 Two records of brown hare were recorded within the survey area during field surveys: one in the north-east of the Site and one south-east of the Site boundary (**Figure 7.5**).

7.5.3.54 No other instances, signs of notable species or INNS were recorded during field surveys.

7.5.4 Future Baseline

7.5.4.1 In the absence of the Proposed Development, it is likely that the IEFs would generally remain as they are at present, although numbers and distribution of species may fluctuate naturally. Vegetation and habitat composition, structure, quality and extents within the Site may be adversely affected by encroachment and invasion of non-native self-seeded conifer trees from adjoining forestry areas in the west and south-west of the Site boundary, and the continuing maturity of the existing self-seeded specimens. Vegetation and habitat composition, structure and extents within the Site may also fluctuate marginally in the long term in line with increasing or decreasing livestock grazing and fluctuations in deer browsing.

7.6 Environmental Design and Impact Avoidance Measures

7.6.1 Embedded Mitigation Measures

7.6.1.1 This section sets out measures by which ecology is controlled by embedded design measures, or by standard practice methods secured through the Section 36 process. For the purposes of the ecology assessment, embedded mitigation is considered to include both primary mitigation (mitigation achieved through



implementing changes during the design of the Proposed Development), and committed mitigation, as described below.

7.6.2 Iterative Design Process

7.6.2.1 As part of the iterative design process for the Proposed Development, ecological constraints identified through baseline survey results were considered to avoid or reduce negative effects on ecological features where possible (**Chapter 3: Description of the Proposed Development**). This involves the following process:

- the infrastructure layout has been designed so that no infrastructure or activities associated with construction, decommissioning, or operational maintenance of the Proposed Development is within the supporting hydrological catchment of Slaidhills Moss SSSI;
- applying a 50 m buffer for any infrastructure or construction activity around all watercourses where possible, except where a minimum number of watercourse crossings are required. This will minimise effects on associated habitats and species;
- using existing tracks and watercourse crossings wherever possible, and designing track length and alignment to reduce the extent of new track and number of watercourse crossings required, where feasible considering the topography of the Site and other environmental Site constraints;
- avoiding deeper peatland (>0.5 m), blanket bog and wet modified bog habitats, and potential GWDTEs for the location of wind turbines and other infrastructure as far as practicable;
- maintaining a 100 m buffer from proposed infrastructure for any badger setts; and
- establishing a 50 m buffer from turbine blade tips to important edge habitats, across the Site to safeguard bats and reduce bat collision risk (NatureScot *et al.*, 2021.)

7.6.3 Standard Mitigation Measures

Pre-Construction and Construction

7.6.3.1 The assessment in this EIA Report has been carried out on the basis that all works would be carried out in line with good industry practice construction measures, guidance and legislation (**Chapter 4: Approach to EIA**).

7.6.3.2 To ensure all reasonable precautions are taken to avoid adverse effects on habitats, protected species and aquatic interests, a suitably qualified ECoW will be appointed prior to the commencement of construction to advise the Applicant and the Principal Contractor (PC) on all ecological matters. The ECoW will be required to be present on-site during the construction phase and will carry out monitoring of works and briefings with regards to any ecological sensitivities on the Site to the relevant staff of the PC and any sub-contractors.

7.6.3.3 A SPP (outline SPP provided as **Technical Appendix 7.5: Outline SPP**) will be implemented during the construction phase. The SPP details measures to safeguard protected species known or likely to be in the area. The SPP includes pre-construction surveys and good practice measures during construction. Pre-construction surveys will be undertaken to check for any new protected species or features in the vicinity of the construction works. The results of the pre-construction surveys will be used to update the outline SPP ahead of construction



starting. The SPP will remain a live document to be updated as required and in agreement with the ECoW where changes to the distribution and status of protected species and features are recorded.

- 7.6.3.4 Any micro-siting of infrastructure will be based on a review of existing ecological data and the completion of pre-construction surveys, to take into consideration the potential for direct encroachment onto protected species features, sensitive habitats or GWDTEs, or indirect alteration of hydrological flows supporting designated sites, sensitive habitats or GWDTEs. Any micro-siting will also take into consideration any buffer distances on protected features identified, as detailed within the SPP (**Technical Appendix 7.5: Outline SPP**).
- 7.6.3.5 Once appointed, there will be a contractual management requirement for the successful PC to develop and/or implement a comprehensive, Site-specific and robust CEMP discharged in consultation with SEPA and Scottish Borders Council (as the planning authority). This document will detail how the successful PC will manage the works in accordance with all commitments and mitigation detailed in the EIA Report, the SPP, statutory consents and authorisations, and good industry practice and guidance for environmental management, including implementation of appropriate pollution prevention (particularly in relation to watercourses). An outline CEMP is provided as **Technical Appendix 2.1: Outline CEMP**.

Operation

- 7.6.3.6 In line with best practice guidance on bats (NatureScot *et al.*, 2021), the Proposed Development will utilise the method of reduced rotation speed whilst idling by feathering, at all turbines, to reduce collision risks to bats during the bat active period (April to October, inclusive). The guidance notes that,
“The reduction in speed resulting from feathering compared with normal idling may reduce fatality rates by up to 50%”.
- 7.6.3.7 Given the known presence of high collision risk bat species on-site (see **Technical Appendix 7.3: Bat Survey Report** for further details), this measure will be put in place from the start of the operational phase of the Proposed Development, and it does not result in any loss of output.
- 7.6.3.8 Operational phase environmental management plans following relevant best practice and guidance will be in place during operation of the Proposed Development, these will for example include provisions for, but not limited to, ongoing pollution prevention control measures.

7.7 Assessment of Likely Impacts and Effects

- 7.7.1.1 This section describes the likely impacts and effects during the construction, operation and decommissioning of the Proposed Development on the relevant ecological features. The assessment of the likely significant effects of the Proposed Development has been based on the implementation of both embedded and standard mitigation measures summarised in **Section 7.6**.

7.7.2 Assumptions of the Assessment

- 7.7.2.1 The following assumptions are included in the assessment of otherwise unmitigated effects on IEFs:
- work on the Proposed Development, including vegetation clearance and construction of new tracks, wind turbine hardstandings and other ancillary infrastructure, erection of the wind turbines and Site restoration is predicted to



last for approximately 28 months (described in detail in **Chapter 2: Description of the Proposed Development**);

- all electrical cabling between wind turbines and the associated infrastructure would be underground in shallow trenches which would be reinstated post-construction and, in all cases, follow the tracks;
- the construction compounds, batching plant areas and any temporary laydown/hardstanding areas will be temporary infrastructure. Any disturbance or earthworks around permanent infrastructure during construction would be temporary and these areas (along with the areas of temporary infrastructure) reinstated or restored before the construction phase ends. The only excavation in these areas around permanent infrastructure would be for cabling as noted above and otherwise may only be periodically used for side-casting of spoil until reinstatement; and
- the embedded pre-construction and construction phase mitigation described in **Section 7.6** will be fully applied, e.g. the presence of an ECoW, adherence to the agreed SPP and CEMP post-consent.

7.7.3 Ecological Features Scoped Out of the Assessment

7.7.3.1 In addition to those ecological features and effects already scoped out as detailed within **Section 7.4**, based on the survey findings and with consideration of the additional desk study and baseline data collected, and following the iterative design and embedded mitigation measures described in **Section 7.6** and project assumptions in this **Section 7.7**, several potential effects on IEFs can be scoped out of further assessment based on the professional judgement of the EIA team and experience from other relevant projects and policy guidance or standards. This includes effects from the construction and operational phases of the Proposed Development, as well as cumulative effects. The following paragraphs detail the ecological features and effects that have been scoped out following further desk studies and field surveys.

Designated Sites and Ancient Woodland

- 7.7.3.2 With respect to Branxholme Easter Loch SSSI, Allan Water, Hillhead SSSI and Alemoor West Loch and Meadow SSSI, giving consideration to the distances between the Site boundary and these designated sites and their respective qualifying features (**Table 7-7**), it is considered that there is no connectivity between the Proposed Development and these designated sites and as such they are scoped out of the assessment, as has also been noted as acceptable by NatureScot (**Table 7-2**).
- 7.7.3.3 Slaidhills Moss SSSI is located within the Site and is a component part of Whitlaw and Branxholme SAC. The qualifying interests are sensitive to changes in the quantity, quality and chemistry of water entering from the surrounding land, including from underground and overground springs, flushes, aquifers, and groundwater movement. A detailed desk-study, Site-specific research and surveys, and hydrological and hydrogeological assessments were undertaken to determine potential connectivity between the Proposed Development and the SSSI (see **Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC**). The Proposed Development layout has been designed so that no infrastructure or activities associated with construction, decommissioning, or operational maintenance of the Proposed Development is within the Slaidhills Moss SSSI catchment. Therefore, it has been ascertained, the



Proposed Development is not hydrologically or hydrogeologically connected to and will not affect the supporting land and catchment area of the Slaidhills Moss SSSI (or this component part of Whitlaw and Branxholme SAC). Consequently, potential effects on Slaidhills Moss SSSI, specifically, are scoped out (see further details and discussion in **Technical Appendix 7.6: Shadow HRA** and **Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC**).

- 7.7.3.4 There is no overlap between the Site boundary and areas of ancient woodland (**Figure 7.1**). As no ancient woodland would be lost due to the Proposed Development, effects are therefore scoped out of the assessment.

LNCS

- 7.7.4 The LNCS within 5 km of the Site boundary (with the exception of Broadlee Moss and Loch LNCS) are scoped out of the assessment for similar reasons as the statutory designated sites listed above in **paragraph 7.7.3.2**, where the respective relevant features of interest (i.e. as described in **Table 7-8**) are sufficiently distant from the Site boundary and/or lack any hydrological or ecological connectivity. As such, Greenbank Hill and Ale Moor Dam Moss; Sea Croft and St Leonards Mosses; Winnington Moss; Barnes Loch Stobs Mire and Reservoirs; Acreknowe Reservoir; and Harden Moss are scoped out of the assessment.

Terrestrial Habitats

- 7.7.4.1 Habitats that are considered to be of a lower conservation value and are very common habitat types locally and regionally are scoped out of the assessment as per **Section 7.4**. Within the study area, these include:

- coniferous plantation woodland;
- recently-felled coniferous woodland;
- scrub – dense/continuous;
- scattered conifer trees;
- unimproved acid grassland;
- semi-improved acid grassland;
- unimproved neutral grassland;
- improved grassland;
- bracken – continuous/scattered;
- tall herb and fern (tall ruderal and non-ruderal);
- acid/neutral exposure;
- quarry;
- arable;
- amenity grassland; and
- bare ground.

- 7.7.4.2 Marsh/marshy grassland and wet heath are also scoped out of the assessment. Marshy grassland covers 578.18 ha (29.5 %) of the Site, and comprises MG10, M23, M25, M27 and M28 communities, and non-NVC types *Carex spp.* neutral sedge mire (Mx), *Juncus effusus* (Je) and *Juncus acutiflorus* (Ja) acid grassland



communities. Wet heath covers 76.66 ha (3.9 %) of the Site, and is made up of the M15 community, sometimes as mosaics of M15 and acid grassland. The range of marshy grassland and wet heath communities within the Site are common habitat types locally, regionally and nationally, and the relatively small direct and indirect losses predicted, as per **Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations, are of minor significance. Many of the NVC communities underpinning these marshy grassland and wet heath communities are considered potential GWDTEs in line with SEPA guidance (SEPA, 2024). However, designation as a GWDTE does not infer an intrinsic biodiversity value, and GWDTE status has not been used as criteria to determine conservation value in the ecology assessment. There is however a statutory requirement to consider GWDTEs, and the data gathered during the NVC surveys has been used to inform this assessment (see **Chapter 11: Geology, Hydrology, Hydrogeology and Peat**).

7.7.4.3 A number of other habitats recorded within the Site are of local importance, some due to their listing as Annex I habitats or SBL Priority Habitats. However, as they occupy such small areas within the Site, they are species-poor examples, and/or any direct or indirect effects on the habitat will not occur or will be negligible in magnitude (**Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations) particularly due to embedded mitigation described in **Section 7.6**, and as such all effects on these habitat types are scoped out of the assessment. These include:

- broadleaved semi-natural woodland;
- broadleaved plantation woodland;
- scattered broadleaved trees;
- unimproved calcareous grassland;
- dry heath;
- acid/neutral flush;
- basic flush;
- swamp;
- standing water; and
- running water.

Aquatic Habitats and Species

7.7.4.4 Effects on aquatic habitats and species in a wider countryside context (i.e. unrelated to Natura 2000 sites), including standing and running water and fisheries interests are scoped out of the following assessment. Five of the watercourses draining the Site were found to contain Atlantic salmon in variable densities; however, only one watercourse within the Site (i.e. Eildrig Burn) is accessible to migratory fish due to impassable barriers on all the other watercourses at the edge of or just outwith the Site boundary. Trout were recorded at all eight watercourses surveyed draining the Site (see **Technical Appendix 7.4: Fish Survey Report**).

7.7.4.5 The Proposed Development has the potential to impact negatively on water quality and hydrogeomorphology in the absence of mitigation. However, to avoid direct or indirect impacts on these features a minimum 50 m buffer distance between infrastructure and watercourses has been maintained where possible, except where a watercourse crossing cannot be avoided (see **Chapter 11: Geology,**



Hydrology, Hydrogeology and Peat)). The design of permanent and temporary access track watercourse crossings would comply with SEPA good practice guidance to minimise impacts on fish and their habitat.

- 7.7.4.6 As detailed in **Section 7.6**, the embedded mitigation includes that construction work would comply with a CEMP developed by the PC, which would be monitored by a suitably experienced ECoW. The CEMP would include good practice mitigation for effective silt and pollution prevention and undertaking works in accordance with SEPA best practice guidelines. With this embedded mitigation in place, water pollution impacts and associated likely significant effects associated with the Proposed Development on watercourses, aquatic ecology and fish are considered unlikely, and therefore these pollution impacts are scoped out of further assessment. Further assessments of watercourses are provided in **Chapter 11**.
- 7.7.4.7 Note that potential impacts on the River Tweed SAC (and the River Tweed SSSI) and their qualifying interests are detailed, considered and assessed separately as part of a shadow HRA presented in **Technical Appendix 7.6: Shadow HRA**.

Protected Species

- 7.7.4.8 Effects on hares, pine marten, red squirrel, reptiles and water vole are scoped out of the assessment due to the absence of protected features, lack of suitable habitat, limited or absence of desk-based or field evidence within the Site boundary and/or lack of potential effects from the Proposed Development.
- 7.7.4.9 Effects on otter are scoped out of the assessment due to lack of suitable habitat and field evidence within the Site boundary. Note that potential impacts on the River Tweed SAC and SSSI of which otter are a qualifying ecological interest is considered and assessed separately in **Technical Appendix 7.6: Shadow HRA**.
- 7.7.4.10 Effects on badgers are also scoped out of the assessment. As noted in **Section 7.5**, 12 badger setts were recorded within the survey area, however, the distance between the proposed infrastructure is sufficient to not pose a disturbance risk to this species. Embedded mitigation by design has ensured that all proposed infrastructure is at least 30 m from a badger sett (and at least 100 m for any blasting or piling work) (NatureScot, 2025d). Further details and distances between setts and nearest proposed infrastructure are provided in **Technical Appendix 7.2: Protected Species Report, Confidential Annex D** and on **Figure 7.5C**.
- 7.7.4.11 Roosting bats are scoped out of the assessment. Whilst nine features offering low suitability for roosting bats were identified within the survey area (see **Figure 7.6**), none were deemed of a size or character that could support maternity roosts. Further, no PRFs recorded are within 200 m plus rotor radius of any proposed turbine. As noted in **Section 7.5**, analysis of bat emergence timings demonstrated that there is unlikely to be a roost near a turbine location (see **Technical Appendix 7.3: Bat Survey Report**). Further, **Technical Appendix 7.5: Outline SPP** includes suitable mitigation measures to ensure compliance with protected species legislation during construction.
- 7.7.4.12 Disturbance effects on foraging/commuting bats are scoped out of the assessment. Construction would mainly take place during daylight hours during the season when bats are active (April to October, inclusive), therefore any disturbance to foraging and commuting bats of any species is unlikely to occur, or would likely be negligible in magnitude, and is therefore scoped out.



- 7.7.4.13 Operational and cumulative effects arising from collision mortality for low collision risk bat species are scoped out of the assessment (as per NatureScot *et al.* (2021)).
- 7.7.4.14 Overall, the SPP (outline provided in **Technical Appendix 7.5: Outline SPP**) will ensure that all reasonably practicable measures are taken during construction so that provisions of the relevant wildlife legislation are complied with in relation to all protected species, should any evidence be found during pre-construction surveys or during construction.
- 7.7.4.15 Adverse effects on all IEFs during operation of the Proposed Development (with the exception of collision risk to high risk bat species) have been scoped out of the assessment. Maintenance of the Proposed Development will involve vehicular access along the access tracks only, and any maintenance of turbines will be occasional, typically carried out by a small number of maintenance staff inside the turbines during normal working hours. This is unlikely to result in any operational effects on any species or habitats recorded at and around the Proposed Development.

Other Species

Deer

- 7.7.4.16 Effects on deer are scoped out of the assessment. Red, roe and sika deer may be present in the local area. There are few areas of forestry scattered within the Site and these are small in extent (**Figure 7.3**), which may only offer periodic or permanent shelter for a relatively small number of deer. Larger areas of commercial forestry surround the Site to the west and south-west.
- 7.7.4.17 The size and location of the Proposed Development is not considered to pose a significant barrier to any local movements or migrations of deer. Operational effects are not anticipated as there is no deer fencing around the Site, and therefore deer may use and pass through uninhibited. The Proposed Development is relatively small, and habitat loss has been minimised. Due to the extensive amount of similar suitable habitat in the surrounding land and its availability and accessibility, this loss of grazing and sheltering habitat is expected to be negligible to the wide-ranging species. Construction effects, due to disturbance, are expected to be minimal due to the timing of works (primarily during the day when deer are least active) and short-term construction period (approximately 28 months).
- 7.7.4.18 If individuals are displaced during construction, there are suitable areas and alternative commuting routes around the Site. As a result of the size and location of the Proposed Development, temporary construction period, minimal habitat loss and the extensive suitable habitat and commuting corridors locally within the Site and beyond, no negative effects on deer are predicted. Due to minimal displacement expected outwith the Site during construction and operation, no negative effects through increased browsing/trampling on surrounding habitats are expected.

7.7.5 Decommissioning Effects

- 7.7.5.1 Due to the distant time frame until their occurrence (>40 years), decommissioning effects are difficult to predict with confidence as the future baseline conditions of the Site and surrounding area, on which to base the assessment, is not yet known, and the proposals for decommissioning or repowering is not yet determined or known. Decommissioning effects are usually considered for the purposes of



assessment to be similar to (or likely less than) those of construction effects (see **Section 7.7.7**) in nature and are likely to be of shorter duration.

- 7.7.5.2 Decommissioning of the Proposed Development would involve removal of all above-ground infrastructure and restoration of the associated ground. Restoration would seek to return areas to their pre-construction habitat type, or as similar as feasible depending on local substrates, topography, hydrology, etc. As a result, decommissioning will not lead to any further direct or indirect habitat losses above those that already occurred during construction, rather, it is predicted that due to restoration of habitats in these areas, there would be a net positive effect. Therefore, on this basis, decommissioning effects are not assessed further. Furthermore, prior to decommissioning, a Decommissioning Restoration and Aftercare Strategy (DRAS) will be required as a standard planning condition and will set out environmental protection measures and restoration principles which will be implemented. This DRAS will be agreed with relevant consultees.

7.7.6 Important Ecological Features (IEFs)

- 7.7.6.1 A summary of the nature conservation value of the remaining IEFs identified within the Site and surrounding area (as confirmed through survey results and consultation outlined above) which have been scoped in to the assessment is provided in **Table 7-10**, together with the justification for inclusion. These comprise four designated sites: Whitlaw and Branxholme SAC (underpinned by Branxholme Wester Loch SSSI²⁷) and the River Tweed SAC (underpinned by the River Tweed SSSI); blanket bog/wet modified bog; Broadlee Moss and Loch LNCS; and bats (operational, high collision risk species only comprising common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and *Nyctalus* spp.).

Table 7-10: Nature Conservation Value of Scoped in IEFs

IEF	Nature Conservation Value	Relevant Legislation/Guidance & Justification
Whitlaw and Branxholme SAC	International	SACs are designated as internationally important sites for nature conservation.
River Tweed SAC	International	SACs are designated as internationally important sites for nature conservation.
Branxholme Wester Loch SSSI	National	SSSIs are designated as nationally important sites for nature conservation.
River Tweed SSSI	National	SSSIs are designated as nationally important sites for nature conservation.
Blanket Bog and Wet Modified Bog	Local	The Proposed Development would result in direct and potentially indirect habitat loss for blanket bog and wet modified bog habitats. Blanket bog covers 82.78 ha (4.2 %) of the study area, and wet modified bog covers 87.71 ha (4.5 %) (Annex A Habitat Baseline Composition (Study Area) and Habitat Loss Calculations) in a fragmented and patchy distribution (Figure 7.3). These habitats are also common locally outwith the Site.

²⁷ N.B. Slaidhills Moss SSSI and this component part of Whitlaw and Branxholme SAC has been scoped out of the assessment as per **paragraph 7.7.3.3**.



IEF	Nature Conservation Value	Relevant Legislation/Guidance & Justification
		<p>The priority peatland blanket bog communities present include M17 and M19 (M19 is predominant), and rarely with some infrequent M2 bog pools. These communities within the Site do not fall within the 'near-natural' classification and generally tend to represent areas of modified bog (see Technical Appendix 7.1: NVC and Habitats Survey Report and the peatland condition assessment information in Chapter 11: Geology, Hydrology, Hydrogeology and Peat).</p> <p>Communities representing wet modified bog within the Site comprise M20 and M25a²⁸, these communities have a lower relative quality compared to the blanket bog communities and in line with relevant guidance (NatureScot, 2023) are communities that are unlikely to raise issues of national interest. These habitats are associated with SBL blanket bog and Annex I type 7130 blanket bog habitat, however these mire habitats within the study area are generally considered modified/degraded due to effects such as drainage, grazing and self-seeded conifer invasion (see Technical Appendix 7.1: NVC and Habitats Survey Report for further details).</p> <p>There are no areas of Class 1 or Class 2 peatland within the Site according to the Carbon and Peatland Map.</p> <p>Despite some of these communities being associated with Annex I and SBL blanket bog classifications, the habitat within the study area is not considered to be Nationally or Regionally important due to its size, fragmented nature, condition and distribution. Therefore, assigning a Nature Conservation Value higher than Local is not deemed appropriate.</p> <p>In addition, mire habitat of this quality (and greater) is relatively widespread across the local area as well as within the Scottish Borders and beyond, which further reduces the relative value of this habitat within the Site.</p>
Broadlee Moss and Loch LNCS	Local	<p>Broadlee Moss and Loch LNCS is shown on Figure 7.1. Parts of the north-western extent of the Proposed Development's infrastructure overlaps with this LNCS.</p> <p>As stated within the title, LNCS are, by definition, of Local conservation value.</p>

²⁸ Where M25 is suffixed with a caret '^', e.g., M25a^, this implies the habitat is more likely to be considered a modified bog habitat with peat depth likely equal to or greater than 0.5 m in depth and/or characteristics or associate species aligning with a bog habitat, as opposed to a marshy grassland habitat on peat or peaty soils less than 0.5 m in depth (i.e., denoted without a caret, e.g., M25a).



IEF	Nature Conservation Value	Relevant Legislation/Guidance & Justification
<p>Bats (high collision risk species: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and <i>Nyctalus</i> spp.)</p>	<p>Local</p>	<p>All UK bat species are listed on Annex II of the Habitats Directive, and fully protected through the Habitats Regulations. Nine species (including common pipistrelle, soprano pipistrelle, <i>Nyctalus</i> spp., Nathusius' pipistrelle) are listed on the SBL.</p> <p>Common pipistrelle and soprano pipistrelle are considered to have a favourable conservation status in the UK and Scotland, under Article 17 of the Habitats Directive and are listed as Least Concern (LC) in Scotland on the IUCN Red List (Matthews <i>et al.</i>, 2018; JNCC, 2019a).</p> <p>Nathusius' pipistrelle have an 'Unknown' conservation status, and are listed as Vulnerable (VU) under the IUCN Red List criteria (Matthews <i>et al.</i>, 2018); JNCC, 2019a). The Proposed Development is outwith the main areas of predicted occurrence and predicted activity for Nathusius' pipistrelle, being located within the northern area of predicted Nathusius' pipistrelle occurrence (see Matthews <i>et al.</i>, 2018).</p> <p><i>Nyctalus</i> spp. comprise Leisler's bat (<i>Nyctalus leisleri</i>) and noctule bat (<i>Nyctalus noctule</i>). <i>Nyctalus</i> spp. are considered to have a favourable conservation status in the UK (no Scotland specific categorisation), with noctule also listed as LC, and Leisler's as Near Threatened (NT), on the IUCN Red List (Matthews <i>et al.</i>, 2018; JNCC, 2019a).</p> <p>The Proposed Development is outwith the core areas of predicted occurrence and predicted activity for Leisler's bat, however, overlaps with the core range for noctule bat (Matthews <i>et al.</i>, 2018).</p> <p>Reliable population estimates for <i>Nyctalus</i> spp. in Scotland are currently not available with some currently used population estimates of only a few hundred bats (e.g., Harris <i>et al.</i>, 1995) outdated and based on expert opinion. Actual populations in Scotland, and their distribution range, are now thought to be much larger than previously reported with populations suggested to be in the region of many thousands (Newson <i>et al.</i>, 2017).</p> <p>The majority of bat activity (91.7 %) was attributed to common or soprano pipistrelle bats, which are considered to have a 'common' population relative abundance and are considered of 'medium' potential vulnerability (NatureScot <i>et al.</i>, 2021).</p> <p>Nathusius' pipistrelle and <i>Nyctalus</i> spp. are considered to have 'rarest' population relative abundance and are considered of 'high' potential vulnerability (NatureScot <i>et al.</i>, 2021); 39 Nathusius' pipistrelle and 1,333 <i>Nyctalus</i> spp. registrations were recorded during surveys, i.e.,</p>



IEF	Nature Conservation Value	Relevant Legislation/Guidance & Justification
		<p>0.2 % and 5.5 % respectively of bat activity recorded (Table 7-9).</p> <p>Giving consideration to confidence levels of survey results (see Quantifying Bat Activity section), the overall risk assessment for high collision species recorded within the Site was generally low (see Technical Appendix 7.3: Bat Survey Report and Figure 7.7 – 7.10 for full details).</p> <p>Considering the above information, including a lack of potential bat roosts within the Site, and the majority of species recorded being common and soprano pipistrelles, a Nature Conservation Value of Local is considered suitable for all bat species.</p>

7.7.7 Construction Effects

7.7.7.1 This section provides an assessment of the likely effects of the construction of the Proposed Development upon the scoped in IEFs.

Designated Sites

7.7.7.2 No direct impacts have been identified on Whitlaw and Branxholme SAC (and by association Branxholme Wester Loch SSSI²⁷). However, construction of the Proposed Development within the supporting catchment of Whitlaw and Branxholme SAC (and Branxholme Wester Loch SSSI) could result in indirect impacts, including silt and sediment entering the wetlands, pollution events, and also to changes in the flow and quality/chemistry of water through, in, around and off these designated sites. The assessment undertaken in **Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC**, indicates negligible overlap between the Proposed Development, comprising approximately 9 m² of a temporary crane hardstanding, and the contributing and supporting catchment of Whitlaw and Branxholme SAC and Branxholme Wester Loch SSSI. Furthermore, this catchment overlap is located 388 m from the boundary of the SAC/SSSI and with only overland, and no watercourse, pathways between. Further details and discussion, including with regards standard and embedded associated mitigation and micrositing proposals, is provided in **Technical Appendix 7.6: Shadow HRA and Technical Appendix 11.1: Hydrological Assessment of Whitlaw and Branxholme SAC, Slaidhills Moss SSSI, Branxholme Wester Loch SSSI and River Tweed SAC**. The conclusion from these assessments is that there is unlikely to be any likely significant effect on the SAC (or SSSI) from the Proposed Development, and the conservation objectives for the designated site’s qualifying interests will not be undermined despite a very minor connection. It has been deemed there is no subsequent requirement for an Appropriate Assessment as part of an HRA with respect to Whitlaw and Branxholme SAC – see full details in **Technical Appendix 7.6: Shadow HRA**.

7.7.7.3 The Proposed Development does not directly overlap or intersect with the River Tweed SAC (or associated SSSI); however, limited potential direct impacts on the otter and Atlantic salmon qualifying interests of the River Tweed SAC/SSSI have been identified, due to these species being present locally and not restricted to the boundaries of the respective designated sites. The entire Site also ultimately will



drain indirectly via smaller undesignated watercourses to either the River Teviot or the Borthwick Water and therefore the River Tweed SAC/SSSI. The qualifying interests of the designated sites are sensitive to disturbance to the river habitat, including silt and sediment entering the watercourse and smothering gravel beds, suspended solids in the water column, pollution events, and changes in water quality and in water chemistry; each of which can materialise from indirect effects.

- 7.7.7.4 Given the hydraulic connectivity between the Site and the River Tweed SAC/SSSI, potential indirect effects, in the absence of mitigation, have the potential to result in a likely significant effect, however the magnitude and duration of the effect would depend on the nature of the pollution/siltation event.
- 7.7.7.5 As a likely significant adverse effect is predicted for the qualifying interests of the River Tweed SAC, an Appropriate Assessment is required for the Proposed Development; this is included in **Technical Appendix 7.6: Shadow HRA**. This assessment concluded that embedded mitigation and standard good practice construction and mitigation measures, particularly in the form of a robust Site-specific CEMP incorporating various pollution prevention and environmental management plans (refer to **Technical Appendix 7.6: Shadow HRA**) and a SPP which will include measures to avoid harm and remove/reduce potential disturbance sources and effects, as well as incorporating pre-construction surveys and ongoing monitoring during the construction and decommissioning periods and the presence of an ECoW will ensure the risk of significant pollution events are minimised during construction and decommissioning of the Proposed Development. These mitigation measures, secured by way of appropriately worded planning conditions, will limit the potential for silt-laden run-off and other forms of pollution in order to safeguard the SAC and respective qualifying habitats and species. No adverse effect on the integrity of the site is therefore predicted; full details and discussion are provided **Technical Appendix 7.6: Shadow HRA**. The Appropriate Assessment for the SAC also adequately informs and addresses the assessment relating to the SSSI.

Habitats

- 7.7.7.6 The most tangible impact during construction of the Proposed Development would be direct habitat loss due to the construction of infrastructure such as new tracks, wind turbines, hardstandings, laydown areas, compounds, borrow pits and substation/Long Duration Energy Storage (LDES). Much of this infrastructure would be permanent, however the borrow pit search areas, satellite, entrance and main construction compounds, batching plants, temporary crane hardstandings, and borrow pits would be restored at the end of construction.
- 7.7.7.7 There may also be some indirect habitat losses of wetland habitats due to drainage effects. For the purposes of this assessment, it is assumed that wetland habitat losses due to indirect drainage effects may extend out to 10 m from infrastructure (i.e. in keeping with precautionary indirect drainage assumptions within SEPA carbon calculator guidance (SEPA, undated). It is expected that any indirect drainage effects would only impact wetland habitat such as blanket bog, wet heath, flushes etc. No indirect drainage effects are expected to impact or alter the quality or composition of non-wetland habitats, such as dry heath, bracken and acid grassland etc., as such only direct habitat loss applies to these habitats.
- 7.7.7.8 Temporary habitat losses due to the creation of temporary infrastructure and up to seven borrow pit search areas (all of which, or the full search area extents, are unlikely to be used or required) have been calculated separately. These have been considered separately to permanent infrastructure as although these areas would be restored at the end of the construction period and therefore would not



show a loss in habitat extent, the habitat type resulting after restoration may not be the same as the original due to changes in topographical or hydrological conditions. In particular, areas of land take for this temporary infrastructure may represent permanent losses for certain wetland habitat types due to the effects on the structure and function of the habitat type, and the complexities and long timescales involved in restoring or re-creating these particular habitat types.

7.7.7.9 **Table 7-11** details the estimated relative losses expected to occur to scoped in habitats (i.e., blanket bog and wet modified bog) for all new permanent and temporary infrastructure (with habitat loss estimated for all habitat types presented in **Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations).

Table 7-11: Estimated Loss of IEF Habitats in study area for Permanent and Temporary Infrastructure

Habitat Type	Extent in Site (ha)	NVC Community or Habitat Type ²⁹	Direct Habitat Loss (ha)	Direct Habitat Loss as a % of Habitat Type	Indirect Habitat Loss (ha) in study area	Indirect Habitat Loss as a % of Habitat Type in study area
Permanent						
Blanket Bog	82.78	M17, M19	0.24	0.29	0.68	0.82
Wet Modified Bog	87.71	M20, M25a^	2.14	2.44	1.66	1.89
Temporary						
Blanket Bog	82.78	M17, M19	0.38	0.46	N/A	N/A
Wet Modified Bog	87.71	M20, M25a^	0.53	0.60	N/A	N/A

Blanket Bog and Wet Modified Bog

7.7.7.10 **Impact:** Impacts upon blanket bog and wet modified habitats will be direct (through permanent and temporary habitat loss) and indirect (through potential drying effects upon neighbouring bog habitats) occurring from the construction phase into the operational phase. Direct loss would occur in areas where permanent infrastructure such as tracks, wind turbine foundations, and permanent hardstandings are sited on these habitat types. The excavation of these habitat types for temporary infrastructure would also likely lead to the losses of blanket bog and wet modified bog due to the long-term effect on the ecological and hydrological structure and function of these habitat types. In addition, there may be indirect losses as a result of drainage around infrastructure (precautionarily around 10 m from infrastructure is assumed (SEPA, undated)).

7.7.7.11 Fragmentation could involve the creation of smaller areas of habitat which in turn could impair the functioning and reduce the resilience of essential hydrological processes. This could make the impacted habitat more vulnerable to future decline in condition and potentially lead to a transition to a different habitat type such as

²⁹ Only specific IEF habitats, communities or features subject to habitat losses are presented within this table. Any IEF communities not listed here are not subject to any predicted direct or indirect habitat losses. Full details of habitat losses for all habitat types are presented in 0.



- blanket bog to wet modified bog/wet heath or wet modified bog to dry modified bog/wet heath, or more subtle sub-community shifts.
- 7.7.7.12 For blanket bog and wet modified bog, fragmentation effects are a function of the extent of the hydrological unit, location of impact within the unit and magnitude of direct and indirect impact in the context of the hydrological unit. **Figure 7.3** shows that blanket bog and wet modified bog habitats have for the most part been avoided through design and exist together and with other wetland habitats (e.g., mires, flushes and marshy grasslands) in large expansive hydrologically connected mosaics across the study area and in the wider local area. The large scale of these wetland habitat mosaics reduces the likelihood that small, fragmented habitat patches would be created. No small-scale habitat fragments appear to be created by the location of tracks and other infrastructure, and where some wetland habitats are subject to infrastructure there are good practice construction methods that will allow the maintenance of sub-surface hydrological connectivity between areas. It is therefore unlikely that the potential effects of fragmentation would lead to further loss of blanket bog and wet modified bog in addition to that predicted to occur as a result of direct loss and precautionary indirect loss figures detailed above.
- 7.7.7.13 **Nature Conservation Value:** Local (as detailed in **Table 7-10**).
- 7.7.7.14 **Conservation Status:** Conservation Status of this habitat as assessed in the 2019 JNCC report by the UK on blanket bog is 'Unfavourable Bad' and 'Stable' at the UK level (JNCC, 2019b).
- 7.7.7.15 **Magnitude of Impact:** The UK has an estimated 2,182,200 ha of blanket bog (JNCC, 2019b) of which around 1,759,000 to 1,800,000 ha is in Scotland (JNCC, 2019c) (approximately 23 % of the land area).
- 7.7.7.16 Blanket bog covers 82.78 ha (4.2 %) of the study area, with a split between the M17 and M19 (mostly M19) NVC communities which comprise the bulk of the blanket bog vegetation (see **Annex A** Habitat Baseline Composition (Study Area) and Habitat Loss Calculations). As per **Table 7-11**, the direct habitat loss for blanket bog is predicted to be 0.24 ha due to permanent infrastructure with up to an additional 0.38 ha due to temporary works areas and borrow pit search areas. This results in a potential total direct loss of 0.62 ha, equivalent to 0.74 % of the blanket bog within the study area.
- 7.7.7.17 Wet modified bog covers 87.71 ha (4.5 %) of the study area and is comprised of lower quality M25a[^] and M20. As per **Table 7-11**, the direct habitat loss for wet modified bog is predicted to be 2.14 ha due to permanent infrastructure with up to an additional 0.53 ha due to the temporary works areas and borrow pit search areas. This results in a potential total direct loss of 2.67 ha, equivalent to 3.05 % of the wet modified bog within the study area.
- 7.7.7.18 For this blanket mire resource as a whole, i.e., combining blanket bog and wet modified bog, direct losses amount to 2.38 ha for permanent infrastructure and 0.90 ha for temporary works areas and borrow pit search areas: a total of 3.29 ha, or 1.93 %, of the combined resource within the study area.
- 7.7.7.19 In addition, there may be some indirect losses because of the zone of drainage around infrastructure. The actual distance of the effects of drainage on a peatland is highly variable and depends on various factors such as the type of peatland and its characteristics and properties of the peat; the type, size distribution and frequency of drainage feature; and whether the drainage affects the acrotelm, penetrates the catotelm, or both. Consequently, drainage effects can be restricted to just a few metres around the feature or extend out to tens of metres, or further



(e.g., see review within Landry & Rochefort (2012)). The hydraulic conductivity of the peatland is one of the key variables which affect the extent of drainage. In general, less decomposed more fibric peatlands (which tend to be found commonly in fen type habitats) generally have a higher hydraulic conductivity and drainage effects can extend to around 50 m, whilst in more decomposed (less fibrous) peat drainage effects may only extend to around 2 m. Blanket bog habitats commonly are associated with more highly decomposed peats (Nayak *et al.* 2008). For this assessment, indirect effects are precautionarily assumed to extend out to 10 m from infrastructure (as per SEPA, 2018).

- 7.7.7.20 As per **Table 7-11**, if indirect drainage effects are fully realised out to 10 m around permanent infrastructure in all blanket bog and wet modified bog areas, then the total predicted potential habitat modification or losses increase for blanket bog to 0.68 ha and 1.66 ha for wet modified bog. This worst-case scenario of direct and indirect habitat loss for permanent and temporary works areas is an overall total of 1.29 ha or 1.56 % of the study area's blanket bog, and 4.33 ha or 4.94 % of the study area's wet modified bog. For this blanket mire resource as a whole, i.e., combining blanket bog and wet modified bog, direct and potential indirect losses for permanent and temporary works areas overall amount to 5.62 ha, or 3.30 % of the combined resource within the study area.
- 7.7.7.21 It is considered highly unlikely that indirect drainage effects of this scale (i.e., out to 10 m either side of all permanent infrastructure) would occur or would have such an effect on the habitat as to result in any notable effect on the type of bog present or shifts to a lower conservation value habitat type (such as acid grassland for example). For instance, Stewart & Lance (1991) in their study found that a lowering of the water table next to drains was slight and confined to just a few metres either side of the drain, on sloping ground the uphill zone of drawdown was even narrower. Subtle variations in plant species abundance were noted, with species dependent on high water-tables having a lower cover-abundance near to drains, and species with drier heathland affinities having higher cover than at places farther away. However, there were no wholesale changes in vegetation or the species assemblage; for instance, declines in *Sphagna* cover were highly localised and took nearly 20 years to achieve statistical significance. Anecdotal observations from wind farms around Scotland also suggest that bog habitats readily persist around infrastructure and within this 10 m zone of possible influence.
- 7.7.7.22 It should also be noted that the predicted indirect losses due to drainage are calculated in GIS and based on the habitat survey mapping, there may be small-scale local specific factors such as those relating to natural breaks in habitat type, hydrology, geology or topography, or the presence of non-wetland habitats that act as a barrier or buffer, that would prevent the full predicted indirect drainage effects from materialising.
- 7.7.7.23 Overall, evidence suggests that if some drainage effects materialise locally around infrastructure due to the Proposed Development the most likely effect will not be a major change in overall bog habitat type but rather a potential small scale near-zone change in vegetation micro-topography, certain species cover, or abundance that may result in a subtle NVC community or sub-community shift, and which may only be apparent in the long term. If severe indirect drying effects are observed long term, then wet modified bog/blanket bog may transition to wet heath (e.g., NVC type M15), dry modified bog, or dry heath. Wet and dry heaths are still habitats of conservation interest, being Annex I, UKBAP and SBL Priority Habitats also.



- 7.7.7.24 When considering the scale of the above worst-case habitat losses for the Proposed Development (i.e., direct and precautionary indirect effects on up to 3.30 % of the combined blanket bog and wet modified bog within the study area) and accounting for the relative abundance, distribution and quality of the blanket bog and wet modified bog within the study area and locally to the Site, an impact magnitude of **low spatial (Table 7-4)** and **long-term temporal** is appropriate.
- 7.7.7.25 **Significance of Effect:** Given the above consideration of Nature Conservation Value, Conservation Status and Magnitude of Impact, the effect significance is considered to be **Minor adverse** and **Not Significant** under the EIA Regulations.

Broadlee Moss and Loch LNCS

- 7.7.7.26 **Impact:** The terrestrial ecological qualifying interests of the Broadlee Moss and Loch LNCS are heathland, acid mire, raised bog and loch, nationally scarce and locally rare plants and a priority butterfly species (Table 7-8). The avian qualifying interests are discussed in **Chapter 6: Ornithology**.
- 7.7.7.27 Impacts upon the Broadlee Moss and Loch LNCS will be direct (through permanent and temporary habitat loss) and indirect (through potential drying effects upon neighbouring wetland habitats) occurring during the construction period into the operational phase.
- 7.7.7.28 Direct permanent loss would occur in areas where permanent infrastructure such as access tracks, turbine foundations and hardstandings are sited. The excavation and earthworks for temporary infrastructure may also lead to temporary habitat losses or modification. However, as noted above, these temporary works areas would be restored at the end of the construction period and therefore would not show a loss in habitat extent, instead the habitat type resulting after restoration may not be exactly the same type as the original due to changes in topographical or hydrological conditions. With appropriate management, temporary effects on certain habitats such as grasslands and dry heath are largely considered reversible. Reinstated areas will be restored on the 'like-for-like or better' principle where possible and these areas would still contribute to the overall habitat mosaic and diversity of habitats. As noted above, indirect drainage effects may also potentially lead to the small-scale modification of certain wetland habitats. Temporary and indirect effects do not result in an overall loss of habitat extent. Therefore, the key impact considered here with regards the habitat assemblage of Broadlee Moss and Loch LNCS, is permanent habitat loss.
- 7.7.7.29 The areas where infrastructure is proposed to be sited within the Broadlee Moss and Loch LNCS are primarily within areas of unimproved acid grassland, marshy grassland, wet heath, dry heath, acid/neutral flush, bracken and dry heath/acid grassland mosaic.
- 7.7.7.30 **Nature Conservation Value:** Local (as detailed in **Table 7-10**).
- 7.7.7.31 **Conservation Status:** The LNCS has not been surveyed by or on behalf of Scottish Borders Council, though it has been identified as a LNCS. There is no detailed information on the ecological interests for which this LNCS has been identified (e.g. the condition and extent of priority habitats). However, at the local level, given its designation as a LNCS and based on baseline Site observations of the priority habitats extent, condition etc. (together with records provided by TWIC), the conservation status of the LNCS is precautionarily assumed to be considered 'Favourable-Maintained' in line with NatureScot site condition monitoring assessment of condition criteria (NatureScot, 2025e).



- 7.7.7.32 **Magnitude of Impact:** Broadlee Moss and Loch LNCS covers 328.99 ha. The more extensive habitats within the LNCS are the same types and nature as that described above within the Site, with the most extensive habitats being unimproved acid grassland, marsh/marshy grassland and bracken. The permanent loss of habitat within the LNCS is predicted to be 2.90 ha (0.88 % of the LNCS total area) and is focused to the southern boundary of the LNCS.
- 7.7.7.33 The 2.90 ha of direct habitat loss is comprised of several habitat types, many of which are common and of generally low conservation value. The predicted loss is comprised of 0.97 ha unimproved acid grassland, 0.62 marsh/marshy grassland, 0.59 ha dry heath, 0.38 ha bracken, 0.32 ha wet heath, 0.02 ha acid/neutral flush and 0.01 ha wet modified bog. As noted above, the relevant habitat interests related to the LNCS are heathland, acid mire, raised bog and loch. Of these interests, only minor losses are therefore predicted to heathland and acid mire habitat types (with no impacts on raised bog or loch).
- 7.7.7.34 The full LNCS area has been surveyed as part of the habitat surveys (see **Technical Appendix 7.1: NVC and Habitat Survey Report**), and TWIC has been consulted for any records specifically to this LNCS (including any information on the priority butterfly species). When considering the minor scale of the above habitat loss within the LNCS and to the respective priority habitats, and considering the relative abundance and distribution of similar habitats within the LNCS and connected immediately adjacent, an effect magnitude of **low spatial** and **long-term temporal** is considered appropriate.
- 7.7.7.35 **Significance of Effect:** Given the above consideration of Nature Conservation Value, Conservation Status and Magnitude of Effect, the effect significance is considered to be **Minor adverse** and **Not Significant** under the EIA Regulations.

7.7.8 Operational Effects

- 7.7.8.1 This section provides an assessment of the likely impacts of the operation of the Proposed Development upon the scoped in IEFs.

Blanket Bog and Wet Modified Bog

- 7.7.8.2 **Impact:** All likely direct and indirect adverse effects on habitats have been considered in the **Section 7.9.1**. Although the majority of habitat loss is associated with infrastructure required for the operation of the Proposed Development (rather than temporary construction infrastructure), the physical loss of habitat would occur during the construction stage and is therefore considered above.
- 7.7.8.3 Potential indirect effects on wetland habitats, if realised, would largely occur during the operational phase as potential drying effects become established. However, for ease and clarity of assessing effects on habitats these are considered together in **Section 7.9.1**.
- 7.7.8.4 However, additional compensation and enhancement measures, such as priority peatland restoration, are proposed for the operational phase as part of the Proposed Development's Outline BEMP as detailed in **Technical Appendix 7.7: Outline BEMP** and outlined below.
- 7.7.8.5 Enhancement and restoration of habitats through the delivery of a BEMP during the operational phase would reduce effects on habitats further. Overall, the BEMP would aim to achieve significant biodiversity enhancement at the Proposed Development, in line with objectives outlined in NPF4 Policy 3 (Scottish Government, 2023), the Onshore Wind Policy Statement (Scottish Government, 2022a), and the Scottish Biodiversity Strategy to 2045 (Scottish Government,



2022b). The BEMP will include provisions for the protection, maintenance, restoration and/or enhancement of blanket bog and priority peatland habitats locally and within the Site. Furthermore, the BEMP would deliver additional proposals including native broadleaved woodland and riparian corridor creation/enhancement, grassland restoration/enhancement, and bracken control to benefit biodiversity in general. The Outline BEMP is provided in **Technical Appendix 7.7: Outline BEMP**³⁰, also see **Figure 7.13**.

- 7.7.8.6 **Nature Conservation Value:** Local (as detailed in **Table 7-10**).
- 7.7.8.7 **Conservation Status:** Conservation Status of this habitat as assessed in the 2019 JNCC report by the UK on blanket bog is 'Unfavourable Bad' and 'Stable' at the UK level (JNCC, 2019b).
- 7.7.8.8 **Magnitude of Impact:** The Outline BEMP is based on several land parcels or areas for each respective habitat management and biodiversity enhancement proposal. Specifically, with respect to blanket bog/wet modified bog (priority peatlands and deep peat habitats), the Outline BEMP includes for a scheme of peatland restoration and enhancement measures within Outline BEMP Unit A. Unit A covers 26.18 ha (26.01 ha of which is peatland habitat/communities). When considering the scale of the enhancement proposal in relation to the Site, an effect magnitude of **low spatial** and **long-term temporal** is appropriate.
- 7.7.8.9 **Significance of Effect:** Given the above consideration of sensitivity and magnitude of impact, the effect significance is considered to be **Minor beneficial** and **Not Significant**.

Bats

- 7.7.8.10 **Impact:** During the operational phase, there is potential collision risk for commuting and foraging bat species in addition to the risk that bats may be affected by barotrauma³¹ when flying in close proximity to moving turbine blades. For the purposes of this assessment, the potential effects from barotrauma are assumed to be the same as for collision risk. This is due to the lack of published empirical evidence in causes of bat fatalities around wind farms and the difficulties in determining whether bat fatalities are due to strikes (collisions) with the turbine blades or barotrauma.
- 7.7.8.11 Research undertaken by Exeter University on behalf of DEFRA (DEFRA, 2016) found that most bat fatalities at UK wind farms have been common pipistrelle, soprano pipistrelle and noctule bats. Further work (Richardson *et al.* 2021) found that common pipistrelle activity was higher at turbine locations than at control locations in similar habitat, suggesting that this species may be at particular risk. In the same study soprano pipistrelle activity was comparable between sites with no attraction or repulsion by turbines. It is suggested the observed higher levels of activity could be because there are more individual bats around turbines, or because bats spend more time in these locations relative to controls, even if the number of individual bats remains the same; however, it is not possible to distinguish between these possibilities using acoustic bat data (Richardson *et al.* 2021).

³⁰ The detailed and final BEMP would be agreed with Scottish Borders Council and NatureScot in advance of construction and would ensure the Proposed Development secures significant biodiversity enhancements through restoring degraded habitats, creating new habitats of greater biodiversity/conservation value, and strengthening nature networks.

³¹ Barotrauma describes injuries that occur when a bat (or other animal) encounters sudden and extreme changes in atmospheric pressure. The rapid pressure fluctuations can rupture air-containing structures in the bodies of mammals which causes internal bleeding and, potentially, death.



- 7.7.8.12 Because the proposed turbines would have a blade tip height of up to 200 m, some of them will require red aviation warning lights. Refer to **Chapter 12: Aviation, Radar and Defence** for details on the aviation lighting scheme. A five-year study by Spoelstra *et al.* (2017) concluded that foraging bats are not attracted to red lighting. This is attributable to the fact that white and green spectrum lights attract insects whereas red lights do not. Based on this, Spoelstra *et al.* (2017) advised, “Hence, in order to limit the negative impact of light at night on bats, white and green light should be avoided in or close to natural habitat, but red lights may be used if illumination is needed”.
- 7.7.8.13 A study by Voight *et al.* (2018) found evidence of attraction of migratory soprano pipistrelle and Nathusius’ pipistrelle to red lighting. However, these species do not migrate in the UK as they do in continental Europe, so this finding is not relevant to the Proposed Development. With regard to *Nyctalus* spp., the results were inconclusive due to the difficulty in distinguishing between species, although there was some suggestion of attraction to red light. The explanation for the contrasting findings between these studies is given by Spoelstra *et al.* (2017) as, “migratory bats may be more susceptible to light sources of specific wavelength spectra because vision may play a more dominant role than echolocation during migration. Non-migratory bats might use orientation cues that are more involved during general hunting behaviour, for example, echoes reflected from local landmarks, instead of cues from natural or artificial light sources”.
- 7.7.8.14 Bats may also be displaced from their foraging grounds through avoidance of operational wind turbines (Scholz and Voigt, 2022). Barré *et al.* (2018) recorded a marked reduction in bat activity around operational wind turbines.
- 7.7.8.15 **Nature Conservation Value:** Local (as detailed in **Table 7-10**).
- 7.7.8.16 **Conservation Status:** Common pipistrelle are assessed in the 2019 JNCC report as ‘Favourable’ and ‘Improving’ at the UK level (JNCC, 2019d); soprano pipistrelle are assessed as ‘Favourable’ and ‘Stable’ at the UK level (JNCC, 2019e); there is insufficient data for the conservation status of Nathusius’ pipistrelle to be assessed under Article 17 of the Habitats Directive; and noctule and Leisler’s bat (i.e. *Nyctalus* spp.) populations are assessed as ‘Favourable’ and ‘Stable’ at the UK level (JNCC, 2019h; JNCC, 2019j). Mathews *et al.* (2018) also consider common pipistrelle, soprano pipistrelle and *Nyctalus* spp. to have a ‘Favourable’ conservation status.
- 7.7.8.17 Further details on the Conservation Status of high collision risk bat species recorded within the Site are provided below. Information on both noctule and Leisler’s bats are presented, as registrations for both species and genera were present, however these bats are assessed at the genus level (i.e., *Nyctalus* spp.).
- 7.7.8.18 Both common and soprano pipistrelle are widespread in Scotland, however there is insufficient data to estimate the population range for Nathusius’ pipistrelle. The low population estimates for *Nyctalus* spp. in Scotland are outdated and likely underestimated due to under-recording (Mathews *et al.* 2018). The survey data indicates that both noctule and Leisler’s bats may be present at the Site. Studies by Newson *et al.* (2017) have shown a general east-west geographical divide between the species distribution in southern Scotland; with the Proposed Development located in the east of their research area and more within noctule distribution mapping. The Proposed Development is also within the northern area of *Nyctalus* spp. distribution range (Mathews *et al.* 2018).
- 7.7.8.19 The estimated population of common pipistrelle in 2019 ranged from 1,100,600 to 7,843,000 in the UK (JNCC, 2019d), and from 285,000 to 2,160,000 in Scotland (JNCC, 2019f), although best single value estimates are not provided due to the



- uncertainty around population estimates. Matthews *et al.* (2018) provided a UK estimate of 3,040,000 (with a plausible range of 991,000 – 7,510,000); population estimates for Scotland were not provided in that review.
- 7.7.8.20 For soprano pipistrelle, the population was estimated to be from 2,024,000 to 8,563,000 in the UK (JNCC, 2019e), and from 512,000 to 2,180,000 in Scotland (JNCC, 2019g), although best single value estimates are not provided due to the uncertainty around population estimates. Matthews *et al.* (2018) provided a UK estimate of 4,670,000 (with a plausible range of 970,000 – 8,400,000); population estimates for Scotland were not provided in that review.
- 7.7.8.21 There is insufficient data to estimate the population range for Nathusius' pipistrelle.
- 7.7.8.22 Population estimates of Leisler's bat in 2013 were 28,000 in the UK and 250³² in Scotland (JNCC, 2013). There is no recent population estimate available for this species across the UK (Mathews *et al.*, 2018; JNCC, 2019h) or Scotland (JNCC, 2019i), and there is limited accurate data on trends, and population changes, meaning that the detailed population status of this species in the UK and Scotland is currently unknown. However, Newson *et al.* (2017) in their study stated that the previously used population estimates in Scotland of only a few hundred bats are outdated, with their research indicating actual populations of *Nyctalus* spp. in Scotland, and their distribution range, are much larger than previously reported, with populations suggested to be in the region of many thousands.
- 7.7.8.23 Population estimates of noctule bat in 2013 were 50,000 in the UK and 250³² in Scotland (JNCC, 2013). The 2019 Article 17 of the UK Habitats Directive Report estimates the population range to be from 20,600 to 2,176,000 in the UK (JNCC, 2019j) with no population value provided for Scotland (JNCC, 2019k). Matthews *et al.* (2018) did not provide a UK population estimate; countrywide estimates were provided for England (565,000 with a plausible range of 17,700 – 1,872,000) and Wales (91,900 with a plausible range of 2,900 – 304,000); no estimate was provided for Scotland. As for Leisler's, above, Newson *et al.* (2017) in their study stated that the previously used population estimates in Scotland of only a few hundred bats are outdated, with their research indicating actual populations of *Nyctalus* spp. in Scotland, and their distribution range, are much larger than previously reported, with populations suggested to be in the region of many thousands.
- 7.7.8.24 **Magnitude of Impact:** Evaluating the vulnerability of a bat population to wind farms is based on three factors: activity level recorded, population vulnerability (determined by collision risk of species and population size), and Site risk level. These factors are used in Ecobat to generate an overall risk assessment score per species of either Low (0-4), Moderate (5-12) or High (15-25) in line with NatureScot *et al.* (2021). **Technical Appendix 7.3: Bat Survey Report** sets out the detailed methodology and results from this risk assessment for each high collision risk species. **Figures 7.7 – 7.10** also present overall risk levels for high-risk species based on the results of the monitoring undertaking at locations across the Site in 2024. A summary is provided further below to inform the assessment.
- 7.7.8.25 The evidence in Britain shows that most bat activity is close to habitat features e.g. woodland or wetlands. Foraging habitat quality and connectivity within the Site is moderate, with several lochs and watercourses throughout the Site and relatively isolated forestry boundaries present. As set out in **Technical Appendix 7.3: Bat**

³² Estimate based on expert opinion with no or minimal sampling, expected to be an underestimate as per Newson *et al.* (2017).



- Survey Report**, the Site has been categorised as a 'Medium' Site risk to bats due to its 'Medium' project size and 'Moderate' habitat risk.
- 7.7.8.26 The following risk assessment score for 'Median' and 'Maximum' percentiles was returned in 2024 for the undernoted species:
- common pipistrelle: Low (3) to High (15);
 - soprano pipistrelle: Low (3) to High (15);
 - Nathusius' pipistrelle: Medium (9) to High (15);
 - *Nyctalus* spp.: Low (3) to High (15);
- 7.7.8.27 **Figures 7.7 – 7.10** show the bat Site activity risk assessment categories per month and per Anabat location based on the median percentile for the study area in 2024. As can be seen in these figures, the risk level varied temporally and spatially between April and September, with spring (April and May combined) generally being the season with marginally greater bat activity levels across the Site. The figures also show there were no 'High' risk locations for common pipistrelle, soprano pipistrelle, or *Nyctalus* spp. Further context on each high collision risk species is provided further below.
- 7.7.8.28 The embedded mitigation described in **Section 7.6**, with respect to bats, namely reduced rotor speed when idling through feathering of the blades, will be implemented throughout operation during the bat active period (April to October, inclusive), reducing the risk of bat fatalities. The presence of this mitigation measure has been taken into account when assigning the Significance of Effect.
- 7.7.8.29 **Common pipistrelle:** As shown on **Figure 7.7**, risk assessment scores for common pipistrelle, based on the median percentile, indicate relatively consistent levels of activity across most locations throughout 2024. Locations 4, 5, 7 – 11, 13 and 15 – 21 returned either a Low risk assessment score or recorded no activity during all survey periods. Peaks in bat activity were in April/May³³ and September, with Medium (6-12) risk assessment scores at Locations 1 – 3, 6, 12, 14 and 18a. The highest risk assessment score for common pipistrelle was recorded at Location 1 in May (Medium (12)). This location is situated approximately 50 m from a proposed borrow pit search area in the south-west of the Site.
- 7.7.8.30 Location 1 was situated in a location where higher bat activity would be expected, along a commuting woodland edge and near a watercourse with foraging resources. Bats are known to use woodland edges as commuting corridors, and the watercourse provides foraging opportunities. Location 1 is located over 3.5 km from the closest proposed turbine (T1).
- 7.7.8.31 An effect magnitude of **low spatial** and **long-term temporal** is considered appropriate for common pipistrelle.
- 7.7.8.32 **Soprano pipistrelle:** As shown on **Figure 7.8**, risk assessment scores for soprano pipistrelle, based on the median percentile, indicate relatively consistent levels of activity across most locations throughout 2024. Locations 3, 4, 5 and 7 – 21 returned either a Low risk assessment score or recorded no activity during all survey periods. The few peaks in bat activity for this species were in April/May and September, with Medium (6-12) risk assessment scores at Locations 1, 2, 6 and 18a only. The highest risk assessment score for soprano pipistrelle was recorded

³³ Visit 1 (spring) was deployed over April and May.



- at Location 6 in April (Medium (12)). This location is situated approximately 874 m from the proposed BESS in the west of the Site.
- 7.7.8.33 Location 6 was situated in a location where higher bat activity would be expected, along a commuting woodland edge and near a watercourse with foraging resources. Location 6 is located over 1.8 km from the closest proposed turbines (T2 and T5).
- 7.7.8.34 An effect magnitude of **low spatial** and **long-term temporal** is considered appropriate for soprano pipistrelle
- 7.7.8.35 ***Nyctalus* spp.** As shown on **Figure 7.9**, risk assessment scores for *Nyctalus* spp., based on the median percentile, indicate relatively consistent and low levels of activity across most locations throughout 2024. Locations 1 – 12 and 14 – 21 returned either a Low risk assessment score or no activity during all survey periods. Peaks in bat activity were in June and September, with a Medium (6-9) risk assessment score at Location 13 only. The highest risk assessment score for *Nyctalus* spp. was recorded at Location 13 in September (Medium (9)). This location is situated approximately 437 m from the nearest turbine (T13).
- 7.7.8.36 Location 13 was situated in open moorland and is surrounded by several watercourses, a loch, and woodland edges.
- 7.7.8.37 An effect magnitude of **low spatial** and **long-term temporal** is considered appropriate for *Nyctalus* spp.
- 7.7.8.38 ***Nathusius' pipistrelle***: As shown on **Figure 7.10**, a high number of the survey locations recorded no activity for *Nathusius' pipistrelle*. These included Locations 2, 3, 5, 7 – 14, 16, 17 and 19 – 21 throughout April/May, Locations 2, 3, 5 – 7, 9 – 14, 16 – 19 and 21 in June, and Locations 1 – 3, 5 – 7, 9 – 11, 13, 15, 19 and 21 in September. There were no risk assessment scores greater than Low in May. Relative peaks in bat activity with Medium (9-12) risk assessment scores were recorded in June and September, at Locations 1, 4, 6, 8, 12, 14, 15, 17, 18a and 20. High (15) risk assessment scores were only recorded at Location 16 and 20, and in September only. Although several locations appear to suggest a Medium or High risk assessment based on the median percentile, the reference range for *Nathusius' pipistrelle* was 44 (see **Technical Appendix 7.3: Bat Survey Report**). For a reliable result, a reference range of 200 and above is recommended, therefore the result is treated with caution, considering the very low number of *Nathusius' pipistrelle* registrations actually recorded during the survey season (i.e. 39 registrations, over 812 data recording nights, with 0.2 % of total bat passes).
- 7.7.8.39 Location 16 is located approximately 227 m from the nearest turbine (T7), and Location 20 is located over 1 km from the nearest turbine (T6).
- 7.7.8.40 Location 20 was situated in a location where higher bat activity would be expected, situated along a watercourse with foraging resources. Location 16 was situated in open moorland and is in commuting distance between two lochs.
- 7.7.8.41 An effect magnitude of **negligible-low spatial** and **long-term temporal** is considered appropriate for *Nathusius' pipistrelle*.
- 7.7.8.42 For each species discussed above, despite some areas of relative higher bat activity/risk recorded, these were generally distant to proposed infrastructure, localised, or seasonal, and therefore while there may be an effect on individuals, the assessment determines that the effect would be unlikely to occur in sufficient numbers to affect the local populations.
- 7.7.8.43 **Significance of Effect**: Given the above consideration of Nature Conservation Value, Conservation Status and Magnitude, the effect significance of collision risk



on all high collision risk bat species recorded at the Site is considered **Minor adverse** and **Not Significant**.

7.8 Assessment of Cumulative Effects

- 7.8.1.1 The cumulative situation, with respect to wind farm sites, is presented on **Figure 5.8** and in **Chapter 4: Approach to EIA**. The purpose of the assessment of cumulative effects is to identify situations where effects on habitats or species populations that may be non-significant from individual developments, are judged to be significant when combined with nearby consented or proposed projects that are subject to an EIA process. In the interests of focusing on the potential for similar significant effects, this assessment considers the potential for cumulative effects with other wind farm developments that are consented or at application submitted stage (operational and under-construction developments are considered part of the baseline). Wind farm projects at scoping stage have been scoped out of the cumulative assessment because they generally do not have sufficient information on potential effects to be included, as the baseline survey period is ongoing, or results have not been published. Projects that have been refused or withdrawn are also scoped out.
- 7.8.1.2 Small projects with three or fewer turbines have also been excluded from the cumulative assessment as often these projects are not subject to the same level of detail of assessment, and so there are no directly comparable data. Because of the small scale of such projects, effects are likely to be negligible on the IEFs assessed.
- 7.8.1.3 One relevant wind farm development was identified within 5 km of the Site (although the majority of proposed turbines are located within the 5 km – 10 km distance band; see **Figure 5.8**), located south of the Proposed Development: Teviot Wind Farm (52 turbines, application submitted May 2022, currently at appeal). No other consented or application developments fulfilling the above criteria are present within 15 km of the Proposed Development.
- 7.8.1.4 In general, for most wind farm developments that are operational or consented, mitigation and/or additional management/restoration/enhancement/creation of habitats is usually proposed to compensate and offset any effects on IEFs. These management areas tend to be much larger than the area of predicted loss. The requirement for each new development project submitted into planning to provide significant biodiversity enhancement is also now imperative through NPF4 (Scottish Government, 2023) Policy 3, and so all projects at application stage will also require mitigation and enhancement at a significantly larger scale than predicted losses. In addition, NatureScot (NatureScot, 2023) guidance specifically relating to developments on peatland requires significant compensation and enhancement for impacts on priority peatland habitats.
- 7.8.1.5 Giving consideration to the IEFs scoped in for the Proposed Development and the relevant cumulative site noted above, it is noted that Teviot Wind Farm (Muirhall Energy Ltd, May 2022) includes standard embedded mitigation proposals and the outline Habitat Management Plan (HMP) includes peatland management and enhancement; for example, 35.5 ha of forest-to-bog peatland restoration and further identified search areas for other forms of peatland restoration (including drain blocking and hagg re-profiling), grazing management, and riparian woodland creation.
- 7.8.1.6 It is considered unlikely that any significant cumulative effects at a local or regional level will arise as a consequence of the Proposed Development adding to habitat loss associated with other projects. This is due to the small nature and not



significant levels of habitat losses associated with the Proposed Development and the Applicant's commitment to the delivery of a BEMP, which would include provisions for the maintenance, restoration and enhancement of bog habitats (amongst a suite of other biodiversity enhancement proposals in line with NPF4, as per **Technical Appendix 7.7: Outline BEMP** and **Figure 7.13**). This ensures the Proposed Development would not contribute to long-term adverse effects on the scoped in IEFs of blanket bog and wet modified bog locally or regionally.

- 7.8.1.7 Based on the commitment of the Applicant to implement the BEMP over the operational phase of the Proposed Development, as well as similar requirements for other wind farm projects, the long-term cumulative effect significance is considered likely to be **Negligible-Minor beneficial** and **Not Significant** under the EIA Regulations.
- 7.8.1.8 With respect to designated sites, the potential for in-combination effects is discussed in **Technical Appendix 7.6: Shadow HRA**.

7.9 Additional Mitigation

7.9.1 Construction Phase

- 7.9.1.1 General and embedded mitigation measures for habitats and species, such as complying with best practice, micro-siting provisions, presence of an ECoW and adherence to a detailed CEMP and SPP are included in **Section 7.6** (see also **Technical Appendix 7.6: Shadow HRA** with respect to these same provisions within the context of designated sites).
- 7.9.1.2 No significant construction effects were identified on IEFs which require additional or bespoke mitigation measures in the context of the EIA Regulations. However, in addition to mitigation measures, a number of compensation and biodiversity enhancement measures are proposed as part of the Outline BEMP, as noted in the **Operational Effects** section above and detailed in **Technical Appendix 7.7: Outline BEMP**.

7.9.2 Operational Phase

- 7.9.2.1 Bats are the only IEF scoped into the assessment of potential adverse operational effects, and mitigation during operation is detailed in **Section 7.6**. This embedded mitigation has been considered as part of the assessment. No significant operational effects were identified, and no additional mitigation is proposed.
- 7.9.2.2 Creation of native broadleaved woodland and riparian habitat through the delivery of the BEMP, as detailed in **Technical Appendix 7.7: Outline BEMP**, would create and enhance bat foraging and commuting habitat within the Site and locally, and in the long term potentially provide roost features distant from any proposed turbines. Overall, beneficial operational effects have been identified via the Outline BEMP, as outlined in the **Operational Effects** section above.

7.9.3 Decommissioning Phase

- 7.9.3.1 None proposed.

7.10 Assessment of Residual Effects

- 7.10.1.1 No significant effects are identified, with all scoped in IEFs assessed as having Minor adverse effects, or less, and which are **Not Significant** (as per the assessment sections above), and prior to the implementation of additional enhancement presented in the Outline BEMP.



7.10.1.2 Whilst no significant adverse effects are concluded upon the IEFs scoped into assessment, the implementation of the BEMP will likely result in operational Minor beneficial effects for certain scoped in IEFs (blanket bog/wet modified bog; see **Table 7-12**).

7.10.2 Further Survey Requirements and Monitoring

7.10.2.1 No significant residual effects are predicted; however, likely further future survey requirements and monitoring are noted here.

7.10.2.2 Pre-construction surveys will be undertaken to check for any new protected species or features in the vicinity of the construction works (**Technical Appendix 7.5: Outline SPP**). The results of the pre-construction surveys will be used to update the outline SPP ahead of construction starting. The SPP will remain a live document to be updated as required and in agreement with the ECoW where changes to the distribution and status of protected species and features are recorded.

7.10.2.3 Operational phase monitoring for certain habitats and species will be undertaken as part of the final BEMP; see outline proposals within **Technical Appendix 7.7: Outline BEMP**.

7.10.2.4 An integrated water quality and fish population monitoring programme will be implemented pre-construction, during construction, and post-construction on relevant watercourses in line with prevailing relevant guidance and guidelines (e.g. from SEPA and MSS).

7.10.2.5 Further survey and monitoring effort may be implemented by Scottish Ministers, if granted consent.

7.11 Summary of Assessment

7.11.1.1 **Table 7-12** provides a summary of the effects on IEFs identified in this chapter and **Technical Appendix 7.6: Shadow HRA** (with respect to designated sites), and describes the embedded, standard and additional environmental measures identified and the means by which they would be secured.



Table 7-12: Summary of Effects and Environmental Measures to be Implemented

IEF	Potential Effect	Mitigation or Environmental Measure	Responsibility for Implementation	Residual Effect
Construction Phase				
Whitlaw and Branxholme SAC	Indirect loss or modification of qualifying habitats through pollution effects and changes in the flow of water quantity and/or quality.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.
Branxholme Wester Loch SSSI	Indirect loss or modification of qualifying habitats through pollution effects and changes in the flow of water quantity and/or quality.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.
River Tweed SAC	Direct loss of life/injury and/or disturbance impacts on Atlantic salmon and otter qualifying features.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.
	Indirect loss or modification of qualifying habitats or respective qualifying species supporting habitats or food sources through pollution effects and changes water quality.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.
River Tweed SSSI	Direct loss of life/injury and/or disturbance impacts on Atlantic salmon and otter qualifying features.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.
	Indirect loss or modification of qualifying habitats or respective qualifying species supporting habitats or food sources through pollution effects and changes water quality.	No mitigation above and beyond embedded mitigation required. All works to be carried out in compliance with the CEMP and SPP.	The Applicant.	Negligible and Not Significant.



IEF	Potential Effect	Mitigation or Environmental Measure	Responsibility for Implementation	Residual Effect
Blanket Bog and Wet Modified Bog	Direct habitat loss, indirect habitat loss/modification and temporary habitat loss/modification.	No mitigation above and beyond embedded mitigation required. Compensation and additional enhancement via the implementation of a BEMP which includes bog restoration/enhancement.	The Applicant.	Minor adverse and Not Significant in the short-term.
Broadlee Moss and Loch LNCS	Direct habitat loss.	No mitigation above and beyond embedded mitigation required. Compensation and additional enhancement via the implementation of a BEMP which includes a suite of habitat management and biodiversity enhancement proposals, some of which overlap with this LNCS.	The Applicant.	Minor adverse and Not Significant in the short-term. Likely Minor beneficial in the long-term when implementation of the Outline BEMP is taken into account.
Operational Phase				
Blanket Bog and Wet Modified Bog	Indirect habitat loss ³⁴	Implementation of a BEMP which includes bog restoration and enhancement.	The Applicant.	Minor beneficial and Not Significant in the long-term.
Bats (high collision risk species: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and <i>Nyctalus</i> spp.)	Fatality through barotrauma or collision.	In addition to embedded mitigation (i.e., maintenance of a 50 m buffer from turbine blade tip to feature height and feathering whilst idling), proposals included as part of biodiversity enhancements detailed in the Outline BEMP would create and improve bat foraging habitat and corridors.	The Applicant.	Minor adverse and Not Significant.
Decommissioning Phase				

³⁴ Considered and assessed as part of predicted Construction Effects.



IEF	Potential Effect	Mitigation or Environmental Measure	Responsibility for Implementation	Residual Effect
None identified. Generally, as for Construction (or less). No further direct or indirect habitat losses. Potential net positive effect on habitats through subsequent Site restoration.				
Cumulative				
None identified.				



7.12 References

Publications

- Barré, K., Le Voil, I., Bas, Y., Julliard, R., and Kerbirou, C. (2018) Estimating habitat loss due to wind turbine avoidance by bats: Implications for European siting guidance. *Biological Conservation*, 2018, 226, pp.205-214. [ff10.1016/j.biocon.2018.07.011](https://doi.org/10.1016/j.biocon.2018.07.011).
- Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th Edition.
- Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition.
- Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds. Fiona Mathews and Paul Chanin. The Mammal Society, London.
- DEFRA (2016). *Understanding the Risk to European Protected Species (bats) at Onshore Wind Turbine Sites to inform Risk Management*. University of Exeter.
- Harris S., Morris, P., Wray, S. & Yalden, D. (1995). *A review of British mammals: population estimates and conservation status of British mammals other than cetaceans*. JNCC, Peterborough.
- Hill, D., Fasham, M., Tucker, G., Shewry, M and Shaw, P. (2005). *Handbook of Biodiversity Methods – Survey, Evaluation and Monitoring*. Cambridge University Press, Cambridge.
- JNCC (2010). *Handbook for phase 1 habitat survey – a technique for environmental audit*. JNCC, Peterborough.
- Landry, J. & Rochefort, L. (2012). *The Drainage of Peatlands: Impacts and Rewetting Techniques*. Peatland Ecology Research Group, Université Laval, Quebec.
- Littlewood, N.A., Campbell, R.D., Dinnie, L., Gilbert, L., Hooper, R., Iason, G., Irvine, J., Kilshaw, K., Kitchener, A., Lackova, P., Newey, S., Ogden, R. & Ross, A. 2014. *Survey and scoping of wildcat priority areas*. Scottish Natural Heritage Commissioned Report No. 768.
- Matthews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C.A., McDonald, R.A., Shore, R.F. (2018). *A Review of the Population and Conservation Status of British Mammals: Technical Summary*. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.
- Nayak, R.A., Miller, D., Nolan, A., Smith, P., Smith, J. (2008). *Calculating carbon savings from wind farms on Scottish peat lands - A New Approach*.
- Newson, S.E., Evans, H.E., Gillings, S., Jarrett, D., Wilson, M.W. (2017). *A survey of high risk bat species across southern Scotland*. Scottish Natural Heritage Commissioned Report No. 1008.
- Stewart, A. J. A. and Lance, A. N. 1991: Effects of moor-draining on the hydrology and vegetation of northern Pennine blanket bog. *Journal of Applied Ecology* 28, 1105-1117.



- Voigt CC, Rehnig K, Lindecke O, Pētersons G. Migratory bats are attracted by red light but not by warm-white light: Implications for the protection of nocturnal migrants. *Ecol Evol.* 2018; 8: 9353–9361.

Guidelines – Online

- CIEEM (2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3 updated September 2024. Available online from: <https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf>.
- European Commission, Directorate-General for Environment (2010). Wind energy developments and Natura 2000.
- Fisheries Management Scotland (2017). Advice to Boards/Trusts on engaging with the planning process for terrestrial wind farms. Available online from: <https://fms.scot/wp-content/uploads/2017/04/170412-Guidance-Terrestrial-windfarms.pdf>.
- JNCC (2020). Biodiversity – The UK Action Plan 1994. Available online from: <https://hub.jncc.gov.uk/assets/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd>.
- JNCC (2022). Guidelines for selection of biological Sites of Special Scientific Interest (SSSIs). Available online from: <https://jncc.gov.uk/our-work/guidelines-for-selection-of-sssis/>.
- Marine Scotland Science (2021). Monitoring watercourses in relation to onshore wind farm developments: generic monitoring programme. Available online from: <https://www.gov.scot/publications/monitoring-watercourses-in-relation-to-onshore-wind-farm-developments-generic-monitoring-programme/>.
- NatureScot (2023). Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Available online from: <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management>.
- NatureScot (2020a). Scottish Biodiversity List. Available online from: <https://www.nature.scot/doc/scottish-biodiversity-list>.
- NatureScot (2020b). General pre-application and scoping advice for onshore wind farms. Available online from: <https://www.nature.scot/sites/default/files/2020-10/General%20pre-application%20and%20scoping%20advice%20for%20onshore%20wind%20farms.pdf>.
- NatureScot (2021). Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments. Available online from: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments>.
- NatureScot (2022). Developing with Nature guidance. Available online from: <https://www.nature.scot/doc/developing-nature-guidance>.
- NatureScot (2024a). Good practice during windfarm construction. Available online from: <https://www.nature.scot/doc/good-practice-during-wind-farm-construction>.
- NatureScot (2024b). NatureScot pre-application guidance for onshore wind farms. Available online from: <https://www.nature.scot/doc/naturescot-pre-application-guidance-onshore-wind-farms>.



- NatureScot (2024c). Planning and development: standing advice and guidance documents. Available online from: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents>.
- NatureScot (2024d). Standing advice for planning consultations – Badgers. Available online from: <https://www.nature.scot/doc/standing-advice-planning-consultations-badgers#:~:text=For%20further%20advice%20on%20badger,the%20boundary%20of%20proposed%20developments>.
- NatureScot (2025e). Assessment of condition. Available online from: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/site-condition-monitoring/assessment-condition>.
- NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT) (2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation. Available online from: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>.
- NatureScot, Scottish Wildlife Trust and Scottish Geology Trust (2023). Guidance on Establishing and Managing Local Nature Conservation Sit Systems in Scotland – 2023 update. Available online from: <https://www.nature.scot/sites/default/files/2024-04/lncs-guidance-march-2024-accessible.pdf>.
- River Tweed (2025). Fish in the Tweed Catchment. Available online from: <https://rivertweed.org.uk/fishing/fish-species-in-the-river-tweed-catchment/>.
- Scottish Government (2021). Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines. Available online from: <https://www.gov.scot/publications/freshwater-and-diadromous-fish-and-fisheries-associated-with-onshore-wind-farm-and-transmission-line-developments-generic-scoping-guidelines/>.
- Scottish Government (2023). Scottish Government Draft Planning Guidance: Biodiversity. Available online from: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2023/11/scottish-government-draft-planning-guidance-biodiversity/documents/scottish-government-draft-planning-guidance-biodiversity/scottish-government-draft-planning-guidance-biodiversity/govscot%3Adocument/scottish-government-draft-planning-guidance-biodiversity.pdf>.
- Scottish Natural Heritage (2018). Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental impact Assessment process in Scotland. Version 5. Available online from: <https://web.archive.org/web/20220901050635/https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>.
- Scottish Government, Scottish Natural Heritage (SNH), SEPA (2017). Peatland Survey – Guidance on Developments on Peatland. Available online from: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance->



[2017/govscot:document/Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf](https://www.gov.scot/document/Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf).

- SNH (2018b). Assessing the cumulative impacts of onshore wind farms on birds. Available online from: <https://www.nature.scot/sites/default/files/2018-08/Guidance%20-%20Assessing%20the%20cumulative%20impacts%20of%20onshore%20wind%20farms%20on%20birds.pdf>.
- SNH (2016a). Decommissioning and Restoration Plans for wind farms. Available online from: <https://www.nature.scot/sites/default/files/2019-10/Guidance%20-%20Decommissioning%20and%20restoration%20plans%20for%20wind%20farms%20-%20Feb%202016.pdf>.
- SNH (2018a). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. Available online from: <https://web.archive.org/web/20220901050635/https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>.
- SNH (2016b). Planning for Development: What to consider and include in deer assessments and management at development sites. Version 2. Available online from: <https://www.nature.scot/sites/default/files/2019-08/Guidance%20-%20Planning%20and%20Development%20-%20What%20to%20Consider%20and%20Include%20in%20Deer%20Assessments%20and%20Management%20at%20Development%20Sites.pdf>.
- SNH (2016c). Planning for Development: What to consider and include in Habitat Management Plans. Version 2. Available online from: <https://www.nature.scot/sites/default/files/2023-12/160324%20-%20HMP%20guidance.pdf>.
- SNH (2015). Scotland's National Peatland Plan. Available online from: <https://www.nature.scot/sites/default/files/2023-06/Publication%202015%20-%20Scotland's%20National%20Peatland%20Plan%20-%20for%20print%20only.pdf>.

Guidelines

- JNCC (2013). Individual Species Reports – 3rd UK Habitats Directive Reporting 2013.
- JNCC (2019a). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019.
- JNCC (2019b). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019. H7130 - Blanket bogs, United Kingdom.
- JNCC (2019c). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019. H7130 - Blanket bogs, Scotland.
- JNCC (2019d). Conservation status assessment for the species: S1309 - Common pipistrelle (*Pipistrellus pipistrellus*). United Kingdom.
- JNCC (2019e). Conservation status assessment for the species: S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). United Kingdom.
- JNCC (2019f). Supporting documentation for the conservation status assessment for the species: S1309 - Common pipistrelle (*Pipistrellus pipistrellus*). Scotland.
- JNCC (2019g). Supporting documentation for the conservation status assessment for the species: S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). Scotland.



- JNCC (2019h). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019 for the species: S1331 - Leisler's bat (*Nyctalus leisleri*). United Kingdom.
- JNCC (2019i). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019 for the species: S1331 - Leisler's bat (*Nyctalus leisleri*). Scotland.
- JNCCSS (2019j). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019 for the species: S1312 - Noctule (*Nyctalus noctule*). United Kingdom.
- JNCC (2019k). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019 for the species: S1312 - Noctule (*Nyctalus noctule*). Scotland.
- SEPA (2006a). Prevention of Pollution from Civil Engineering Contracts: Guidelines for the Special Requirements.
- SEPA (2006b). Prevention of Pollution from Civil Engineering Contracts: Special Requirements.
- SEPA (2024). Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems.
- Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

Legislation

- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (2000). L327/2.
- Directive 2011/92/EU the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment (codification). (2011). L26/1.
- Nature Conservation (Scotland) Act 2004. asp 6. Scotland.
- Protection of Badgers Act 1992. c. 51. United Kingdom.
- Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. asp 15. Scotland.
- The Conservation (Natural Habitats, &c.) Regulations 1994. No. 2716. United Kingdom.
- The Conservation of Habitats and Species Regulations 2017. No. 1012. United Kingdom.
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. No. 101. Scotland.
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 No. 102. Scotland.
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011. No. 209. Scotland.
- The Water Environment and Water Services (Scotland) Act 2003. asp. 3. Scotland.
- Wildlife and Countryside Act 1981. c. 69. United Kingdom.



- Wildlife and Natural Environment (Scotland) Act 2011. asp 6. Scotland.

Data

- British Deer Society (2023). Deer Distribution Survey 2023. Available online from: <https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/>.
- JNCC (undated). Habitats list. Available online from: <https://sac.jncc.gov.uk/habitat/>.
- JNCC (2024). UK BAP Priority Habitats. Available online from: <https://jncc.gov.uk/our-work/uk-bap-priority-habitats>.
- Mammal Society (2025). Ecobat. Available online from: <https://ecobat.mammal.org.uk/login>.
- NatureScot (2025). Sitelink. Available online from: <https://sitelink.nature.scot/home>.
- NBN Atlas Scotland (2025). Available online from: <https://scotland.nbnatlas.org/>.
- Saving Scotland's Red Squirrels (2025). Available online from: <https://scottishsquirrels.org.uk/squirrel-sightings/>.
- SEPA (2023). SEPA Water Environment Hub. Available online from: <https://www.sepa.org.uk/data-visualisation/water-environment-hub/>.
- SEPA (undated). Windfarm Carbon Calculator Web Tool. Available online from: https://informatics.sepa.org.uk/CarbonCalculator/assets/Carbon_calculator_User_Guidance.pdf.
- Scottish Government (2025a). Ancient Woodland Inventory. Available online from: <https://map.environment.gov.scot/sewebmap/?layers=ancientWoodlandInventoryScotland>.
- Scottish Government (2025b). Carbon and Peatland Map (2016). Available online from: <https://map.environment.gov.scot/sewebmap/>.
- Scottish Government (2025c). Local Nature Conservation Sites – Scotland. Available online from: <https://www.data.gov.uk/dataset/c3460656-74ab-435a-8f77-9a528e24beb1/local-nature-conservation-sites-scotland>.
- The Wildlife Information Centre (TWIC). Data Services. Available online from: <https://wildlifeinformation.co.uk/>.

Standards

- CIEEM (2022). Code of Professional Conduct. Available online from: <https://cieem.net/wp-content/uploads/2019/02/Code-of-Professional-Conduct-fEB-2022.pdf>.

Planning Policy and Guidance

- European Commission, Directorate-General for Environment (2010). Wind energy developments and Natura 2000.
- JNCC on behalf of the Four Countries' Biodiversity Group (4CBG). 2024. UK Biodiversity Framework. JNCC, Peterborough.
- Scottish Borders Council (2024). Local Development Plan.
- Scottish Borders Council (2020). Technical Note 4: Local Biodiversity Sites.
- Scottish Borders Council (2018). Scottish Borders Local Biodiversity Action Plan 2018-2028.



- Scottish Executive (2000). Nature conservation: implementation in Scotland of EC Directives on the conservation of natural habitats and of wild flora and fauna and the conservation of wild birds ('The Habitats and Birds Directives'). Revised guidance updating Scottish Executive Circular no. 6/1995.
- Scottish Executive Rural Affairs Department (SERAD) (2001). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements.
- Scottish Government (2016). Draft Peatland and Energy Policy Statement.
- Scottish Government (2020). EU Exit: The Habitat Regulations in Scotland.
- Scottish Government (2023). National Planning Framework 4.
- Scottish Government (2022a). Onshore Wind Policy Statement 2022.
- Scottish Government (2017a). Planning Advice Note 1/2013 – Environmental Impact Assessment. Revision 1.0.
- Scottish Government (2017b). Planning Circular 1/2017: The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.
- Scottish Government (2022b). Scottish Biodiversity Strategy to 2045. Tackling the Nature Emergency in Scotland.
- Scottish Government (2020). Securing a green recovery on a path to net zero: climate change plan 2018 – 2032 – update.
- Scottish Government (2019). The Scottish Forestry Strategy 2019–2029.

Other

- Muirhall Energy Ltd (2022). Teviot Windfarm Environmental Impact Assessment, Technical Appendix 7.5, Outline Habitat Management Plan.



Annex A Habitat Baseline Composition (Study Area) and Habitat Loss Calculations



Table 7-13: Habitat Baseline Composition (Study Area) and Habitat Loss Calculations

		Site Boundary and Study Area (Baseline)				Permanent Direct Loss	Permanent Infrastructure Indirect Loss (only applies to Wetland Habitats) ³⁵	Temporary Direct Loss
Phase 1 Description (Code)	NVC	Phase 1 Area (ha)	Phase 1% of Study Area	NVC Area (ha)	% of NVC Type within Study Area	NVC Area (ha)	NVC Area (ha)	NVC Area (ha)
Totals		1962.08	100	1962.08	100	19.91	15.92	28.61
Broad-Leaved Semi-Natural Woodland (A1.1.1)	W4b	2.05	0.10	0.13	0.01	0.00	0.00	0.00
	W5			0.03	<0.01	0.00	0.00	0.00
	W6			0.11	0.01	0.00	0.00	0.00
	W7			0.06	<0.01	0.00	0.00	0.00
	W10			0.45	<0.01	<0.01	0.00	0.00
	W10d			0.09	<0.01	0.02	0.00	0.00
	W11			1.17	0.06	0.00	0.00	0.00
Broad-Leaved Plantation Woodland (A1.1.2)	BP	7.35	0.37	0.70	0.04	0.00	0.00	0.00
	YBP			6.43	0.33	0.01	0.00	0.00
	W10(p)			<0.01	<0.01	<0.01	0.00	0.00
	W14(p)			0.14	0.01	0.00	0.00	0.00
	W15(p)			0.09	<0.01	0.00	0.00	0.00
Coniferous Plantation Woodland (A1.2.2)	CP	33.79	1.72	28.40	1.45	0.04	0.00	0.00
	YCP			5.33	0.27	0.00	0.00	0.00
	W18(p)			0.05	<0.01	0.00	0.00	0.00

³⁵ Based upon the precautionary 10 m indirect drainage assumption (SEPA, undated).



		Site Boundary and Study Area (Baseline)				Permanent Direct Loss	Permanent Infrastructure Indirect Loss (only applies to Wetland Habitats) ³⁵	Temporary Direct Loss
Dense/Continuous Scrub (A2.1)	W21	3.79	0.19	0.93	0.05	0.02	0.00	0.00
	W23			2.86	0.15	0.01	0.00	1.32
Scattered Broad-Leaved Tree (A3.1)	SBT	0.59	0.03	0.59	0.03	0.00	0.00	0.00
Scattered Coniferous Tree (A3.2)	SCT	0.16	0.01	0.16	0.01	<0.01	0.00	0.00
Recently Felled Coniferous Woodland (A4.2)	CF	0.34	0.02	0.34	0.02	0.00	0.00	0.00
Unimproved Acid Grassland (B1.1)	U4	318.60	16.24	317.53	16.18	3.56	0.00	7.81
	U5			0.49	0.03	0.00	0.00	0.00
	U6			0.42	0.02	<0.01	0.01	0.04
	U6a			0.16	0.01	0.00	0.00	0.00
Semi-improved Acid Grassland (B1.2)	U4b	246.97	12.59	246.97	12.59	1.29	0.00	0.45
Unimproved Neutral Grassland (B2.1)	MG1	5.43	0.28	1.24	0.06	0.01	0.00	0.00
	MG1c			0.59	0.03	0.05	0.00	0.00
	MG9			3.52	0.18	0.00	0.00	0.00
	MG9a			0.08	<0.01	0.00	0.00	0.00
Unimproved Calcareous Grassland (B3.1)	CG10	0.26	0.01	0.04	<0.01	0.00	0.00	0.00
	CG10a			0.23	0.01	<0.01	<0.01	<0.01
Improved Grassland (B4)	MG6	141.37	7.21	75.52	3.85	0.00	0.00	0.00
	MG6a			68.85	3.36	0.58	0.00	5.61
Marsh/Marshy Grassland (B5)	MG10a	578.18	29.47	38.94	1.98	0.25	0.59	0.60
	MG10c			0.06	<0.01	0.00	0.00	0.00



		Site Boundary and Study Area (Baseline)				Permanent Direct Loss	Permanent Infrastructure Indirect Loss (only applies to Wetland Habitats) ³⁵	Temporary Direct Loss
	M23a			20.66	1.05	0.53	0.90	0.28
	M23b			81.55	4.16	0.36	0.76	0.13
	M25a			317.62	16.19	3.49	5.97	4.56
	M25b			91.59	4.67	0.53	1.29	1.10
	M27			<0.01	<0.01	0.00	0.00	0.00
	M27a			2.92	0.15	0.00	0.00	0.00
	M27b			0.34	0.02	0.00	0.00	0.00
	Ja			0.15	0.01	0.00	0.00	0.00
	Je			24.27	1.24	0.51	0.73	0.44
	Mx			0.07	<0.01	0.00	0.00	0.00
Continuous Bracken (C1.1)	U20	262.06	13.36	195.19	9.95	1.92	0.00	1.57
	U20a			66.43	3.39	0.00	0.00	0.00
	U20b			0.44	0.02	0.00	0.00	0.00
Tall Ruderal (C3.1)	OV24	1.77	0.09	0.16	0.01	0.00	0.00	0.00
	OV25			1.58	0.08	0.00	0.00	0.00
	OV25b			0.04	<0.01	0.00	0.00	0.04
Acid Dry Dwarf Shrub Heath (D1.1)	H9c	79.24	4.04	0.18	0.01	0.00	0.00	0.00
	H10			0.08	<0.01	0.00	0.00	0.00
	H12			40.04	2.04	0.88	0.00	0.86
	H12a			36.50	1.86	0.70	0.00	1.98
	H12b			2.08	0.11	0.00	0.00	0.00
	H12c			0.25	0.01	0.00	0.00	0.00



		Site Boundary and Study Area (Baseline)				Permanent Direct Loss	Permanent Infrastructure Indirect Loss (only applies to Wetland Habitats) ³⁵	Temporary Direct Loss
	H21			0.10	0.01	0.00	0.00	0.00
Wet Dwarf Shrub Heath (D2)	M15a	76.66	3.91	0.15	0.01	0.00	0.00	0.00
	M15b			74.84	3.81	1.49	2.70	0.62
	M15d			1.67	0.08	0.02	0.04	0.00
Blanket Bog (E1.6.1)	M2	82.78	4.22	0.01	<0.01	0.00	0.00	0.00
	M17			18.53	0.94	0.06	0.20	0.02
	M17a			7.29	0.37	0.00	0.00	0.00
	M17c			3.14	0.06	0.00	0.02	0.00
	M19			48.54	2.47	0.13	0.41	0.33
	M19a			5.27	0.27	0.05	0.05	0.03
Wet Modified Bog (E1.7)	M20	87.71	4.47	16.24	0.83	0.48	0.28	0.19
	M20b			10.19	0.52	0.10	0.18	0.06
	M25a^			61.28	3.12	1.56	1.19	0.28
Acid/Neutral Flush (E2.1)	M4	13.30	0.68	0.35	0.02	0.00	<0.01	0.00
	M6a			3.06	0.16	0.12	0.18	0.01
	M6b			0.15	0.01	0.00	0.00	0.00
	M6c			9.03	0.46	0.13	0.38	0.02
	M6d			0.71	0.04	0.00	<0.01	0.00
Basic Flush (E2.2)	M9	0.45	0.02	0.34	0.02	0.00	0.00	0.00
	M10			0.11	0.01	0.00	<0.01	0.00
Swamp (F1)	S4	4.68	0.24	0.08	<0.01	0.00	0.00	0.00
	S7			0.24	0.01	0.00	0.00	0.00



		Site Boundary and Study Area (Baseline)				Permanent Direct Loss	Permanent Infrastructure Indirect Loss (only applies to Wetland Habitats) ³⁵	Temporary Direct Loss
	S9			0.09	<0.01	0.00	0.01	0.00
	S9a			0.74	0.04	0.00	0.00	0.00
	S9b			2.76	0.14	0.00	0.00	0.00
	S10a			0.30	0.02	0.00	0.00	0.00
	S27a			0.25	0.01	0.00	<0.01	0.00
	S27b			0.03	<0.01	0.00	0.00	0.00
	S28a			0.20	0.01	0.00	0.00	0.00
Standing Water (G1)	SW	2.75	0.14	2.75	0.14	0.00	0.00	0.00
Running Water (G2)	RW	1.13	0.06	1.13	0.06	0.00	0.00	0.00
Acid/Neutral Exposure (I1.4.1)	RK	0.12	0.01	0.12	0.01	0.00	0.00	0.00
Quarry (I2.1)	QY	0.17	0.01	0.17	0.01	0.00	0.00	0.00
Arable (J1.1)	AR	6.12	0.31	6.12	0.31	0.12	0.00	0.00
Building (J3.6)	BD	0.12	0.01	0.12	0.01	0.00	0.00	0.00
Bare Ground (J4)	BG	4.14	0.20	4.14	0.21	0.88	0.00	0.29



