

## Chapter 8: Ecology



# Chapter 8

## Ecology

### Introduction

**8.1** This chapter presents the findings of the assessment of likely effects of the proposed Loch Liath Wind Farm (hereafter referred to as the 'Proposed Development') on Ecology. It constitutes an Ecological Impact Assessment (EclA) which includes the following:

- A description and interpretation of the ecology baseline (including desk-based studies and field surveys);
- The assessment methodology and significance criteria used in assessing effects on ecological features;
- An assessment of the likely effects during the construction and operational phases of the Proposed Development, and consideration of potential cumulative effects with other developments; and
- Mitigation and monitoring measures proposed to address potential significant effects, where necessary.

**8.2** This chapter should be considered in conjunction with the following chapters which inform, or have been informed by, this assessment:

- **Chapter 2: Approach to the EIA;**
- **Chapter 3: Site Selection and Design Strategy;**
- **Chapter 4: Project Description;**
- **Chapter 7: Geology, Hydrology, Hydrogeology, and Peat;** and
- **Chapter 9: Ornithology.**

**8.3** The ecology assessment was undertaken by Land Use Consultants (LUC). This EclA was prepared and overseen by professional and experienced ecological consultants with appropriate memberships of the Chartered Institute of Ecology and Environmental Management (MCIEEM), and experience of EclA in the context of wind farm EclA. Field surveys and data collection were undertaken by ecologists who had extensive experience and/or training in undertaking baseline ecological surveys for renewable energy projects (particularly wind farms), and in the assessment of ecological effects in the EIA context (see **Appendix 1.1: Statement of Expertise**).

**8.4** This chapter is supported by a number of figures which are referenced throughout the text and which can be found at the end of this chapter.

**8.5** The following appendices are also referred to throughout the chapter:

- **Appendix 8.1: Desk Study and Legal/ Policy Context;**
- **Appendix 8.2: Habitats and Vegetation Survey Report;**
- **Appendix 8.3: Protected Species Survey Report;**
- **Appendix 8.4: Bat Survey Report;** and
- **Appendix 8.5: Outline Restoration and Enhancement Plan (OREP).**

**8.6** The following terminology will be referred to throughout this chapter:

- **Site**
  - All land within the red-line boundary, as shown in **Figure 1.1**.

### ■ Proposed Development

- The process involved in the development of the land at Loch Liath Wind Farm including construction, operation and decommissioning<sup>1</sup>.
- Encompasses the construction of up to 13 turbine wind farm and associated infrastructure including access tracks, crane hardstandings, substation compound and underground cabling (as shown on **Figure 4.1a-c** and described in **Chapter 4**).

### ■ Study Area

- The area within which ecology desk-based studies were undertaken (up to 10 kilometres (km) from the Site).

### ■ Ecology Survey Area (ESA)

- The Ecology Survey Area (ESA) is shown as the green line boundary in **Figure 8.1**. The ESA was defined prior to the finalisation of the layout of the Proposed Development and therefore includes a wider area than that of the footprint of the Proposed Development. Survey specific buffers and areas are detailed within their respective appendices, in **Appendix 8.2, 8.3 and 8.4**.
- The ESA is the area within the red line boundary in which ecology surveys were undertaken in line with good practice guidelines for all ecological features surveyed, defined as the location of the turbines plus a buffer up to the boundary of the Site, extending from the end of the existing access track in the south-west at approximately National Grid Reference (NGR) NH 37230 21850, and up to NH 40000 26000 at its north-east corner, as shown in **Figure 8.1**.

### ■ Bat Survey Area (BSA)

- The area within which bat surveys were undertaken in line with good practice guidelines<sup>2</sup>. The Bat Survey Area is defined as a 200 metres (m) buffer plus rotor radius (77.5m) of proposed turbine locations (as shown in **Figure 8.1**), and a 50m buffer along the proposed new access track.
- At the time of survey, the footprint of the Proposed Development extended beyond the boundary of the Site to the east, and so static bat detectors were deployed outwith the final BSA.

### ■ Access Survey Area (ASA)

- The area within the Site in which ecological surveys were undertaken along the Bhlaraidh Wind Farm existing access track. This is defined at its southern end as the junction of the existing track with the A887 in Glen Moriston, and at its northern end as the location at which the existing track ends (approximately NH 37230 21850), as shown in **Figure 8.1**.

## Scope of the Assessment

### Effects Assessed in Full

**8.7** The following effects were identified at the Scoping stage for consideration in this assessment:

- Direct or indirect effects during construction on:
  - Designated sites structurally or functionally connected to the Site.
  - Habitats of conservation interest<sup>3</sup>.
  - Protected species recorded within the Site.

<sup>1</sup> As noted in **Chapter 2**, an assessment of effects during the decommissioning phase has not been undertaken in the EIA as the baseline against which to assess likely significant decommissioning effects is not known. However, a method statement will be prepared and agreed with the relevant statutory consultees prior to decommissioning of the Proposed Development, and it is anticipated that any effects associated with decommissioning will be similar to or less than those associated with construction.

<sup>2</sup> NatureScot (2021). Bats and onshore wind turbines - survey, assessment and mitigation. Available at: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation> [Accessed June 2022]

<sup>3</sup> Habitats of conservation interest include habitats considered conservation priorities in the Habitats Directive (i.e. Annex 1 habitats); habitats considered to indicate potential groundwater dependency; habitats included on the Scottish Biodiversity List; and habitats included in the Highland Nature: Biodiversity Action Plan 2021-2026 (June 2021).

- Direct or indirect effects during operation on bats.
- Cumulative effects during construction on ecological features.
- Cumulative effects during operation on ecological features.

#### Effects Scoped Out

On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects, and policy guidance or standards, and feedback received from consultees, the following effects have been 'scoped out' of detailed assessment:

- Construction or operational effects on habitats and species generally considered to be widespread and common (i.e. those not protected by the legislation or policy detailed below).
- Operational effects on habitats of conservation interest.
- Effects on protected species where the desk study highlighted a lack of suitable habitat, likely absence (e.g., due to species range), and returned no or minimal local records (including great-crested newt, fisheries and freshwater pearl mussel).
- Operational effects on protected species, with the exception of bats.

**8.8** It is important to note, however, that whilst effects are scoped out because they are not considered to be significant in EIA terms, the need to ensure compliance with nature conservation legislation still applies. The presence and potential presence of protected species, and notable species<sup>4</sup>, within the Site will require consideration within the Construction Environmental Management Plan (CEMP) and appropriate measures will be necessary to ensure their ongoing ability to survive (viability) and to avoid a legal offence.

#### Cumulative Effects

**8.9** The potential cumulative effects of the Proposed Development and other wind farm developments in planning within a 5km search area are considered. Given that the habitats present within the Site are widespread and common in the local landscape and are likely to support a similar assemblage of protected species, 5km is considered an appropriate search area.

**8.10** Four other wind farm developments are located within 5km of the Proposed Development. Two of these (Bhlaraidh and Corrimony) are operational and so form part of the baseline condition of the Site, and one wind farm (Chrathaich) is in the design/Scoping stage (and therefore the ecological data is not available to inform the cumulative assessment). The fourth wind farm (Bhlaraidh Extension) has been recently consented; therefore, a cumulative assessment has been carried out for construction and operational effects with this windfarm only.

#### Changes to Scope

**8.11** When the Scoping Report was submitted, the Proposed Development comprised up to 26 turbines over a wider area. The Proposed Development now comprises up to 13 turbines over a smaller area. The area over which the ecological studies are reported has therefore been reduced accordingly.

**8.12** In addition, the access for the Proposed Development had not been confirmed at the time of the Scoping Report and initial surveys. Ecological surveys were undertaken in 2021 along the access route, within the ASA, that follows the existing wind farm track through the operational Bhlaraidh Wind Farm, to the south. No works are proposed to the track or adjacent habitats to facilitate the Proposed Development with the exception of potentially improving the running surface and scraping the top layer of material to ensure the turbine blade tips do not strike the earthworks embankment. Therefore, this does not change the scope of the assessment and potential effects associated with upgrading the Bhlaraidh Wind Farm access have not been assessed.

## Assessment Methodology

### Legislation and Guidance

#### Legislation

**8.13** This assessment is carried out in accordance with the principles contained within the following legislation (detailed within **Appendix 8.1**) that creates a mechanism for designated sites, protected habitats, and protected species:

- The Nature Conservation (Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Scotland Act 1992 (as amended);
- The Water Environment and Water Services (Scotland) Act 2003 (WEWS); and
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011.

#### Policy and Guidance

**8.14** This assessment is carried out in accordance with the principles contained within the following relevant nature conservation policy or guidance that creates a mechanism for locally-designated sites, habitats, and species of conservation interest:

- The Scottish Biodiversity List (SBL)<sup>4</sup>;
- Highland Nature: Biodiversity Action Plan 2021-2026<sup>5</sup>; and
- National<sup>6</sup> and local planning policy and supplementary guidance.

**8.15** Relevant guidance that has informed the assessment methods adopted in the chapter includes:

- Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal, 3rd edition, CIEEM (2019)<sup>7</sup>;
- Land Use Planning System: Guidance Note 31 – Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE). Scottish Environment Protection Agency (SEPA) (2017)<sup>8</sup>; and
- Good Practice During Windfarm Construction, 4th edition. Scottish Renewables et al. (2019)<sup>9</sup>.

**8.16** Further guidance in relation to survey methods and the interpretation of ecological data is referenced in the relevant technical appendices, where appropriate.

#### Consultation

**8.17** In undertaking the assessment, consideration has been given to the Scoping responses and other consultation which has been undertaken as detailed in **Table 8.1**.

**8.18** No formal Scoping Response was received from SEPA as a result of the major cyber-attack on the organisation in December 2020. However, informal consultation was subsequently undertaken prior to submission of the EIA Report.

<sup>4</sup> NatureScot (2020). *Scottish Biodiversity List*. Available online at: <https://www.nature.scot/doc/scottish-biodiversity-list>.

<sup>5</sup> Highland Environment Forum (2021) Highland Nature: Biodiversity Action Plan 2021-2026. Available online at: <https://www.highlandenvironmentforum.info/biodiversity/action-plan/> [Accessed November 2022]

<sup>6</sup> Scottish Government (2014). *Scottish Planning Policy*. Available online at: <https://www.gov.scot/publications/scottish-planning-policy> [Accessed November 2022]

<sup>7</sup> CIEEM (2018) (version 1.2 updated April 2022). *Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal, 3<sup>rd</sup> edition*. Available online at: <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>. [Accessed November 2022]

<sup>8</sup> Scottish Environment Protection Agency (SEPA) (2017). *Land Use Planning System: Guidance Note 31 – Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE)*. Available online at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf>. [Accessed November 2022]

<sup>9</sup> Scottish Renewables et al. (2019). *Good Practice During Wind Farm Construction*. Available online at: <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction> [Accessed November 2022]

Table 8.1: Consultation Responses

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
<b>Statutory Consultees</b>			
NatureScot (23/04/2020)	Informal consultation NatureScot were consulted in April 2020 with regards the disruption to ecological fieldwork resulting from the Covid-19 pandemic.	NatureScot agreed with the proposed approach of collecting static bat detector data in the Summer and Autumn survey seasons of 2020 and collecting further data in the Spring survey season of 2021.	Data collection was completed as proposed, within a 12 month period across the two survey seasons of 2020 and 2021.
NatureScot (23/02/2021)	Formal Scoping Response	<p>Noted that the Proposed Development has potential to affect nationally important peatland habitat and if adverse impacts cannot be overcome by siting, design or mitigation then they may object.</p> <p>Advised that the EIA Report should provide sufficient information and assessment, based on site-specific surveys to determine if the wind farm infrastructure will affect, directly or indirectly areas of nationally important carbon-rich soils, deep peat and priority peatland habitat.</p> <p>Advised that an Outline Habitat Management Plan (HMP) should be prepared in addition to a Peat Management Plan and Peat Landslide Hazard and Risk Assessment.</p> <p>Confirmed they agree with the survey scope, assessment methodology and the proposed approach to embedded and additional mitigation for assessing effects from a habitat and peatland perspective.</p> <p>Advised that there is potential for Ness Woods SAC otters to be connected with the Site and if Otters are recorded during surveys, the SAC's otter features should be scoped into the EIA.</p> <p>Agreed with the protected species surveys proposed and noted that if any protected species are identified then Species Protection Plans should be produced and included within the EIA Report.</p> <p>Noted that if wild deer are present on or will use the Site then an assessment of the potential impacts on deer welfare, habitats, neighbouring and other interests should be presented. If significant impacts are identified a draft deer management statement will also be required to address the impacts.</p>	<p>Extensive design work has been undertaken to avoid sensitive areas. Full details of the design are provided in <b>Chapter 3</b>.</p> <p>The assessment of the effects on peatland habitats is provided in this chapter.</p> <p>Detailed surveys have been undertaken of peat depth and quality across the Site and the findings of the assessment are presented in <b>Chapter 7</b> and this chapter.</p> <p>An Outline Restoration and Enhancement Plan (OREP) is provided as <b>Appendix 8.5</b>, an Outline Peat Management Plan (Outline PMP) in <b>Appendix 7.3</b>, and a Peat Landslide Hazard and Risk Assessment in <b>Appendix 7.4</b>.</p> <p>Potential effects on otter, including the potential for effects on Ness Woods SAC, are considered in this chapter.</p> <p>Full details of the protected species surveys and findings are provided in this chapter.</p> <p>Wild deer are addressed in this chapter.</p>
NatureScot (19/10/2022)	Informal consultation A project update meeting was held with NatureScot in October 2022 to discuss interests including ecology, ornithology and peat. An update was provided regarding survey results and design work undertaken to date, and emerging proposals for the OREP.	<p>NatureScot acknowledged the detailed design work which had been undertaken to minimise potential impacts to sensitive features. NatureScot advised that they take into consideration the condition of areas of peatland habitat that are on peat less than 0.5m depth.</p> <p>NatureScot were satisfied with the measures proposed to improve habitats and stated these are in line with what NatureScot would expect to see. NatureScot confirmed that the type of restoration measures that would be considered applicable are active interventions such as re-profiling.</p>	No action required.
NatureScot (06/12/2022)	Gatecheck Consultation Feedback	NatureScot is content that the developer has carefully considered the advice provided in response to both the Scoping Request and further consultation. NatureScot met with the developer and their ecology consultants in	No action required.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
<b>Statutory Consultees</b>			
		<p>October 2022 to discuss the revised layout and progress of the survey work.</p> <p>NatureScot have no additional comments to make in response to the Gatecheck consultation.</p>	
Scottish Environment Protection Agency (SEPA) (11/10/2022)	Gatecheck Consultation Feedback	<p>In relation to peat SEPA note that the Proposed Development has generally been designed to avoid the deepest areas of peat, but made some further suggestions in relation to potential tweaks to the infrastructure layout.</p> <p>SEPA note and welcome the commentary which suggests that bog pools have been avoided and hope a similar approach has been taken to any other near natural wetland habitats.</p> <p>SEPA also welcome the reference made to habitat management prescriptions and habitat management area and would expect the application to be supported by an outline habitat management plan which identifies areas for peatland restoration (which should be significantly larger in scale than the area of direct and indirect impacts from the Proposed Development) and an outline of the types of works proposed.</p>	<p>It was not possible to make further edits to the layout due to a number of other constraints. This was confirmed to SEPA by email in February 2022. Further details are provided in <b>Appendix 2.1: Consultation Response Table</b>.</p> <p>This chapter includes details of the important habitats (including near-natural wetlands) onsite.</p> <p>An OREP is provided in <b>Appendix 8.5</b> and includes proposed measures with regards to peatland restoration.</p>
SEPA (11/10/2022)	Informal consultation A project update meeting was held with SEPA in October 2022 to discuss interests including ecology and peat. An update was provided regarding survey results and detailed design work undertaken to date.	<p>SEPA noted the design work undertaken includes the type of amendments that they would often recommend to limit impacts on peat. SEPA welcomes some of the specific design elements including flipping of hardstandings, and the decision on the proposed access route.</p> <p>SEPA requested plans of the proposed layout depicting NVC survey results, confirmed GWDTEs, and peat depth data, to allow them to provide a table of comments on the proposed layout.</p>	<p>A review of NVC data indicated that only one small area was classified as potentially highly groundwater dependent. Within the Proposed Development area envelope, much of the area was classified as potentially moderately groundwater-dependent, comprising M15 and M25. Based on the hydrogeological regime of the Proposed Development area, the topography and observations made onsite, these potential GWDTEs are unlikely to be true GWDTEs and are considered to be rainwater or surface water fed. Additionally, no springs or flush lines were observed onsite. Some of the area is located on peat which is predominantly rainwater fed (oligotrophic) and provides a relatively impermeable layer over the bedrock.</p>
The Highland Council (THC) (24/02/2021)	Formal Scoping Response	<p>Advised that the EIA Report should provide a baseline survey of the birds, animals and habitats present on the Site alongside any habitat enhancement programme. This should also address whether or not the Proposed Development could assist or impede delivery of elements of relevant Biodiversity Action Plans.</p> <p>Highlighted that if wild deer are present or will use the Site an assessment of the potential impact on deer will be required and should address deer welfare, habitats and other interests.</p>	<p>Full details of the surveys undertaken are provided in this chapter and <b>Chapter 9</b>.</p> <p>Wild deer are addressed in this chapter.</p> <p>It was agreed through consultation with NatureScot that effects on freshwater pearl mussel and fisheries could be scoped out of detailed assessment.</p> <p>Consultation was undertaken with Fisheries Management Scotland,</p>

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
<b>Statutory Consultees</b>			
		Noted the requirement to consider aquatic interests within local watercourses, and highlighted the requirement to consult with the local fishery boards.	Ness District Salmon Fisheries Board and Ness & Beaully Fisheries Trust however no responses were received.
<b>Non-Statutory Consultees</b>			
Royal Society for the Protection of Birds (RSPB) (01/02/2021)	Formal Scoping Response	Advised that a suitable area of modified blanket bog should be identified and restored as compensation for the estimated loss of any functioning blanket bog that cannot be avoided. The area should be of sufficient size, assessed for suitability and discussed in the EIA Report.  Stated that the EIA Report should include a full survey, impact assessment and proposals for mitigation in relation to important habitats and species on the Site.  Requested that a HMP is submitted alongside the application. Noted that there are areas of ancient woodland inventory within the Site and stated that opportunities to enhance this habitat should be identified and included in the HMP in line with SPP.	This chapter includes details of the important habitats and species onsite.  An OREP is provided in <b>Appendix 8.5</b> . As a result of the reduction in size of the Proposed Development, there is no longer any ancient woodland within the Site.

### Study Area and ESA

**8.19** The Study Area used in the desk study for this assessment, is the Site plus relevant buffers as shown in **Figure 8.2**. The Study Area varies by ecological feature, as defined in **Table 8.2**.

**8.20** The ESA used in field surveys is the location of the turbines and associated infrastructure, plus relevant buffers as shown in **Figure 8.1**, and defined in **Table 8.2**.

**Table 8.2: Study Area Descriptions**

Ecological Feature	Study Area
<b>Desk-based Studies</b>	
Statutory Designated Sites	The Site and a 10km buffer
Non-Statutory Designated Sites	The Site and a 5km buffer
Existing Protected Species Data	The Site and a 2km buffer (10km buffer for bats)
<b>Field Surveys</b>	
Habitat and NVC Surveys	The ESA for habitats and vegetation is defined as the location of the turbines plus a buffer up to the boundary of the Site, extending from the end of the existing access track in the south-west, and up to NH 40000 26000 at its north-east corner <sup>10</sup> , as shown in <b>Figure 8.1</b> .
GWDTEs	This area was chosen to ensure a minimum 500m buffer of the turbine area where land falls within the Site, and to provide additional context in the wider Site.

<sup>10</sup> The proposed turbines are situated in the south-west corner of the Site which itself covers a much larger area. The ESA should provide a suitable context within which to assess likely effects on habitats as a result of the Proposed Development. The ESA as defined extends to approximately 0.8km north and 1.3km east of the turbine area, and this was chosen as it is considered sufficient to provide the necessary context for the assessment.

<sup>11</sup> NatureScot SiteLink Website [online]. Available at: <https://sitelink.nature.scot/home> [Accessed May 2022].

<sup>12</sup> Scottish Environment Protection Agency (n.d.) Scotland's Environment Map [online]. Available at: <https://map.environment.gov.scot/sewebmap/> [Accessed May 2022].

Ecological Feature	Study Area
	In addition, survey was undertaken within the ASA along the Bhlaraidh Wind Farm existing access track as shown on <b>Figure 8.1</b> .
Protected Species	The ESA for protected species is defined as the location of the turbines plus a buffer up to the boundary of the Site, extending from the end of the existing access track in the south-west (approximately NH 37230 21850), and up to NH 40000 26000 at its north-east corner.  This area was chosen to ensure a minimum 250m buffer of the turbine area where land falls within the Site, and to provide additional context in the wider Site.  In addition, survey was undertaken within the ASA along the Bhlaraidh Wind Farm existing access track. The ASA is defined as the area within the Site, extending from the junction of the existing track with the A887 in Glen Moriston at its southern end, to where the existing track ends at its northern end (approximately NH 37230 21850).
Bats	In line with guidance <sup>2</sup> , the BSA for bats is defined as a 200m buffer plus rotor radius (77.5m) of proposed turbine locations, and a 50m buffer along the proposed new access track.  At the time of survey, the footprint of the Proposed Development extended beyond the boundary of the Site to the east, and so static bat detectors were deployed outwith the final BSA. Data from these have been used to provide additional context of bat activity within the wider area.  In addition, survey for bat roost potential was undertaken within the ASA along the Bhlaraidh Wind Farm existing access track.

**8.21** Detailed descriptions of the Study Area as it relates to each ecological feature are provided in **Appendix 8.1 to 8.4**.

### Desk Based Research and Data Sources

**8.22** A desk study was undertaken to identify known ecological features within the relevant study areas described in **Table 8.2** above. Searches were made for those habitats and species agreed through consultation, and the following resources were used:

- NatureScot's SiteLink Website<sup>11</sup>;
- Scotland's Environment Mapping Service<sup>12</sup>;
- The Highland Biological Recording Group (HBRG)<sup>13</sup>;
- Highland Nature: Biodiversity Action Plan 2021-2026<sup>5</sup>;
- The Carbon and Peatland Map (2016)<sup>14</sup>; and
- National Biodiversity Network (NBN) Atlas Scotland<sup>15</sup>.

**8.23** Where appropriate, other scientific resources were referred to when determining protected species behaviour or population sizes. These resources are referenced in the chapter where appropriate.

**8.24** Further information relating to the desk study methodology is provided in **Appendix 8.1**.

### Field Survey

**8.25** A suite of habitat and species surveys were undertaken to inform this assessment. Field surveys included:

- Phase 1 Habitat survey.
- National Vegetation Classification (NVC) survey of habitats of conservation interest<sup>3</sup>.
- Protected species surveys, including detailed searches for suitable habitat for, and direct evidence of the following species:
  - Otter;

<sup>13</sup> The Highland Biological Recording Group. Available at: <https://www.hbrg.org.uk/> [Accessed November 2022].

<sup>14</sup> Scotland's Soils (2016) Carbon and Peatland Map [online]. Available at: <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> [Accessed June 2022].

<sup>15</sup> National Biodiversity Network Atlas (n.d.) National Biodiversity Network Atlas, Scotland [online]. Available at: <https://scotland.nbnatlas.org/> [Accessed June 2022].

- Scottish wildcat;
- Badger;
- Red squirrel;
- Pine marten;
- Water vole; and
- Bats.

**8.26** Incidental observations of other species of conservation interest<sup>3</sup>, including those scoped out of assessment through the Scoping process, were recorded where encountered.

**8.27** The majority of ecology field surveys were undertaken between April and September (the 'survey season') 2020 and 2021 as described in the relevant appendices. Targeted wildcat surveys were undertaken in February to July 2020 and September to November 2020<sup>16</sup>. Field surveys were undertaken in appropriate conditions and, where necessary, appropriate seasons. Detailed accounts of survey rationale and methods are provided in **Appendices 8.1 to 8.4**.

#### Approach to GWDTEs

**8.28** The term 'Groundwater Dependent Terrestrial Ecosystem' (GWDTE) refers to wetland habitats that rely on groundwater for their function and viability. The concept evolved from the Water Framework Directive, transposed in Scotland through the Water Environment and Water Services Act (2003) (WEWS), and subsequent SEPA guidance.

**8.29** SEPA guidance<sup>8</sup> sets out those vegetation communities that at least potentially rely upon groundwater. Classification as a GWDTE does not convey any ecological value on a habitat; indeed, many GWDTE habitats are common and widespread across Scotland (e.g. rush mire). However, although GWDTE habitats are not necessarily of specific ecological value, WEWS and consequent guidance require GWDTE to be protected wherever possible.

**8.30** SEPA guidance<sup>8</sup> requires potential effects on GWDTEs to be fully assessed and where necessary, mitigated. It is important to understand this context because to focus the assessment solely on the ecological value of GWDTEs is not appropriate. The assessment of potential effects should focus on GWDTEs as a proxy for groundwater movement, i.e. the assessment should focus on the effect of the Proposed Development upon the quality and quantity of groundwater supporting the GWDTE. Notwithstanding this, the ecological value of GWDTEs in their own right must also be considered.

**8.31** A short account of the identification methodology for potential GWDTEs is presented in **Appendix 8.2**. Detailed assessment of GWDTEs and potential effects on them is provided in **Chapter 7**.

#### Assessing Significance

**8.32** The assessment undertaken in this chapter is based on good practice methods described in CIEEM's 'Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal'<sup>7</sup>.

**8.33** The guidelines recommend that the 'Ecological Importance' of a given site in relation to each of its ecological features is determined within a defined geographical context. The geographical context as it relates to the Proposed Development, is described in **Table 8.3** below.

**Table 8.3: Ecological Importance Criteria**

Ecological Importance	Qualifying Criteria	Relevant Context
International	A Site is considered of International ecological importance when it supports: <ul style="list-style-type: none"> <li>■ An internationally designated site or candidate site (Special Protection Areas (SPA), potential SPA, Special Areas of Conservation (SAC), candidate SAC, possible SAC, Ramsar sites, proposed Ramsar sites or Biogenetic Reserve) or an area which NatureScot has determined meets the published selection criteria for such designations, irrespective of whether or not it has been notified;</li> </ul>	Europe

Ecological Importance	Qualifying Criteria	Relevant Context
	<ul style="list-style-type: none"> <li>■ A viable area of habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitat which are essential to maintaining the viability of that ecological resource at an international scale; and</li> <li>■ &gt;1% of the European resource of an internationally important species, i.e. listed in Annex 1, 2 or 4 of the Habitats Directive.</li> </ul>	
UK/National	<p>A Site is considered of UK/National ecological importance when it supports:</p> <ul style="list-style-type: none"> <li>■ A nationally designated site (Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserve) or a discrete area which NatureScot has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified;</li> <li>■ A viable area of a priority habitat referenced in the UK Post-2010 Biodiversity Framework or Scottish Biodiversity List (SBL), or smaller areas of such habitat which are essential to maintaining the viability of that ecological resource at a national scale; and</li> <li>■ &gt;1% of the National resource of a regularly occurring population of a nationally important species i.e. a priority species listed in the SBL and/or Schedules 1, 5 (Section 9 (1, 4a, 4b)) or 8 of the Wildlife and Countryside Act 1981.</li> </ul>	UK/Scotland
Regional	<p>A Site is considered of Regional ecological importance when it supports:</p> <ul style="list-style-type: none"> <li>■ Non-statutory designated sites that represent a scale, or habitat/species assemblage, of value across a number of counties which are recognised in a regional context;</li> <li>■ Non-designated sites that the designating authority has determined meet the published ecological selection criteria for designation, particularly large or representative habitat or species assemblages of importance at a regional level;</li> <li>■ Viable and extensive areas of legally protected habitat/habitat identified in Regional BAP or County BAP, or smaller areas of such habitats that are essential to maintaining the viability of the resource at a regional scale;</li> <li>■ Any regularly occurring populations of an internationally/nationally important species or a species in a relevant policy which is important for the maintenance of the regional meta-population; and</li> <li>■ Semi-natural ancient woodland greater than 0.25 hectares (ha).</li> </ul>	North Scotland
County	<p>A Site is considered of County ecological importance when it supports:</p> <ul style="list-style-type: none"> <li>■ County sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, e.g. Local Nature Conservation Sites (LNCS);</li> <li>■ Viable areas of legally protected habitat/habitat identified in Council BAP or smaller areas of such habitats that are essential to maintaining the viability of the resource at a county scale;</li> <li>■ Any regularly occurring population of an internationally/nationally important species of species in a relevant UK/Council BAP which is important for the maintenance of the county meta-population;</li> <li>■ Semi-natural ancient woodland smaller than 0.25ha; and</li> <li>■ Networks of species-rich hedgerows.</li> </ul>	Highland
Local	<p>A Site is considered of Local ecological importance when it supports:</p> <ul style="list-style-type: none"> <li>■ Commonplace and widespread semi-natural habitats, e.g. scrub, poor semi-improved grassland, coniferous plantation woodland, intensive arable farmland, etc. which despite their ubiquity, contribute to the ecological function of the local area (habitat networks etc.);</li> <li>■ Isolated or species poor stands of habitat of conservation interest which contribute to the viability of the resource at a local level;</li> <li>■ Very small, but viable, populations of internationally/nationally important species or a species in a relevant UK/Council BAP which is important for the maintenance of the local meta-population; and</li> <li>■ Networks of linear features, including species-poor hedgerows.</li> </ul>	Study Area plus a 5km radius
Study Area (or Site) <sup>17</sup>	<p>A Site is considered of Study Area ecological importance when it supports:</p>	Study Area

<sup>16</sup> Kilshaw, K. & Macdonald, D.W. (2011). The use of camera trapping as a method to survey for the Scottish wildcat. Scottish Natural Heritage Commissioned Report No. 479.

<sup>17</sup> For the purpose of this assessment, the Study Area is the ESA.

Ecological Importance	Qualifying Criteria	Relevant Context
	<ul style="list-style-type: none"> <li>Habitats of limited ecological value, e.g. amenity grassland, but which contribute to the overall function of the application site's ecological functions;</li> <li>Isolated or species-poor stands of habitats of conservation interest which do not contribute to the viability of the resource at a local level but create diversity within in the Study Area; and</li> <li>Very small, but viable, populations of internationally/nationally important species or a species in a relevant UK/Council BAP which do not contribute to the viability of the resource at a local level, but which contribute to diversity within the Study Area.</li> </ul>	

**8.34** Following the assessment of ecological importance, likely significant effects are identified. This process involves the study of the proposed infrastructure layout, construction methods, proposed timescales, and operational requirements, with a view to identifying the pathways by which ecological features may be affected. Potential effects can be grouped into the following broad types:

- Direct habitat loss;
- Habitat fragmentation (disruption of ecological processes through fragmentation, isolation, and barriers to movement);
- Mortality (loss of life to habitats, species or qualifying features through direct contact or following pollution events, etc.); and
- Disturbance (disruption to ecological processes through increased human presence, noise, vibration, etc.).

**8.35** To determine significance, effects are considered with reference to the following parameters:

- Beneficial or adverse;
- Extent;
- Magnitude;
- Duration;
- Frequency; and
- Reversibility.

**8.36** A degree of confidence, based on professional judgement, is used to assess the likelihood of an effect occurring. The following scale is referred to:

- Certain/Near-Certain: Probability estimated at ≥95%;
- Probably: Probability estimated at 50-95%;
- Unlikely: Probability estimated at 5-≤50%; and
- Extremely Unlikely; Probability estimated at ≤5%.

**8.37** Based on the combination of these parameters listed above, an effect is then considered to be either significant or not significant in the context of the EIA Regulations. An effect is considered to be significant if it has the potential to affect the integrity of a habitat or the conservation status of a species. Technical definitions of integrity and conservation status follow CIEEM guidelines<sup>7</sup>.

**8.38** The significance of a potential effect is considered, using professional judgement, within the context of the geographically based ecological importance of the feature. For example, the significance of a potential effect on a habitat of Local ecological importance is considered to be significant, or not significant, at a Local level. In some cases, where only a small part of an ecological feature is affected, the potential effect may be significant at a lower geographical level; for example an effect deemed to be significant on a feature of Local ecological importance may be only considered significant at the Site level.

**8.39** The EIA assessment process generally requires that the significance of an effect is described as either 'major', 'moderate', 'minor' or 'negligible'. However, best practice guidance in relation to Ecological Impact Assessment (EclA) does not support this approach, due to the complexities of ecological processes.

**8.40** To allow the potential effects identified in this EclA to be considered alongside those addressed in other topic chapters, a 'translation' from EclA significance to EIA significance has been undertaken, as described in **Table 8.4** below. The translation relates the geographically based significance of ecological effects (identified through the EclA process) to the standard terminology for significance presented in other chapters (following the EIA process), allowing direct comparison.

**8.41** Effects of Major and Moderate significance are considered 'significant' in the context of the EIA Regulations.

**Table 8.4: Ecological Effect 'Significance' Translation to EIA Terminology**

EIA Significance Terminology	Corresponding EclA Effect Significance Terminology
Major	International/European
	UK/National
Moderate	Regional
	County
Minor	Local
	Study Area
Negligible	Not significant

#### Identifying Mitigation and Assessing Residual Significance

**8.42** Where likely significant effects are identified, mitigation measures are proposed to alleviate their significance as far as is possible. The standard mitigation hierarchy applies, whereby the following sequential measures are considered:

- Avoidance: The effect is avoided by removing its pathway, e.g. by changing the route of an access track. This is most often achieved during the iterative design process;
- Mitigation: Measures are taken to reduce the significance of the effect, e.g. scheduling works outwith the hours of darkness to reduce effects on crepuscular species such as otter and badger; and
- Compensation: Where the effect cannot be avoided or reduced, alternative action is taken elsewhere within the Site/Proposed Development boundary, e.g. a Habitat Management Plan that brings retained habitat into better condition.

**8.43** Using the assessment method described above, significant effects are re-assessed on the basis that mitigation measures will be applied, and a residual significance identified. An important part of this step is the identification of the likely success, or confidence in, the proposed mitigation measure.

#### Identifying Opportunities for Enhancement

**8.44** Once the steps for identifying mitigation and assessing residual significance have been completed, consideration is given to the potential for enhancement measures to benefit biodiversity to be applied within the Site via the OREP.

#### Assessment Limitations

**8.45** Due to travel restrictions imposed by the Scottish Government in Spring 2020 in response to the outbreak of coronavirus, it was not possible to deploy ground-level static detectors during the Spring 2020 survey season. Bat detectors were deployed in Summer and Autumn 2020, and Spring 2021, as agreed with NatureScot<sup>18</sup>. This did not have a material effect on the outcome of the results as data was collected across the three seasons over a 12-month period.

**8.46** Sixteen detectors were originally deployed based on a layout of 26 turbines proposed at the time of survey. Guidance regarding the deployment of ground-level static detectors states "detectors should be placed within the developable area at ten potential turbine locations plus a third of additional potential turbine sites"; therefore 11 detectors are recommended for a development of 13 turbines. However, due to changes in the proposed layout, seven of the detectors are within the final BSA while the remaining nine are outwith

<sup>18</sup> Email correspondence with NatureScot's Renewable Energy Casework Advisor [Dated April 2020], as detailed in **Table 8.1**.



the BSA but within the wider Site (see **Figure 8.7**). The number of detectors within the final BSA is therefore lower than recommended by guidance<sup>2</sup>. However, the guidance also acknowledges that turbine locations are often subject to change. Given the higher number of detectors deployed overall, thereby providing information about use of the wider landscape, this is not considered to be a limitation to the assessment of bat activity levels and risk.

**8.47** Two bat detectors in summer 2020 and two detectors in autumn 2020 were found to have had technical faults resulting in a lack of data. These issues may have resulted in bat passes not being recorded. Given that the BSA consists of undulating blanket bog and heathland and 14 detectors were in similar habitats throughout these survey periods, the technical faults are unlikely to have had a substantive effect of the results of the survey. Furthermore, excluding the detectors that developed faults, the number of detectors that were operational (14) adheres to NatureScot guidance<sup>2</sup> under the proposed 13 turbine layout.

**8.48** During the final reactive period of wildcat camera trapping, it was not possible to access the Site to check and rebait the camera traps due to regular stalking activity. However, as five of the cameras operated for at least three weeks, with two of them operating for the full period of 70 nights and given the lack of evidence of wildcat despite the survey effort, this is not considered to be a limitation to the assessment.

**8.49** Ecological surveys are influenced by a variety of factors which affect the presence of flora and fauna: for example, climatic variation, seasonal and species behaviours may mean that evidence of protected species is not always recorded during a survey. This does not mean that a species is absent, hence the surveys also record and assess the ability of habitats to support species. All ecological surveys provide only a snapshot of activity and cannot be used for long-term interpretation.

**8.50** Within these constraints, the authors are confident that the baseline data collected has allowed a robust and thorough assessment of potential effects. A further account of limitations, where relevant to each appendix, is provided in **Appendices 8.1 to 8.4**.

**8.51** Whilst some information gaps have been identified, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant effects on ecological receptors.

## Existing Conditions

### Desk Study

#### Designated Sites

**8.52 Table 8.5** lists the statutory designated sites identified within 10km of the Site, and non-statutory designated sites identified within 5km of the Site. Special Protection Areas (SPAs), which are designated for their ornithological interest, are detailed in **Chapter 9**. Similarly, Sites of Special Scientific Interest (SSSIs) for which only ornithological interests qualify, are listed only within **Chapter 9**. Designated Sites are illustrated in **Figure 8.2**.

**Table 8.5: Designated Sites**

Site Name	Designation	Approx. Distance and Orientation from Site	Qualifying Feature(s)
Statutory Sites (within 10km)			
River Moriston	SAC	Adjacent to the Site, at the south-end of the Bhlaraidh Wind Farm existing access track	Atlantic salmon Freshwater pearl mussel
Ness Woods (including Easter Ness Forest SSSI and Glen Tarff SSSI)	SAC	4.9km south-east	Mixed woodland on base-rich soils associated with rocky slopes Western acidic oak woodland Otter
Strathglass Complex	SAC	7.0km west	Alpine and subalpine heaths Blanket bog Bog woodland

Site Name	Designation	Approx. Distance and Orientation from Site	Qualifying Feature(s)
			Plants in crevices on base-rich rocks Caledonian forest Dry heaths Tall herb communities Wet heathland with cross-leaved heath Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels Montane acid grasslands Plants in crevices on acid rocks Acidic scree Mountain willow scrub Otter
Levishie Wood	SSSI	Adjacent to the Site, along the Bhlaraidh Wind Farm existing access track	Upland birch wood
Glen Affric	SSSI	7.1km west	Dragonfly assemblage Lichen assemblage Native pinewood
Balnagrach	SSSI	9.6km north-east	Club sedge
Glen Affric	NNR	6.7km west	Network of upland habitat assemblages
Non-Statutory Designated Sites (within 5km)			
Numerous areas of named and unnamed woodland	Ancient Woodland	Extensive network in South Highland region.  The proposed access follows the Bhlaraidh Wind Farm existing access track through ancient woodland features (Coille Bhlaraidh) on the north side of Glen Moriston.  With the exception of the Coille Bhlaraidh woodland, the nearest ancient woodland features are located approximately 0.7km north of the Site.	Woodland

**8.53** River Moriston SAC encompasses the river itself, as well as a strip of riparian habitat on either side. It is located within the south of the Site, across the A887 opposite the junction with the Bhlaraidh Wind Farm existing access track. The riparian corridor of the SAC is within approximately 10m of the junction, while the river itself is within approximately 30m. No works are anticipated in this location, although there will be movement of vehicles associated with the Proposed Development. Potential indirect effects on the SAC are therefore considered.

**8.54** Ness Woods SAC is located at some distance (4.9km) from the Site on the eastern side of Loch Ness. Due to the distance from the Site and lack of structural connectivity between the Proposed Development and the SAC, effects on the qualifying woodland habitat features of the SAC are scoped out. There is the potential for functional connectivity for the remaining qualifying feature as otter that are ordinarily resident in the SAC may occasionally pass through the ESA. However, the most direct route for otter from the SAC to the ESA is over 20km. It is therefore not considered likely that the ESA would form part of the core territory of an otter resident in the SAC. Potential effects on the SAC with respect to otter are therefore scoped out from further assessment.

**8.55** Levishie Woods SSSI is located within approximately 20m of the Site, at a distance of approximately 65m from the Bhlaraidh Wind Farm existing access track. Potential indirect effects on the SSSI are therefore considered.

**8.56** Based on the qualifying features of the remaining statutory designated sites in **Table 8.5**, the distance from the Site, lack of structural or functional connectivity between the Proposed Development and the sites, and the nature of the Proposed Development, it is unlikely that there will be any adverse environmental effects. Therefore, effects as a result of construction or operation on the remaining statutory designated sites have been scoped out of this assessment.

**8.57** Blocks of woodland along the Bhlaraidh Wind Farm existing access track in the south of the Site are listed on the Ancient Woodland Inventory (AWI)<sup>19</sup>. These form part of Coille Bhlaraidh woods, and most are listed as Ancient (of semi-natural origin), and more specifically as Category 1a (woodland on maps of 1750). A smaller area is listed as Other (on Roy map); these are woods that have had only a short break in continuity of woodland cover<sup>19</sup>. Much of the Coille Bhlaraidh woodland along the existing access track is described in the Native Woodland Survey of Scotland (NWSS)<sup>20</sup> as woodland planted on ancient woodland sites (PAWS), with a smaller extent of native upland birchwood on the northern edge. As such, much of Coille Bhlaraidh has previously comprised commercial forestry of non-native species, although extents have been felled in recent years. However, no felling of trees is required to facilitate the Proposed Development, and so direct effects are scoped out; the potential for indirect effects is considered in this EclA.

**8.58** In addition, there are numerous further blocks of woodland listed on the AWI within 5km of the Site, many of which are functionally connected to the Site via the blocks along the existing access track, or via watercourses that flow from the Site down into extents of woodland (for example to the north and east). However, assuming good practice measures are observed in construction, adverse effects on woodland blocks outwith the Site are considered unlikely. Therefore, effects as a result of construction or operation on woodland listed on the AWI outwith the Site have been scoped out of this assessment.

**8.59** There are no Ramsar sites, National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) within 10km of the Site, and no Local Nature Conservation Sites (LNCS) within 5km of the Site.

**8.60** For the reasons stated above, with the exception of River Moriston SAC, Levishie Wood SSSI and the ancient woodland of Coille Bhlaraidh, effects on all other statutory and non-statutory designated sites have been scoped out of this assessment and are not discussed further within in this chapter.

#### Existing Records of Protected Species

**8.61** A search of NBN Atlas<sup>15</sup> and HBRG<sup>13</sup> returned the following protected species records within 2km and 10km (bat species) of the Site (see **Table 8.6** below).

**Table 8.6: Protected Species Data Search Results**

Species		Number of records	Year of most recent record
Red squirrel		17	2020
Otter		2	2018
Bats	Common pipistrelle	62	2017
	Soprano pipistrelle	11	2019
	Unidentified pipistrelle species	43	2016
	Daubenton's bat	2	2015
	Brown long-eared bat	10	2019
	Unidentified bat	4	2013

<sup>19</sup> NatureScot (no date). A guide to understanding the Scottish Ancient Woodland Inventory (AWI). Available at: <https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi> [Accessed October 2022].

**8.62** Further information relating to the desk study is provided in **Appendix 8.1**.

#### Field Study

**8.63** A summary of field study findings is presented below. Detailed accounts of methods adopted, survey findings and interpretation can be found in **Appendices 8.2 to 8.4**.

#### Site Description

**8.64** The Site is predominantly within the Balmacaan Estate, with access through the Glenmoriston Estate, directly west of the Great Glen and Loch Ness, and approximately 13km south-west of Drumnadrochit, within THC administrative area. The Site is located on a plateau above Loch Ness (to the south-west) between Glen Urquhart (to the north) and Glen Moriston (to the south) and rises to a height of 614m Above Ordnance Datum (AOD) at Carn na Ruighe Duibhe which is within the western site boundary. The Proposed Development stretches from the adjacent Bhlaraidh Wind Farm at the south-west to Loch a' Mhuilinn in the north. The land comprises an undulating moorland plateau with frequent lochans and bog pools in lower-lying areas and rocky outcrops forming areas of higher ground. A complex network of watercourses is present, some of which flow through deeply eroded peat channels. Extents of forestry are present outwith the Site to the north and along the Bhlaraidh Wind Farm existing access track to the south, although there is no woodland within the area where turbines and infrastructure are proposed.

**8.65** The ESA covers approximately 1020ha. The undulating topography and steep sides of the many hills account for the varying vegetative communities, as peat depth is highly variable on the Site and localised pockets of deep peat are scattered throughout. The majority of the Site is composed of blanket bog and heathland communities of varying quality. Within the ESA, large expanses of relatively homogenous stands are punctuated by smaller areas of transitional habitats. The Site has an extensive network of water bodies and channels connecting throughout which are bordered by rank grassland communities. Typically, the higher elevations are composed of exposed rock and associated heath/montane communities. Very occasionally, plateau mires were recorded particularly in the north of the ESA. The steep hillsides are dominated by ericoids and sub-shrubs with varying levels of bryophyte cover. Moving lower in elevation, where the topography levels out, expanses of sphagnum-rich blanket bog are present with typical bog pool communities.

**8.66** The Site is grazed by both deer and occasional cattle. The majority of the habitats within the ESA have been influenced to some extent by grazing pressure and/or previous management, and this is particularly evident to the east of the ESA. However, across the ESA there are extensive areas of heathland and peatland supporting a variety of habitats of conservation interest.

#### Habitats and Vegetation

##### Phase 1 Habitat Survey

**8.67** Detailed Phase 1 Habitat descriptions are provided in **Appendix 8.2** and a Phase 1 Habitat Survey map is presented in **Figure 8.3**. A summary of the habitats recorded within the ESA is provided in **Table 8.7** below.

**8.68** The habitats within the ESA comprise a complex mosaic of upland communities that correspond to the variable topography and associated peat depth due to the underlying topography. The ESA is dominated by extensive areas of habitat mosaics, the principal components of which are blanket bog (including wet and dry modified bog), and wet and dry dwarf shrub heath. Wet heath was often recorded in intimate mosaic with blanket bog, often in response to varying peat depth, while dry heath was generally noted on drier, steeper slopes. A complex network of watercourses and lochans is present throughout this area. Bog habitats account for approximately 487ha (47%) of the ESA. Wet heath was the next most common habitat accounting for approximately 337ha (33%) of the ESA, followed by dry heath at approximately 96ha (9%) of the ESA.

**8.69** Marshy grasslands are present scattered within the ESA and account for approximately 28ha (3%) of the ESA. These are characterised by a dominance of purple moor grass *Molinia caerulea*, and often occurring on relatively low-lying ground adjacent to watercourses or on gently sloping damp hillsides.

**8.70** A total of 12 Phase 1 habitats were recorded within the ESA and within these a total of 21 NVC communities were identified.

**8.71** **Table 8.7** provides a summary of the Phase 1 habitats within the ESA, with their absolute area and relative proportions.

<sup>20</sup> Forestry Commission Scotland (2014) Scotland's Native Woodlands: Results from the Native Woodland Survey of Scotland.

Table 8.7: Phase 1 Habitat Classifications and Proportions

Phase 1 Habitat		Area	
Code	Title	Absolute (ha)	Relative % (1dp)
B1.1	Acid grassland (unimproved)	0.1	<0.1
B5	Marshy grassland	28.0	2.7
D1	Dry dwarf shrub heath	95.9	9.3
D2	Wet dwarf shrub heath	337.1	32.8
E1.6.1	Blanket bog	344.3	33.5
E1.7	Wet modified bog	112.5	11.0
E1.8	Dry modified bog	24.8	2.4
E3.2	Fen – basin mire	0.5	<0.1
E3.3	Fen – flood plain mire	2.6	0.3
E4	Peat (bare)	5.3	0.5
G1	Standing water	76.3	7.4
G2	Running water	12.3km	-

**National Vegetation Classification (NVC)**

8.72 Detailed NVC descriptions are provided in Appendix 8.2 and mapped in Figure 8.4.

8.73 NVC is a more detailed and precise means of describing vegetation communities than Phase 1 Habitat nomenclature. NVC is reported where habitats of conservation interest were identified, and their extent and species assemblage was of sufficient quality to identify and map. Habitats of conservation interest<sup>3</sup> identified within the ESA include:

- Habitats considered conservation priorities in the Habitats Directive (i.e. Annex 1 habitats) ;
- Habitats considered to be potentially groundwater dependent;
- Habitats included on the Scottish Biodiversity List (SBL); and
- Habitats included in Highland Nature: Biodiversity Action Plan (BAP) 2021-2026.

8.74 As described in Appendix 8.2, and illustrated in Figure 8.4, not all habitats identified using the Phase 1 codes have a corresponding NVC code. However, habitats of likely conservation interest were subject to NVC. Habitats that do have NVC codes are summarised in Table 8.8 below.

Table 8.8: Phase 1 Habitat and NVC Translation

Phase 1 Habitat Code		Mechanism for Habitat of Conservation Interest	Relevant NVC Classification	
Code	Title		Code	Title
B1	Acid grassland (unimproved and semi-improved)	Potential GWDTE	U6	<i>Juncus squarrosus-Festuca ovina</i> grassland
B5	Marshy grassland	Potential GWDTE	M25	<i>Molinia caerulea – Potentilla erecta</i> mire
D1	Dry dwarf shrub heath	Annex 1 Habitat (H4030 European dry heaths)	H10	<i>Calluna vulgaris-Erica cinerea</i> heath
			H12	<i>Calluna vulgaris-Vaccinium myrtillus</i> heath

Phase 1 Habitat Code		Mechanism for Habitat of Conservation Interest	Relevant NVC Classification	
Code	Title		Code	Title
		SBL (Upland Heathland) Highland BAP	H13	<i>Calluna vulgaris-Cladonia arbuscula</i> heath
			H14	<i>Calluna vulgaris-Racomitrium lanuginosum</i> heath
			H16	<i>Calluna vulgaris-Arctostaphylos uva-ursi</i> heath
			H17	<i>Calluna vulgaris-Arctostaphylos alpinus</i> heath
			H19	<i>Vaccinium myrtillus-Cladonia arbuscula</i> heath
			H20	<i>Vaccinium myrtillus-Racomitrium lanuginosum</i> heath
			H21	<i>Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium</i> heath
			H22	<i>Vaccinium myrtillus-Rubus chamaemorus</i> heath
			U10	<i>Carex bigelowii-Racomitrium lanuginosum</i> moss-heath
			D2	Wet dwarf shrub heath
E1.6.1	Blanket bog	Annex 1 Habitat (H7130 Blanket bogs) SBL (Blanket Bog) Highland BAP	M1	<i>Sphagnum denticulatum</i> bog pool community
			M2	<i>Sphagnum cuspidatum/fallax</i> bog pool community
			M3	<i>Eriophorum angustifolium</i> bog pool community
			M17	<i>Trichophorum germanicum-Eriophorum vaginatum</i> blanket mire
			M19	<i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire
E1.7	Wet modified bog	Annex 1 Habitat (H7130 Blanket bogs) SBL (Blanket Bog) Highland BAP Potential GWDTE (M15)	M15	<i>Trichophorum germanicum-Erica tetralix</i> wet heath
			M20	<i>Eriophorum vaginatum</i> blanket and raised mire
E1.8	Dry modified bog	Annex 1 Habitat (H7130 Blanket bogs)	M3	<i>Eriophorum angustifolium</i> bog pool community

Phase 1 Habitat Code		Mechanism for Habitat of Conservation Interest	Relevant NVC Classification	
Code	Title		Code	Title
		SBL (Blanket Bog) Highland BAP	M19	<i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire
E3.2	Fen (basin mire)	Annex 1 Habitat (M4: H7140 Transition mires and quaking bogs)	M4	<i>Carex rostrata-Sphagnum fallax</i> mire
E3.3	Fen (flood-plain mire)	SBL (Upland Flushes, Fens and Swamps) Highland BAP		

**8.75** In addition to the habitats listed in the table above, the waterbodies (G1 Standing water) and watercourses (G2 Running water) within the ESA qualify as habitats of conservation interest as SBL priority habitats<sup>4</sup>; the larger lochans qualify as Oligotrophic and Dystrophic Lakes, while smaller bog pools qualify as part of the Blanket Bog priority habitat, and the watercourses qualify as the Rivers priority habitat.

#### Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

**8.76** Three NVC communities were recorded which, according to SEPA guidance<sup>8</sup>, may indicate groundwater dependency. **Table 8.9** summarises the NVC communities with potential to be GWDTEs. The two right-hand columns note the potential groundwater dependency according to the guidance, with the far right-hand column providing the outcome of an assessment of likely groundwater dependency (with verification via hydrological survey) based on the actual onsite condition, habitat assemblage and topography. Hydrological survey confirmed that the NVC communities recorded as potential GWDTE and potentially affected by the Proposed Development are not groundwater dependent, as detailed in **Table 8.9** and **Chapter 7**.

**Table 8.9: Potential and Actual Groundwater Dependency**

Potential GWDTE NVC Code		Groundwater Dependency	
Code	Title	Guidance	Actual
M15	<i>Trichophorum germanicum-Erica tetralix</i> wet heath	Moderate	Not a GWDTE
M25	<i>Molinia caerulea – Potentilla erecta</i> mire	Moderate	Not a GWDTE
U6	<i>Juncus squarrosus-Festuca ovina</i> grassland	Moderate	Not a GWDTE

#### Peatland Condition

**8.77** The peatland within the ESA is classified as Class 1 and Class 2<sup>21</sup>; Class 1 is considered to be indicative of areas of likely high conservation value, while Class 2 is considered to be indicative of areas of potentially high conservation value and restoration potential. These classes indicate the likely presence of carbon-rich soils, deep peat and priority peatland habitat at a coarse scale. As such, site-specific data on peat depth and peatland condition are of greater relevance in assessing effects.

**8.78** The peatland condition varied across the ESA, with areas of 'near natural' occurring among larger extents of 'modified' peatland. Areas of bare peat were recorded scattered across the ESA generally comprising relatively small patches, and in hags and gullies, which were considered indicative of 'modified' conditions. There was evidence of grazing noted throughout the ESA, but only limited evidence of burning, with a relatively recent area of muirburn in a valley in the north-east and some older evidence in the west. Details are provided in **Appendix 8.2**.

**8.79** The condition of peatland therefore comprises a mosaic, with large extents showing a degree of modification. However, the ESA lacks extensive areas of 'drained' or 'actively eroding' condition.

#### Protected Species

##### Bats

**8.80** The desk study returned no records of bats within the Site and 132 records from within 10km.

**8.81** The BSA was confirmed during field surveys to have limited potential to support roosting bats. This is due to the dominance of bog and heath habitats; this area lacks trees or structures with features offering suitability for roosting bats.

**8.82** Field surveys comprised automatic static bat detector sample and analysis. A total of 16 static detectors were deployed for a minimum of 10 consecutive nights during three survey seasons in 2020 and 2021 (i.e. Summer: June/July/August; Autumn: September/October; Spring: April/May).

**8.83** Surveys identified the following species within the BSA:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*;
- Brown long-eared *Plecotus auritus*; and
- *Myotis* spp.

**8.84** Bat activity varied according to the location within the BSA, by the season and by species or species group. By far the highest level of activity was recorded at a detector adjacent to an unnamed watercourse outwith the BSA in the east of the Site. Levels across the rest of the Site were much lower, although relatively higher activity levels were recorded at locations where detectors were deployed relatively close to waterbodies. Pipistrelle bats were by far the most common genus recorded, accounting for 93% of all passes recorded during the static surveys.

**8.85** It should be noted that due to the iterative design process, static bat detectors were placed in locations that are no longer proposed for turbines. The data collected from these locations were therefore used to understand the bat activity level across the whole Site, providing additional information on the local bat population and how bats use the Site in its entirety.

**8.86** The Site is considered to have 'Low' habitat risk status to bats, as defined by best practice guidelines<sup>2</sup>; this is due to the lack of potential roost features, the relatively low quality foraging habitat within the Site, and the isolation with a lack of prominent linear features (such as woodland edges) to connect the Site to the wider landscape. The project size is defined as 'Large' due to the maximum blade tip heights (between 180-200m) and the presence of other wind energy developments within 5km<sup>2</sup>. Therefore, the Site Risk Level for collision effects on bats is 'Medium' <sup>2</sup>.

**8.87** The only high collision risk species recorded during the surveys are pipistrelle bats. The results of the analysis indicate that the Typical Risks<sup>22</sup> to these common and soprano pipistrelle bats are 'Medium' and 'Low' respectively, while the Peak Risks<sup>23</sup> for both species are 'Medium' <sup>2</sup>.

**8.88** Full results and data analysis are provided in **Appendix 8.4** and **Figures 8.7 and 8.8**.

##### Otter

**8.89** The desk study returned no records of otter within the Site, although two records were present within 2km, both of which were on watercourses that are hydrologically connected to the Site.

**8.90** Watercourses within the ESA varied in their suitability to support otter. The headwaters of the Allt Seanabhaile in the north of the ESA and of the River Coiltie in the east of the Site are two of the larger watercourses, and both offer suitable conditions for commuting, and foraging. The network of watercourses, and both larger named lochs and smaller unnamed lochans set within extents of blanket bog and wet heath habitats, offer foraging opportunities and routes for commuting through the ESA.

<sup>21</sup> Scottish Natural Heritage (2016) Carbon and Peatland 2016 Map. Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map>

<sup>22</sup> Typical Risk is the risk posed to a species by the Proposed Development based on the mean activity levels of that species, and is used to determine the likely general effect of the Proposed Development on each species.

<sup>23</sup> Peak Risk is the risk posed by the Proposed Development based on the highest recorded activity level of that species, and is used to identify the highest risk posed by the Proposed Development to account for peaks in bat activity.

**8.91** No evidence of otter was recorded during the targeted field surveys. However, an incidental recording of otter was made on a wildcat camera trap deployed on the Allt Seanabhaile. This record is outwith and to the north of the ESA, although it provides confirmation that the species utilises the habitats within the wider Site.

**8.92** Further details from the otter survey are provided in **Appendix 8.3** and **Figure 8.6**.

#### Wildcat

**8.93** The field surveys did not record any evidence of wildcat (such as scats or feeding remains) during field surveys. No images of cats were recorded during the wildcat camera trapping surveys. Habitats were identified that may support prey species, such as water vole and upland waders. However, there was no significant presence of rabbit *Oryctolagus cuniculus* identified, which is a key prey species, and no brown hares *Lepus europaeus* were observed.

**8.94** The ESA is devoid of any notable areas of woodland, and woodland is relatively limited in the surrounding landscape with the exception of Glen Urquhart and Glen Moriston which are some distance to the north and south respectively. Although the ESA has some rocky outcrops and boulder fields offering denning potential, it occupies an exposed position on high ground between these glens with low vegetation and limited connectivity to the mosaic of habitat types favoured by wildcat, and with relatively limited prey resources, the presence of wildcat within the ESA is assessed as unlikely and this species is scoped out from further assessment.

**8.95** Further details from the wildcat survey are provided in **Appendix 8.3**.

#### Badger

**8.96** The desk study returned no records of badger within the Site nor within 2km.

**8.97** No field signs of badger were recorded during the targeted field surveys. However, a sighting of a badger was made by a surveyor near Loch na Ruighe Duibhe in the centre of the ESA. In addition, there were six incidental recordings of badger from wildcat camera traps deployed outwith the Site on the edge of Shewglie Wood, confirming the presence of badger in the wider landscape.

**8.98** The habitats of the ESA are open and exposed, and the ground is frequently wet, supporting bog, wet heath and marshy grassland. While these habitats provide some limited foraging potential, they do not offer suitable sett-building habitat. Drier heathland habitats on well-drained, rocky slopes may provide some limited potential. However, the ESA is at some distance from more suitable habitat, such as woodland and more lowland agricultural habitats found along the valleys of the River Enrick to the north and River Moriston to the south.

**8.99** Habitats within the ESA were considered to be of limited suitability to support badger. Whilst there is some limited foraging potential on the moorland, it is at significant distance from extents of more suitable habitat and so it is not likely to be regularly used. More suitable habitat is present in Glen Moriston, either side of the Bhlairaidh Wind Farm existing access track; however, no upgrades to the track are required. Despite this, a conservative approach is taken and badger is scoped in for further assessment.

**8.100** Further details from the badger survey are provided in **Appendix 8.3** and **Figure 8.6**.

#### Red Squirrel

**8.101** The desk study returned no records of red squirrel within the Site, and 17 records within 2km.

**8.102** Habitats within the ESA had no suitability to support red squirrel due to a lack of woodland cover as exposed moorland habitats dominate. However, surveys of the wider area confirmed red squirrel to be present in Shewglie Wood to the north of the Site. The species is also expected to be present in woodland along the Bhlairaidh Wind Farm existing access track in Glen Moriston. However, no upgrades to the track are required and no felling is proposed.

**8.103** Due to the lack of suitable habitat within the ESA, red squirrel has been scoped out from further assessment.

**8.104** Further details from the red squirrel survey are provided in **Appendix 8.3**.

#### Pine Marten

**8.105** The desk study returned no records of pine marten within the Site nor within 2km.

**8.106** No evidence of pine marten was recorded in the ESA during the targeted field surveys. However, there were two incidental recordings of pine marten within the wider Site from wildcat camera traps deployed a short distance outwith the ESA, with further recordings on the edge of Shewglie Wood to the north, and to the south-east. This confirms the presence of pine marten in the wider Site and landscape beyond.

**8.107** Habitats within the ESA are considered to provide some suitability to support pine marten. The habitats within the ESA are likely to provide some foraging resources, for example nests of ground-nesting birds and small mammals, and there may be cavities offering shelter within rocky outcrops (although no potential denning locations were specifically noted). The ESA is unlikely to provide all of the resource requirements; however, this species can have a very large home range<sup>24</sup> and more optimal habitats are present outwith the ESA to the north and south in the form of areas of coniferous plantation forestry<sup>25</sup>. The ESA is likely to form part of the matrix of habitats used by pine marten, although unlikely to be part of the core territory requirements. A conservative approach is therefore taken and pine marten is scoped in for further assessment.

**8.108** Further details from the pine marten survey are provided in **Appendix 8.3**.

#### Water Vole

**8.109** The desk study returned no records of water vole within 2km of the Site. However, surveys undertaken to inform the consented Bhlairaidh Wind Farm Extension, adjacent to the south of the Site, recorded evidence of water vole in the form of burrows and latrines.

**8.110** The ESA contains optimal habitat for water vole, with many of the watercourses providing abundant foraging resources and opportunities for concealment and protection. Particularly favourable habitat was recorded along tributaries of the River Coiltie in the east of the ESA, on watercourses flowing into and out of the northern Loch nam Meur, and on watercourses flowing north and east into Loch na Ruighe Dhuibhe. Many of these watercourses were tunnelled within the peat beneath the surface vegetation. Where there was surface water, the watercourses were often characterised by extents of slow-moving clean water, with areas of deeper water (pools). Macrophytes were limited within the watercourses, but the adjacent vegetation provided a plentiful food resource.

**8.111** Water vole presence was recorded throughout the ESA. The most commonly recorded sign was burrows of a sufficient size to indicate the likely presence of this species. Confirmatory evidence was recorded at many (but not all) locations in the form of feeding remains and latrines.

**8.112** Details of water vole evidence are provided in **Appendix 8.3** and **Figure 8.6**.

#### Notable Species

**8.113** Red deer *Cervus elaphus* are known to be present within the Site as stalking activities and deer management are undertaken across the wider estate, and deer were occasionally observed by surveyors. Deer density within Glen Moriston has been stable in recent years<sup>26</sup>. The latest deer count data is reported to indicate a density of 9.8 deer per square kilometre<sup>27</sup>, which is considered moderate<sup>28</sup>. As such, there are no effects anticipated with regards to deer welfare or displacement of a limited number of deer as a result of the Proposed Development, and deer are scoped out of the assessment.

**8.114** A weasel *Mustela nivalis* was recorded on a camera trap on a tributary of the River Coiltie during the wildcat camera trapping.

**8.115** Numerous habitats common across the ESA, particularly wet heath, bog and marshy grassland, are considered suitable for common species of amphibians such as common toad *Bufo bufo* and common frog *Rana temporaria*. Although no sightings were recorded, these species are expected to be present within the ESA.

**8.116** Habitats within the ESA, such as heathland and bog, are considered suitable for common species of reptile. Common lizards *Zootoca vivipara* and adder *Vipera berus* would be expected to be present in the wider area and are likely within the ESA.

**8.117** While the above notable species are (or are expected to be) present within the ESA, effects upon these species are considered unlikely to be significant due to the extent of available habitat and their life-histories. As such these species have been scoped out of assessment, although site-wide mitigation to protect incidental species will be addressed in the CEMP and Species Protection Plans (SPPs).

<sup>24</sup> Balharry, D. (1993) *Factors Affecting the Distribution and Population Density of Pine Martens (Martes martes) in Scotland*. PhD Dissertation. University of Aberdeen. Cited in: Birks, J. D. S. (2002) *The Pine Marten*. London: The Mammal Society.

<sup>25</sup> The Mammal Society (2022). Species – Pine Marten [Online]. Available at: <https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/species-pine-marten/> [Accessed June 2022].

<sup>26</sup> Glen Moriaston Deer Management Group (2019) Summary Working Plan 2020-2021.

<sup>27</sup> Balmacaan Estate, personal communication, October 2022.

<sup>28</sup> Edwards, T. (2020) *Herbivore Impacts, Upland Red Deer Densities, Carbon Sequestration and Storage in the Upland Red Deer Range – a Report for Scottish Environment Link's Deer Task Force*. Available at: <https://www.scotlink.org/publication/herbivore-impacts-upland-red-deer-densities-carbon-sequestration-and-storage-in-the-upland-red-deer-range-a-report-for-scottish-environment-links-deer-task-force/> [Accessed March 2023]

## Implications of Climate Change

**8.118** The predicted effects of climate change are likely to have a bearing on the future ecological status of the Site. The UK Climate Projections (most recently UKCP18<sup>29</sup>) generally predicts hotter, drier summers and milder, wetter winters, with an increase in the number of heavy rain days and in the frequency of winter storms.

**8.119** These predicted changes in climate may result in changes to vegetation assemblages; however, it is unlikely that climate change will have a significant bearing on the structure and function of the upland habitats present within the Proposed Development and surrounding area.

**8.120** However, individual species may be adversely affected by the predicted changes in climate if conditions affect the survival rate of the animals at a critical life stage (such as at hibernation or during breeding). For example, water vole may be affected by either periods of drought or episodic heavy rain affecting success during the breeding season<sup>30</sup>. The distribution of species in the uplands may therefore be altered as a result of projected climate change, although the exact nature of the effects are difficult to predict due to the complex nature of interactions between species and their resources.

## Future Baseline in the Absence of the Proposed Development

**8.121** In the absence of the Proposed Development, the ecological features currently present are likely to persist in their current form. It is anticipated that the Site will continue to be managed as an open-range habitat for deer and occasional cattle. In this event, the constituent habitats and species within the ESA, and their range and distribution, are likely to stay broadly similar to the existing baseline.

## Ecological Importance

**8.122 Table 8.10** provides an interpretation of the Ecological Importance of the ESA for those habitats and species scoped into the assessment. A detailed account of these habitats is provided in **Appendix 8.2**. As common and widespread habitats have been scoped out, only habitats of conservation interest<sup>3</sup> are included in the assessment. For ease of assessment, habitats are grouped by 'conservation interest type', using the highest level of importance (i.e. Annex 1 classification supersedes SBL-listed, and SBL-listed supersedes Highland BAP status). Note that the habitats and protected species listed on the Highland BAP are also listed on the SBL and so are not repeated in the table below.

**Table 8.10: Ecological Importance Assessment**

Ecological Feature	Ecological Importance of Site for Ecological Feature	Rationale
Designated Sites		
River Moriston SAC	International	The River Moriston is designated as an SAC as it supports a functional population of freshwater pearl mussel <i>Margaritifera margaritifera</i> ; the population is reported to include a high percentage of juveniles, indicating that successful recruitment has taken place. In addition, Atlantic salmon <i>Salmo salar</i> is present although not a primary reason for site selection. It is located within the Site, across the A887 from the junction with the Bhlaraidh Wind Farm existing access track.
Levishie Wood SSSI	National	Levishie Wood is designated as a SSSI in recognition of its nationally important upland birch woods. It is located outwith the Site, adjacent to the Bhlaraidh Wind Farm existing access track.
Coille Bhlaraidh AWI	Regional	The woodland blocks of Coille Bhlaraidh are listed on the AWI. The AWI is a provisional guide to the location of ancient woodland <sup>19</sup> , and more recent survey data indicates that much of the woodland in this area has been affected by commercial non-native conifer forestry <sup>20</sup> . Despite this, the woodland and its soils may retain a relatively more diverse species composition. The Coille Bhlaraidh woodland is significantly greater than 0.25ha in size. It is therefore considered to be of Regional level importance.
Habitats of Conservation Interest		
Annex 1 Habitats		

<sup>29</sup> Met Office (2018) UK Climate Projections project (UKCP18).

Ecological Feature	Ecological Importance of Site for Ecological Feature	Rationale
H7130 Blanket bogs	County	Phase 1 Habitats: E1.6.1 Blanket bog, E1.7 Wet modified bog, E1.8 Dry modified bog NVC Codes: M1, M2, M3, M17, M19, M20, M25  This habitat is extensive and well-connected within the ESA and beyond. Although some areas are modified and affected by grazing, others are moderately species-rich and semi-natural. Dwarf birch was recorded throughout, with scattered juniper. As per guidance <sup>7</sup> , habitats in a degraded state should be considered with regards to their <i>potential</i> value. As such, and to ensure a robust assessment, no distinction is made between bog habitats on the basis of the relative degree of modification. The bog habitats within the ESA either currently or potentially represent a functional example of an Annex 1 habitat, and are therefore a valuable component of the wider resource. The Site is considered to be of County level importance.
H4030 European dry heaths	Local	Phase 1 Habitat: D1 Dry dwarf shrub heath NVC Codes: H10, H12, H13, H14, H16, H17, H19, H20, H21, H22  Dry heath occurs scattered on drier slopes and hilltops throughout the ESA. It is connected via wet heath and bog habitats and forms part of the overall mosaic of upland habitats with these communities. It is a functional example of an Annex 1 habitat, albeit one that is common in the landscape and which generally occurs on shallow peat deposits. The Site is considered to be of Local level importance.
H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>	Local	Phase 1 Habitat: D2 Wet dwarf shrub heath NVC Code: M15  Wet heath occurs in intimate mosaic with blanket bog communities throughout in the ESA, on damp, peaty substrate, although generally corresponding to relatively shallower deposits. It is connected to the wider landscape and forms an important part of the overall mosaic of upland habitats. It is a functional example of an Annex 1 habitat, albeit one that is common in the wider landscape. The Site is considered to be of Local level importance.
H7140 Transition mires and quaking bogs	Local	Phase 1 Habitat: E3.2 Fen (basin mire), E3.3 Fen (flood plain mire) NVC Code: M4  Small extents of fen occur in the west and north-east of the ESA, in level, low-lying areas such as shallow basins, wet peaty hollows and on level ground along small watercourses, often in intimate mosaic with blanket bog communities. It is a functional example of an Annex 1 habitat, and forms part of the mosaic within the blanket bog habitats. The Site is considered to be of Local level importance.
Scottish Biodiversity List Habitats		
Oligotrophic and Dystrophic Lakes	Local	Phase 1 Habitat: G1 Standing water  Several lochans within the ESA are over 1ha in size and qualify as this priority habitat. This habitat type is not uncommon in the wider landscape, although the plateau between Glen Urquhart and Glen Moriston has a high concentration of these types of waterbody. As such, the Site is considered to be of Local level importance.
Rivers	Local	Phase 1 Habitat: G2 Running water  Many of the watercourses within the ESA qualify as the priority habitat as they represent headwaters. Such watercourses are common and widespread in upland areas. Many ecological features rely on the watercourses, and they are hydrologically linked to the wider landscape. The Site is considered to be of Local level importance.
Upland Flushes, Fens and Swamps	n/a	NVC Code: M4 Considered in the context of Annex 1 habitats above.
Upland Heathland	n/a	NVC Codes: H10, H12, H13, H14, H16, H17, H19, H20, H21, H22, M15 Considered in the context of Annex 1 habitats above.

<sup>30</sup> National Trust (2019) 2019 wildlife and weather review. Available at: <https://www.nationaltrust.org.uk/features/2019-wildlife-and-weather-review> [Accessed October 2022].

Ecological Feature	Ecological Importance of Site for Ecological Feature	Rationale
Blanket Bog	n/a	NVC Codes: M1, M2, M3, M17, M19, M20, M25 Considered in the context of Annex 1 habitats above.
Protected Species		
Bats	Study Area	The BSA does not contain trees or structures with bat roosting potential. Bat activity across the Site was generally low and the assemblage was dominated by common and widespread pipistrelle species.  From the desk study assessments it is considered that there is more suitable foraging habitat within the wider landscape, and in the absence of extensive evidence of bat roosts within the BSA, it is likely that the Site is not of importance for bats beyond the Study Area level.
Otter	Study Area	No evidence of otter was found within the ESA, although the species was confirmed to be present on the Allt Seanabhaile which flows from the north of the ESA. No resting up sites were recorded. Given it's position on a plateau between two watersheds, it is considered likely that the ESA may be on the edge of more than one otter territory, but with the core of each territory likely to be outwith the ESA in Glen Urquhart to the north and Glen Moriston to the south.  As the ESA is located between two glens which each have notable watercourses, both of which flow into Loch Ness to the east, it is considered that more suitable habitat is present in the wider landscape. In the absence of extensive evidence of otter within the ESA, the Site is not considered to be of importance for otter beyond the Study Area level.
Badger	Study Area	Although no field signs of badger were identified, a single animal was seen within the ESA. Badger was also recorded during camera trapping, to the north but outwith the Site on the edge of Shewglie Wood in Glen Urquhart. The species is also expected to be present in woodland habitats in Glen Moriston to the south of the Site.  The ESA comprises an upland plateau that is considered to have limited suitability for badger. However, the species has been confirmed to be present in the wider area. The ESA is unlikely to be used on a regular basis and is not considered to be of importance for badger beyond the Study Area level.
Pine marten	Study Area	No evidence of pine marten was recorded within the ESA, although the species was confirmed to be present in habitats within the Site a short distance outwith the ESA, and in Shewglie Wood on the south of Glen Urquhart. No denning sites were recorded. Although habitats in the ESA lack woodland cover, pine marten occupy large home ranges and utilise a range of non-wooded habitats <sup>24</sup> , therefore the ESA is likely to be part of a larger territory.  From desk study assessments it is considered that there is more suitable habitat within the wider landscape, and in the absence of extensive evidence of pine marten within the ESA, it is likely that the Site is not of importance for pine marten beyond the Study Area level.
Water vole	County	Evidence of water vole was recorded along watercourses throughout the ESA, particularly in the north, and several areas of optimal habitat were identified. Water voles in the uplands occur as metapopulations <sup>31</sup> , with local extinctions and colonisations occurring in response to stochastic (chance) events. As such, it is considered likely that water vole may occur in any area of suitable habitat adjacent to slow-moving water within the ESA.  It is considered from desk study assessment that there is additional suitable habitat within the wider landscape. However, the water vole population has experienced a drastic decline due to habitat changes and predation pressure, and upland areas and headwater streams are now the most important remaining sites for water vole in some areas <sup>32</sup> . As such, given the confirmed presence of water vole within the ESA, the Site is considered to be of County level importance.

### Identification of Likely Effects

**8.123** Potential effects associated with the construction and operation of the Proposed Development have been identified through consideration of information provided in **Chapter 4**, standard guidance and guidelines and the professional judgment of the assessor.

**8.124 Table 8.11** relates ecological features to potential effects, effect pathways and development activities. For ease of reference, the table is set out by ecological feature. Note that potential effects on GWDTEs are considered in **Chapter 7**. The significance of each potential effect is then assessed in following sections.

**Table 8.11: Identification of Likely Effects**

Ecological Feature	Development Activity	Likely Effect Pathway	Likely Effect
Construction Activities			
River Moriston SAC	<ul style="list-style-type: none"> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Dust pollution.</li> </ul>	Disturbance
Levishie Woods SSSI	<ul style="list-style-type: none"> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Dust pollution.</li> </ul>	Disturbance
Coille Bhlairaidh AWI	<ul style="list-style-type: none"> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Dust pollution.</li> </ul>	Disturbance
Habitats	<ul style="list-style-type: none"> <li>Surface vegetation clearance;</li> <li>Excavation for construction of turbine platforms and infrastructure;</li> <li>Construction of turbine platforms and infrastructure; and</li> <li>Presence and use of fuelled plant.</li> </ul>	<ul style="list-style-type: none"> <li>Physical removal of habitat;</li> <li>Changes in water quality and volume;</li> <li>Change in hydrological regime of peatland habitats; and</li> <li>Pollution event.</li> </ul>	Direct habitat loss
			Habitat fragmentation
Bats	<ul style="list-style-type: none"> <li>Installation of construction site security lighting.</li> </ul>	<ul style="list-style-type: none"> <li>Light spill on foraging areas.</li> </ul>	Habitat fragmentation
Otter	<ul style="list-style-type: none"> <li>Excavation for construction of turbine platforms and infrastructure;</li> <li>Construction of watercourse crossings;</li> <li>Use of cementitious materials for turbine platforms;</li> <li>Presence and use of fuelled plant; and</li> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Changes in water quality and volume;</li> <li>Change in hydrological regime of peatland habitats;</li> <li>Loss of riparian habitat used for sheltering, commuting and foraging;</li> <li>Pollution event;</li> <li>Trapped in site excavations;</li> <li>Road collision with site vehicles; and</li> <li>Accidental disturbance from site staff and plant.</li> </ul>	Direct habitat loss
			Habitat fragmentation
			Mortality
			Disturbance
Badger	<ul style="list-style-type: none"> <li>Excavation for construction of turbine platforms and infrastructure;</li> </ul>	<ul style="list-style-type: none"> <li>Trapped in site excavations;</li> <li>Light spill on woodland vegetation (sheltering and foraging habitat);</li> </ul>	Mortality

<sup>31</sup> Capreolus Wildlife Consultancy (2005). The ecology and conservation of water voles in upland habitats. Scottish Natural Heritage Commissioned Report No. 099 (ROAME No. F99AC320).

<sup>32</sup> Mathews, 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. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.

Ecological Feature	Development Activity	Likely Effect Pathway	Likely Effect
	<ul style="list-style-type: none"> <li>Installation of construction site security lighting; and</li> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Road collision with site vehicles; and</li> <li>Accidental disturbance from site staff and plant.</li> </ul>	Disturbance
Pine marten	<ul style="list-style-type: none"> <li>Installation of construction site security lighting; and</li> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Loss of potential habitat used for commuting and foraging;</li> <li>Trapped in site excavations;</li> <li>Light spill on woodland vegetation (sheltering and foraging sites);</li> <li>Road collision with site vehicles; and</li> <li>Accidental disturbance from site staff and plant.</li> </ul>	Direct habitat loss
			Habitat fragmentation
			Mortality
			Disturbance
Water vole	<ul style="list-style-type: none"> <li>Excavation for construction of turbine platforms and infrastructure;</li> <li>Construction of watercourse crossings;</li> <li>Use of cementitious materials for turbine platforms;</li> <li>Presence and use of fuelled plant; and</li> <li>Presence of construction staff and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Changes in water quality and volume;</li> <li>Change in hydrological regime of peatland habitats;</li> <li>Loss of riparian habitat used for sheltering, dispersal and foraging;</li> <li>Pollution event;</li> <li>Trapped in site excavations;</li> <li>Road collision with site vehicles; and</li> <li>Accidental disturbance from site staff and plant.</li> </ul>	Direct habitat loss
			Habitat fragmentation
			Mortality
			Disturbance
Operational Activities			
Bats	<ul style="list-style-type: none"> <li>Operation of turbines at night (taken to be 30 minutes prior to sunset until 30 minutes after sunrise).</li> </ul>	<ul style="list-style-type: none"> <li>Changes in air pressure around operational turbines and along commuting and foraging corridors; and</li> <li>Accidental collision with turbine blades.</li> </ul>	Habitat fragmentation
			Mortality

## Design Considerations

**8.125** The assessment recognises that environmental considerations were taken into account during the design process. Relevant considerations include:

- Location of infrastructure on non-peat or shallower peat habitats, and less sensitive blanket bog where possible (while recognising that much of the Site comprises blanket bog);
- Inclusion of a 50m buffer between watercourses and turbine locations, with the exception of minor incursions for which a minimum 42m buffer has been observed (see **Chapter 7**);
- Minimisation of the number of watercourse crossings;
- Observation of 50m blade clearance from habitats that provide commuting and foraging habitat for bats (i.e. watercourses and waterbodies)<sup>2</sup>; and
- Minimising of vegetation removal to accommodate access track by using existing tracks and firebreaks where possible.

<sup>33</sup> NetRegs (2021) Guidance for Pollution Prevention (GPP) documents. Available at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/> [Accessed October 2022]

## Micrositing

**8.126** Any micrositing 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 indirect alteration of hydrological flows supporting sensitive habitats.

**8.127** Any micrositing will also take into consideration any buffer distances on protected features identified following further pre-construction surveys (see **Embedded Mitigation Measures** below). With these micrositing precautions and procedures in place, should micrositing be utilised, then the significance of effect on ecological receptors will not be greater than those predicted within this assessment as presented within this chapter.

## Embedded Mitigation Measures

**8.128** In addition to the design considerations detailed above, standard good practice measures will be implemented during construction and operation of the Proposed Development, and are detailed in **Chapter 4** and **Appendix 4.2: Schedule of Good Practice and Mitigation Measures**. These embedded mitigation measures are acknowledged in the assessment of otherwise unmitigated effects on important ecological features.

## Construction Environment Management Plan

**8.129** At this stage, a Construction Environment Management Plan (CEMP) has been prepared in outline (see **Appendix 4.1: Outline Construction and Environmental Management Plan (CEMP)**). However, it is proposed that a full CEMP be produced in compliance with the requirements of a condition on any planning permission granted for the Proposed Development, in discussion with statutory stakeholders, prior to the commencement of construction activity. The following will be key features of the CEMP, as detailed in **Appendix 4.1**:

- An Advisory Ecological Clerk of Works (ECoW) will be appointed to advise on the content of the CEMP. The ECoW will also be responsible for monitoring compliance with legislation, the CEMP (including SPPs), and other best practice measures, reporting directly to the developer where immediate remediation or correction is required. The ECoW will be present during construction to provide onsite support and advice, and will also monitor compliance with the CEMP and relevant legislation. The ECoW will regularly provide reports on a weekly basis which will be made available to all relevant site staff including the developer. A detailed Scope of Works for the role will be agreed with NatureScot and THC before construction commences and will include the preparation and delivery of a water quality monitoring programme. The definition and scope of the role of ECoW has been defined within **Appendix 4.1**;
- Best practice will be followed in relation to pollution prevention. In particular, all Guidance for Pollution Prevention (GPPs)<sup>33</sup> will be adhered to in detailed design and construction;
- All watercourse crossings will be designed and constructed in line with current best practice and in accordance with a Construction Site Licence (from SEPA) that will be necessary before works commence;
- Where possible, surface vegetation will be stripped and stored according to best practice methods, and used in restoration of track verges, borrow pits, temporary hardstandings and any other areas requiring restoration;
- An Outline Peat Management Plan (Outline PMP) has also been produced and is provided to support **Chapter 7**. This document details the measures that will be taken to minimise effects on peatlands within the Site, calculate the potential volumes of peat extracted, identify reuse of acrotelmic and catotelmic peat where it cannot be reinstated at source, and identify good practice measures regarding storage of excavated peat;
- The CEMP will include and be supported by a Species Protection Plan (SPP) which will set out the approach to the monitoring of protected species during construction. This will include a programme of re-survey to ensure mobile species are protected during works. The SPP will also detail proposals for longer-term monitoring, particularly in relation to bats and water vole. The level of survey effort and the scope of SPP will be proportionate and cognisant of the limited evidence of protected species identified;
- Regular ecological survey updates will be undertaken, to ensure survey data being relied upon during construction is not more than 12 months old as per best practice guidelines<sup>7</sup>, in the season immediately prior to construction (particularly for mobile



species, including otter, pine marten and badger). Where surveys find evidence of new protected features (e.g. resting sites), micro-siting will attempt to avoid effects. If this is not possible, the ECoW will make the necessary protected species licence applications;

- Excavations and trenches will be fenced, covered or a means of escape provided when left unattended to prevent animals falling in and becoming trapped; and
- Temporary open pipe systems will be capped when unattended to prevent animals accessing them and becoming trapped.

### Species Protection Plans

**8.130** Measures will be implemented to ensure legislative compliance during construction with regards to protected species. These measures will be captured in the CEMP and Species Protection Plans (SPP). SPPs for the protected species and notable species considered in this assessment will be drawn up and implemented to monitor species during construction and operation. They will include pre-construction survey updates and detail any species-specific mitigation measures required. They will be 'live' documents that will be updated in light of new findings.

**8.131** The SPPs will include, but not be limited to, the following measures.

#### All Species

- Pre-construction update surveys will confirm the current status of the Site with regards to the protected and notable species that have been confirmed to be present within the Site. This will include a walkover of the existing access route with a focus on the locations of any proposed improvement works; and
- Security lighting will be designed to minimise light-spill on sensitive habitat features such as watercourses, waterbodies, and woodland edges.

#### Otter and Water Vole

- Pre-construction surveys of all watercourse crossings during the survey season immediately prior to construction for water vole, and no more than six months prior to construction for otter;
- Micro-siting of the infrastructure will avoid any new otter resting sites or water vole burrows identified during update surveys. If unavoidable, the ECoW will make necessary protected species licence applications; and
- All watercourse crossings will be 'mammal friendly', with banksides retained or mammal ledges installed.

#### Badger and Pine Marten

- Micro-siting of the infrastructure will avoid any new resting sites (sett/den) identified during update surveys. If unavoidable, the ECoW will make necessary protected species licence applications.

### Assessment of Effects

**8.132** The assessment of effects is based on the project description as outlined in **Chapter 4**. Unless otherwise stated, potential effects identified are considered to be negative.

#### Predicted Construction Effects

**8.133** In this section, drawing on **Table 8.11**, an assessment is made of the significance of likely effects on ecological features during construction, in the absence of additional mitigation. Unless highlighted as otherwise, all likely effects are considered to be adverse.

**8.134** The application for consent includes a request for a micro-siting tolerance of up to 50m for site infrastructure where ground investigation works and/or geotechnical surveys find ground conditions to be unsuitable for construction. In the event that micro-siting is required, habitat and protected species surveys of the 'new' location will be required before works can begin. Micro-siting should maintain the 50m buffer between infrastructure locations and all watercourses, wherever possible. In areas where it has not been possible to achieve the 50m buffer between infrastructure and watercourses (see **Appendix 7.5: Watercourse Crossing Inventory**), there will be no further encroachment into these buffers.

### Designated Sites

**8.135** The Proposed Development has the potential to cause indirect effects on designated sites, specifically River Moriston SAC, Levishie Wood SSSI and Coille Bhlaraidh (listed on the AWI).

**8.136** Potential construction effects are associated with an increase in vehicle movements on the Bhlaraidh Wind Farm existing access track, resulting in dust pollution that can smother vegetation and disrupt physiological processes, thereby affecting the health of trees within each of the designated sites. The area of construction works is not hydrologically connected with the SAC. Strict pollution prevention measures regarding dust will be implemented via the CEMP.

**8.137** In considering the above, the significance of potential effects on designated sites is detailed in **Table 8.12**. Significance is assessed within the context of the Ecological Importance of River Moriston SAC, Levishie Wood SSSI and the woodland of Coille Bhlaraidh (see **Table 8.10**).

**Table 8.12: Assessment of Significance of Likely Construction Effects – Designated Sites**

Parameter	Likely Effect
	Disturbance
Extent	Disturbance is limited to the potential for increased dust within vicinity of the Bhlaraidh Wind Farm existing access track. This is therefore limited to the riparian habitats of the River Moriston SAC, and the woodland of Levishie Wood SSSI and Coille Bhlaraidh (listed on the AWI).
Magnitude	Dust pollution will be minimised through the application of the CEMP.
Duration	Temporary
Frequency	Potentially repeated during construction phase.
Reversibility	Reversible
Likelihood	Possible
Significance (EclA)	Not significant
Significance (EIA)	Negligible

**8.138** Under the Habitats Regulations, the competent authority must consider whether a proposal could affect a European site. The information provided in the assessment of effects can be used by the competent authority to assess whether there is a need for engagement of the Habitats Regulations Appraisal (HRA) process. The information in this report indicates that there are no significant effects (in EclA and EIA terms). Effects would not be significant in the absence of mitigation, and therefore there are no Likely Significant Effects (LSE) on the River Moriston SAC (in HRA terms). As such, an appropriate assessment is not required.

### Habitats

**8.139** Potential effects on habitats have been identified as direct habitat loss (in relation to the removal of habitat to construct turbines and associated infrastructure, through changes to hydrological regimes as a consequence of construction) and habitat fragmentation (in relation to changes in hydrological regimes).

**8.140** In relation to direct habitat loss, approximately 20ha is predicted to be lost. This is calculated by applying a 2.5m buffer to the proposed infrastructure; to ensure a conservative assessment, all habitats within this area are treated as direct loss.

**8.141** Due to the complex topography and vegetation of the ESA, bog communities often occur in mosaic with dry and/or wet heathland communities. Wherever possible, the design process has avoided deeper deposits of peat; as such, the design process has also avoided, wherever possible, both larger expanses and smaller pockets of blanket bog. Therefore, where blanket bog communities comprise a minor component of an affected habitat mosaic (i.e. ≤30%), the area of potential habitat loss is re-assigned to the remaining component communities recorded within the mosaic, which in each case are dry or wet heath communities. This method aims to better capture the outcome of the design process in relation to blanket bog, whilst maintaining a robust assessment.

**8.142 Table 8.13** details the total area to be lost, of each habitat type of conservation interest (as defined in **Table 8.10** above), arising from the Site infrastructure.

**Table 8.13: Habitat Loss Calculations**

Phase 1 Habitat	NVC Codes	Area to be Lost (ha)	Total of Habitat Type(s) Within ESA (ha)	% of ESA Habitat Resource to be Lost
D1 Dry dwarf shrub heath	H10, H12, H14, H21, H22, U10	3.3	151.6	2.2
D2 Wet dwarf shrub heath	M15	7.7	333.1	2.3
E1.6.1 Blanket bog E1.7 Wet modified bog E1.8 Dry modified bog	M2, M3, M17, M19, M20	8.9	486.9	2.0

**8.143 Table 8.13** above highlights the limited nature of habitat loss within the ESA. Notably, in all cases, less than 2.5% of the ESA's resource of each habitat of conservation interest will be lost to development.

**8.144** There is no loss of the following communities and habitats that represent habitats of conservation interest within the ESA:

- NVC: M4 (Annex 1 Transition mires and quaking bogs);
- Phase 1 habitat: G1 Standing water (SBL Oligotrophic and Dystrophic Lakes); and
- Phase 1 habitat: G2 Running water (SBL Rivers).

**8.145** There will be losses of the following habitats and communities that represent habitats of conservation interest within the ESA:

- Phase 1 habitat: D1 Dry dwarf shrub heath (Annex 1 European dry heaths);
- Phase 1 habitat: D2 Wet dwarf shrub heath (Annex 1 Northern Atlantic wet heaths with *Erica tetralix*); and
- Phase 1 habitats: E1 Bog habitats (Annex 1 Blanket bogs).

**8.146** Approximately 3.3ha of dry heath communities (Annex 1 European dry heaths) are predicted to be lost, representing approximately 2.2% of habitat resource within the ESA. This habitat type is widespread throughout the uplands, and the effect due to loss as a result of the Proposed Development is not predicted to be significant.

**8.147** Approximately 7.7ha of wet heath (Annex 1 Northern Atlantic wet heaths with *Erica tetralix*) are predicted to be lost. However, this represents 2.3% of the resource of this community within the ESA, and furthermore the community is known to be common and widespread in the uplands. As such, the extent of this loss is not expected to impact upon the conservation status of the wider resource, and the effect is not considered to be significant.

**8.148** The most notable losses of habitats of conservation interest relate to bog habitats (Annex 1 Blanket bog; approximately 8.9ha loss). However, the proportion of these habitats to be lost in comparison to the available resource within the ESA is limited (2.0%) and the losses are not considered to adversely affect the viability or integrity of these habitats in a wider context.

**8.149** Habitat fragmentation, particularly of peat-forming habitats, largely relates to changes in the hydrological regime of the Site during and following construction of new access tracks on the open ground in the south-west of the ESA. The habitats here are heavily influenced by topography and hydrology, with the latter being key to habitat connectivity. Through the design of the Proposed Development, the network of watercourses and lochans will be maintained, watercourse crossings have been minimised, and floating tracks are proposed where necessary in areas of deeper peat. In addition, peat-forming bog habitats are ombrogenous (rain-fed), and there are no confirmed GWDTEs within the ESA. As such, the hydrological connectivity of habitats will be maintained as far as possible. As discussed in **Chapter 7**, no significant effects have been predicted for effects to alteration of flow, natural drainage patterns, runoff volumes and rates. The effect of the Proposed Development on the hydrological regime of the Site is assessed in detail in **Chapter 7**.

**8.150** The Outline PMP (**Appendix 7.3**) forms part of the embedded mitigation and details proposals for the re-use of excavated peat in the reinstatement of areas of temporary works (including temporary areas of hardstanding and track, the construction compound,

and borrow pit); in each case, peat is reinstated to depths ranging from 0.5m to 1.15m. In addition, the Outline PMP identifies areas of exposed peat within proximity of the Proposed Development which are suitable for restoration through the placement of peat to depths of 0.6m -1.4m. The re-use of the excavated peat has taken a conservative approach in terms of the areas that will be possible to restore and the depths achievable. To ensure parity between the approach taken to calculate habitat loss and the approach taken to calculate the total area of restoration, both approaches seek to capture adjacent impacts, whether these be adverse or beneficial. In order to capture the effect of reinstatement and restoration measures on adjacent habitats, a 2.5m buffer is once again applied to areas of proposed restoration where these are located outwith the infrastructure. The total area of peatland reinstatement and restoration is therefore calculated by this method to be approximately 8.7ha.

**8.151** In considering the above, the significance of potential effects on habitats is detailed in **Table 8.14**. Significance is assessed within the context of the Ecological Importance of the ESA for these habitats (see **Table 8.10**).

**Table 8.14: Assessment of Significance of Likely Construction Effects - Habitats**

Parameter	Likely Effect	
	Direct Habitat Loss	Habitat Fragmentation
Extent	Habitat loss is limited to a small proportion of the habitats of conservation interest within the ESA. However, of note is the loss of bog habitats (Annex 1 habitat).	Habitat fragmentation is limited to habitats within the south-west of the ESA. However, the connectivity of habitats here is heavily influenced by hydrology. The hydrological regime is maintained as far as possible through the design of the Proposed Development.
Magnitude	Proposed habitat loss is unlikely to have an effect on the integrity of the habitats of conservation interest within the ESA.	A commitment to utilise the Bhlairaidh Wind Farm existing access track means that habitat fragmentation is limited to the onsite access tracks only. Habitats of conservation interest within the ESA will retain their structure and viability.
Duration	Permanent	Permanent
Frequency	One-off event during construction.	One-off event during construction.
Reversibility	Irreversible	Reversible
Likelihood	Certain	Certain
Significance (EclA)	<b>Significant (at Local level) for bog habitats only</b>	Not significant
Significance (EIA)	<b>Minor, not significant</b>	Negligible

#### Protected Species

##### Bats

**8.152** Likely effects on bats during construction have been identified as:

- Habitat fragmentation through severance of commuting and foraging corridors; and
- Disturbance through an increased human and vehicle presence, resulting in increased noise and vibration.

**8.153** Potential construction effects are associated with the use of the existing Bhlairaidh Wind Farm access track and security lighting required (such as at the construction compound).

**8.154** The design process has considered these likely effects and sought to minimise them through the use of the existing infrastructure associated with Bhlairaidh Wind Farm. No vegetation removal along the existing access track is required.

**8.155** With the exception of nine watercourse crossings and seven drain crossings (16 crossings in total), there are limited incursions into the 50m watercourse buffer (see **Chapter 7**). However, these are only a small number of locations and a minimum 42m buffer is maintained between construction works and potential commuting and foraging habitats, thereby minimising the potential for disturbance during construction.

**8.156** In considering the above, the significance of potential effects on bats is detailed in **Table 8.15**. Significance is assessed within the context of the Ecological Importance of the BSA for bats (see **Table 8.10**).

**Table 8.15: Assessment of Significance of Likely Construction Effects - Bats**

Parameter	Likely Effect	
	Habitat Fragmentation	Disturbance
Extent	The existing track will be used and no felling of trees is proposed. With the exception of nine watercourse crossings and seven drain crossings (16 crossings in total), a minimum 42m buffer is maintained between construction works and potential commuting and foraging habitats.	Limited to the woodland along the existing access track where bats may roost and forage. No tree removal is proposed. Light-spill from security lighting, for example at the construction compound or along the existing access track, could result in disturbance to potential commuting and foraging habitats such as watercourses and woodland edges.
Magnitude	A small proportion of the available resource of the BSA could be affected.	A small proportion of the available resource of the wider landscape could be affected.
Duration	Project lifetime	Intermittent during 18-month construction phase.
Frequency	One-off event during construction.	Intermittent during construction.
Reversibility	Reversible	Reversible
Likelihood	Unlikely	Unlikely
Significance (EclA)	Not significant	Not significant
Significance (EIA)	Negligible	Negligible

#### Otter

**8.157** Likely effects on otter during construction have been identified as:

- Direct habitat loss in relation to suitable sheltering, commuting and foraging habitat;
- Habitat fragmentation through severance of commuting and foraging corridors;
- Mortality as a consequence of direct contact or pollution event; and
- Disturbance through an increased human and vehicle presence, resulting in increased noise and vibration.

**8.158** No otter signs were identified within the ESA. However, otter was confirmed to be present on a watercourse outwith to the north of the ESA during camera trapping within the wider Site. The network of watercourses and lochans within the ESA are considered to provide high suitability foraging and commuting habitat for otter, although limited opportunities for resting sites, and no resting sites have been identified within the ESA.

**8.159** The design process has considered the potential effects on otter, and their known distribution within the ESA. With exception of the watercourse crossings and limited incursions in a small number of areas identified (see **Chapter 7**), no construction works will take place within 50m of a watercourse/waterbody. Strict pollution prevention measures will be implemented via the CEMP.

**8.160** Due to a range of constraints, such as the presence of deep peat and steep slopes, there are limited incursions into the 50m watercourse buffer (see **Chapter 7**). However, these are only a few locations and a minimum 42m buffer is maintained. As such, and with suitable mitigation in place as per the SPP, including the use of an ECoW and commitment to follow GPPs, works are not considered likely to adversely affect otters at these locations.

**8.161** Blasting will avoid conflict with the crepuscular nature of otters by avoiding scheduling blasting between 30 minutes after sunrise and 30 minutes before sunset, thereby reducing the risk of mortality and disturbance.

**8.162** In considering the above, the significance of potential effects on otter is detailed in **Table 8.16**. Significance is assessed within the context of the Ecological Importance of the ESA for otter (see **Table 8.10**).

**Table 8.16: Assessment of Significance of Likely Construction Effects - Otter**

Parameter	Likely Effect			
	Direct Habitat Loss	Habitat Fragmentation	Mortality	Disturbance
Extent	Limited to nine new watercourse crossings and seven drain crossings (16 crossings in total).	Limited to nine new watercourse crossings and seven drain crossings (16 crossings in total).	Localised to the area around nine new watercourse crossings and seven drain crossings (16 crossings in total).	Localised to the area around nine new watercourse crossings and seven drain crossings (16 crossings in total).
Magnitude	Limited to relatively small areas within wider riparian habitat.	Limited to relatively small area of wider suitable riparian habitat but has the potential to disrupt commuting patterns and access to territories.	Limited to a very small number of otters, based on the lack of resting sites identified during surveys.	Limited to isolated construction events.
Duration	Project lifetime.	Project lifetime.	18-month construction phase, but permanent to the individual(s) killed.	Intermittent during 18-month construction phase.
Frequency	One-off event at each watercourse crossing during the construction phase.	One-off event at each watercourse crossing during the construction phase.	Potentially repeated during construction phase.	Potentially repeated during construction phase.
Reversibility	Irreversible	Irreversible	Irreversible at the level of the individual animal; reversible at the population level.	Reversible
Likelihood	Certain	Certain	Extremely unlikely	Unlikely
Significance (EclA)	Not significant	Not significant	Not significant	Not significant
Significance (EIA)	Negligible	Negligible	Negligible	Negligible

#### Badger

**8.163** Likely effects on badger during construction have been identified as:

- Mortality as a consequence of direct contact, e.g. road collision; and
- Disturbance through an increased human and vehicle presence, resulting in increased noise and vibration.

**8.164** Limited evidence of badger has been recorded during field surveys. The ESA is dominated by heath and bog habitats that are not considered optimal<sup>34</sup>. However, a badger was observed on one occasion within the ESA and camera traps confirmed the presence of this species in Shewglie Wood outwith the Site to the north. Badgers do occur in upland habitats albeit at low densities<sup>34</sup>, therefore badger is considered to be present within the ESA albeit at a low density.

**8.165** The design process has considered potential effects on badger, and the proposed access route follows the Bhlairaidh Wind Farm access existing track. As such, the Proposed Development does not require removal of vegetation from areas of more suitable habitat in the lower areas of Glen Moriston.

**8.166** In considering the above, the significance of potential effects on badger is detailed in **Table 8.17**. Significance is assessed within the context of the Ecological Importance of the ESA for badger (see **Table 8.10**).

<sup>34</sup> Rainey, E., Butler, A., Bierman, S. and Roberts, A.M.I. (2009). Scottish Badger Distribution Survey 2006 – 2009: estimating the distribution and density of badger main setts in Scotland. Report prepared by Scottish Badgers and Biomathematics and Statistics Scotland.

Table 8.17: Assessment of Significance of Likely Construction Effects - Badger

Parameter	Likely Effect	
	Mortality	Disturbance
Extent	Localised along the existing access track and at construction areas across the Site.	Localised areas of higher habitat potential along the existing access track.
Magnitude	Very low as this species is likely to be present at a low density.	Low as this species is likely to be present at a low density.
Duration	18-month construction phase, but permanent to the individual(s) killed.	Intermittent during 18-month construction phase.
Frequency	Potentially repeated during construction phase.	Intermittent during construction.
Reversibility	Irreversible at the level of the individual animal; reversible at the population level.	Reversible
Likelihood	Extremely unlikely	Unlikely
Significance (EcIA)	Not significant	Not significant
Significance (EIA)	Negligible	Negligible

**Pine Marten**

8.167 Likely effects on pine marten during construction have been identified as:

- Direct habitat loss in relation to suitable sheltering and foraging habitat in the ESA;
- Habitat fragmentation through severance of commuting and foraging corridors;
- Mortality as a consequence of direct contact, e.g. road collision; and
- Disturbance through an increased human and vehicle presence, resulting in increased noise and vibration.

8.168 No dens were identified during the surveys; however, habitats within the ESA offered limited suitability to pine marten due to the lack of trees on the upland plateau. However, there are rocky outcrops that may offer suitable cavities.

8.169 Pine marten was confirmed to be present within the Site with camera trap recordings from a short distance outwith the ESA. However, forestry habitats are extensive in the glens to north and south, and this species is known to utilise a range of habitat types over large home ranges<sup>24</sup>. Pine marten is therefore assumed to use the ESA although likely not as a core territory holding.

8.170 The design process has considered the potential effects on pine marten; no tree removal to facilitate access to the Site is required due to the use of the Bhlairaidh Wind Farm existing access track.

8.171 In considering the above, the significance of potential effects on pine marten is detailed in **Table 8.18**. Significance is assessed within the context of the Ecological Importance of the ESA for pine marten (see **Table 8.10**).

Table 8.18: Assessment of Significance of Likely Construction Effects – Pine Marten

Parameter	Likely Effect			
	Direct Habitat Loss	Habitat Fragmentation	Mortality	Disturbance
Extent	Localised along the existing access track and at construction areas across the Site.	Localised along the existing access track and at construction areas across the Site.	Localised along the existing access track and at construction areas across the Site.	Localised along the existing access track and at construction areas across the Site.
Magnitude	Limited to small areas of generally low suitability habitat.	Very low. The existing access track will be used to minimise	Very low as this species is likely to be present at a low density.	Very low as this species is likely to be present at a low density.

Parameter	Likely Effect			
	Direct Habitat Loss	Habitat Fragmentation	Mortality	Disturbance
		the potential for fragmentation.		
Duration	Project lifetime	Project lifetime	18-month construction phase, but permanent to the individual(s) killed.	Intermittent during 18-month construction phase.
Frequency	One-off event during construction.	One-off event during construction.	Potentially repeated during construction phase.	Intermittent during construction.
Reversibility	Irreversible	Irreversible	Irreversible at the level of the individual animal; reversible at the population level.	Reversible
Likelihood	Certain	Extremely unlikely	Extremely unlikely	Extremely unlikely
Significance (EcIA)	Not significant	Not significant	Not significant	Not significant
Significance (EIA)	Negligible	Negligible	Negligible	Negligible

**Water Vole**

8.172 Likely effects on water vole during construction have been identified as:

- Direct habitat loss in relation to suitable sheltering and foraging habitat;
- Habitat fragmentation through severance of dispersal and foraging corridors;
- Mortality as a consequence of direct contact or pollution event; and
- Disturbance through an increased human and vehicle presence, resulting in increased noise and vibration.

8.173 Evidence of water vole has been found throughout the ESA, although particularly in the north. This included burrows, runs, feeding signs and latrines, with signs recorded on the Allt Seanabhaile and its tributaries, and on watercourses in the network of watercourses and waterbodies that form its headwaters. As water vole in the uplands exists in a metapopulation of colonies<sup>31</sup>, it is possible that water vole could utilise any area of suitable habitat beside slow-moving water within the ESA.

8.174 The design process has considered the potential effects on water vole and sought to reduce them through minimising the number of watercourse crossings, and through the application of a 50m buffer from which construction works are excluded around remaining watercourses and waterbodies wherever possible. Due to a range of constraints, such as deep peat and steep slopes, there are limited incursions into the 50m watercourse buffer which is reduced to a minimum of 42m from watercourses in four specific locations (see **Chapter 7**). However, these locations have not been noted to have water vole signs or potential water vole habitat. In addition, all watercourse crossings will be 'mammal friendly', with banksides retained or mammal ledges installed. As such, with the exception of the watercourse crossings and the limited incursions identified (see **Chapter 7**), no construction works will take place within 50m of a watercourse, and habitat loss and fragmentation is therefore minimised.

8.175 Strict pollution prevention measures will be implemented via the CEMP, and the provision of an ECoW and pre-works surveys will further reduce the risk of mortality and disturbance.

8.176 With suitable mitigation in place, implemented through the design process and the CEMP and SPP, including the use of an ECoW and commitment to follow GPPs, the works are unlikely to adversely affect water vole.

8.177 In considering the above, the significance of potential effects on water vole is detailed in **Table 8.19**. Significance is assessed within the context of the Ecological Importance of the ESA for water vole (see **Table 8.10**).

Table 8.19: Assessment of Significance of Likely Construction Effects – Water Vole

Parameter	Likely Effect			
	Direct Habitat Loss	Habitat Fragmentation	Mortality	Disturbance
Extent	Limited to nine new watercourse crossings and seven drain crossings (16 crossings in total).	Limited to nine new watercourse crossings and seven drain crossings (16 crossings in total).	Localised to the area around nine new watercourse crossings and seven drain crossings (16 crossings in total).	Localised to the area around nine new watercourse crossings and seven drain crossings (16 crossings in total).
Magnitude	Limited to relatively small areas within wider riparian habitat. Scheme design has avoided known populations. Micrositing of watercourse crossings will aim to avoid potential habitat wherever possible.	Limited to watercourse crossings which may become impassable. Watercourse crossings will be 'mammal friendly'. The County importance of this population suggests that any obstruction to dispersal and genetic viability is important.	Very low as scheme design has avoided current known populations.	Limited to localised sub-populations of the wider Site resource.
Duration	Permanent	Permanent	Temporary at the population level, but permanent to the individual(s) killed.	Intermittent during 18-month construction phase.
Frequency	One-off event during construction.	One-off event during construction.	Potentially repeated during construction phase.	Intermittent during construction.
Reversibility	Irreversible	Irreversible	Irreversible at the level of the individual animal; reversible at the population level.	Reversible
Likelihood	Certain	Possible	Unlikely	Extremely unlikely
Significance (EclA)	Not significant	<b>Significant (at Study Area level)</b>	Not significant	Not significant
Significance (EIA)	Negligible	<b>Minor, not significant</b>	Negligible	Negligible

**Proposed Mitigation**

**8.178** Significant effects (in EclA terms) at the Local level have been identified resulting from the loss of blanket bog habitats. In addition, significant effects (in EclA terms) at the Study Area level have been identified with regards to water vole and habitat fragmentation. In EIA terms, these are considered to be **Minor** and **not significant** (Table 8.4). As such, no additional mitigation measures are required.

**8.179** Further measures designed to enhance the Site for biodiversity are considered below. This includes additional possible areas of peatland restoration estimated to amount to up to 2ha, and as such it is anticipated that compensatory mitigation for loss of blanket bog habitats will be fully achieved.

**Residual Construction Effects**

**8.180** Subject to adherence with all embedded mitigation, including general site-wide mitigation measures and species-specific measures, **no significant residual effects** (in EIA terms; see Table 8.4) as a result of construction of the Proposed Development are anticipated on designated sites, habitats, bats, or protected species.

**Predicted Operational Effects**

**8.181** In this section, drawing on Table 8.11, an assessment is made of the significance of likely effects on ecological features during operation of the Proposed Development, in the absence of mitigation. Unless highlighted as otherwise, all likely effects are considered to be adverse.

**Protected Species**

**8.182** Operational effects have been scoped out for all species other than bats.

**Bats**

**8.183** Potential effects on bats have been identified as:

- Habitat fragmentation in relation to lost commuting lines and foraging habitat due to the presence of turbines; and
- Mortality in relation to barotrauma caused by changes in air pressure around turbines, and direct collision.

**8.184** It is widely acknowledged that common and widespread bat species (such as common and soprano pipistrelle, which accounted for the vast majority of bats recorded) favour linear features such as forest edges and watercourses for commuting and foraging. Whilst bat activity was generally low across the BSA and seasons, and the species assemblages largely comprised common and widespread species, the installation of turbines near linear features, particularly watercourses, is likely to pose a mortality risk to bats and also disrupt their commuting and foraging. The loss of a small number of individuals from a small population can have a substantial effect on the local population and may adversely affect the distribution of bats. Therefore, the Proposed Development could have an adverse effects on bats in terms of their mortality and population viability within the BSA. However, the design of the Proposed Development observes a minimum 50m buffer between turbine blades and watercourses, and therefore both potential effects are reduced.

**8.185** Two operational wind farm developments are present within 5km; Bhlairaidh Wind Farm (32 turbines) is located adjacent to the south of the Proposed Development, and Corrimony Wind Farm (5 turbines) is located almost 4km to the west. The levels of bat mortality at these sites are not known; however, the consented Bhlairaidh Wind Farm Extension reported a similarly low to medium risk to pipistrelle bat species, and so low levels of mortality are expected at the operational sites.

**8.186** In considering the above, the significance of likely effect on bats is detailed in Table 8.20. Significance is assessed within the context of the Ecological Importance of the BSA for bats (see Table 8.10).

Table 8.20: Assessment of Significance of Likely Operational Effects – Bats

Parameter	Likely Effect	
	Habitat Fragmentation	Mortality
Extent	Turbine areas where commuting and foraging lines may be severed.	Turbine areas where collision and/or barotrauma may be experienced.
Magnitude	Very low. Limited to a small number of potential foraging and commuting routes in the vicinity of turbines; a minimum 50m buffer has been maintained between turbine blade tips and watercourses.	Low given the low levels of activity across the BSA; however the loss of a small number of bats from small populations will be proportionally high and will affect the bat population of the Study Area.
Duration	Operational lifetime of Proposed Development.	Operational lifetime of Proposed Development.
Frequency	Potentially repeatedly during operational lifetime.	Potentially repeatedly during operational lifetime.
Reversibility	Reversible upon decommissioning.	Irreversible at an individual level, but reversible at the population level, albeit slowly.
Likelihood	Probable	Probable
Significance (EclA)	Not significant	<b>Significant (at Study Area level)</b>
Significance (EIA)	Negligible	<b>Minor, not significant</b>

### Proposed Mitigation

**8.187** Operational effects on bats were the only potential operational effect identified. However, these are only significant at the Study Area level, therefore this is not considered to be significant in the context of the Regulations (refer to **Table 8.4**), and therefore no specific mitigation is required.

**8.188** Further measures designed to enhance the Site for biodiversity are considered after the assessment of residual effects (see **Enhancement**).

### Residual Operational Effects

**8.189** Subject to adherence with all embedded and good practice mitigation, **no significant residual effects** (in EIA terms; see **Table 8.4**) as a result of operation of the Proposed Development are anticipated on bats.

### Cumulative Effects

**8.190** In this section, the potential cumulative effects of the Proposed Development and other wind farm developments in planning within a 5km search area are considered. Operational wind farms are not considered in this cumulative assessment of effects because the baseline conditions at the Site have already been influenced by the existing wind farms in operation within 5km. Thus, assessing the cumulative effects of operational wind farms along with the effects anticipated for the Proposed Development at Loch Liath will equate to double-counting of effects.

**8.191** Therefore, one wind farm has been considered within this cumulative impact assessment: the consented Bhlaraidh Wind Farm Extension, for which an application has been submitted and which lies adjacent to the south of the Site.

### Predicted Cumulative Effects during Construction

**8.192** Only those wind farm developments that have not already been constructed are considered in this assessment, therefore only the consented Bhlaraidh Wind Farm Extension<sup>35</sup> is considered.

### Habitats

**8.193** Only those habitats of conservation interest recorded within the ESA are included in this assessment. **Table 8.21** below shows a summary of direct habitat loss for the developments included in this assessment.

**Table 8.21: Summary of Cumulative Direct Habitat Losses**

Habitats of Conservation Interest Present Within Loch Liath Wind Farm	Wind Farm Development	
	Proposed Direct Habitat Loss (ha) Within Loch Liath	Proposed Direct Habitat Loss (ha) Within the Consented Bhlaraidh Wind Farm Extension <sup>36</sup>
D1 Dry dwarf shrub heath (NVC: H10, H12, H14, H22, U10)	3.3	0.0
D2 Wet dwarf shrub heath (NVC: M15)	7.7	33.9
<b>Total heath communities</b>	<b>11.0</b>	<b>33.9</b>
Bog communities (NVC: M2, M3, M17, M19, M20)	9.9	-
E1.6.1 Blanket bog	-	3.2
E1.7 Wet modified bog	-	1.3
<b>Total bog communities/habitats</b>	<b>8.9</b>	<b>4.5</b>

<sup>35</sup> SSE Generation Limited (2018) Bhlaraidh Wind Farm Extension Environmental Statement, Volume 2: Main Report, Chapter 5: Ecology.

**8.194 Table 8.21** above shows that the cumulative loss of habitats of conservation interest within 5km of the Proposed Development is predicted to be limited. Across both developments, the largest habitat losses are approximately 44.9ha of wet heath habitat, and 13.4ha of blanket bog and wet modified bog. However the scale of the losses, viewed in terms of the proportions of these habitats within the wider landscape, are small. Nevertheless, the cumulative loss of blanket bog habitats is considered significant at a Local level (in EIA terms).

**8.195** Peatland reinstatement and restoration is proposed as compensatory mitigation within the Site, amounting to approximately 8.7ha. Similar measures are expected to be implemented at the consented Bhlaraidh Wind Farm Extension.

**8.196** Although there is a cumulative loss of habitats of conservation interest, particularly of bog habitats, when taking account of the reinstatement and restoration proposed at both sites, and in the context of the wider resource, it is considered that cumulative effects on the conservation status of these habitats will be **not significant**.

### Protected Species

#### Bats

**8.197** No bat roosts were recorded during the ecology surveys at the consented Bhlaraidh Wind Farm Extension. This is due to the lack of woodland habitats within the Site which comprises open upland habitats. Additionally, surveys recorded generally low activity of bats across the Site, with the notable exception of a detector in the south of the Site near a watercourse between two lochs. Five species were recorded (common pipistrelle, soprano pipistrelle, Daubenton's bat, Natterer's bat and brown long-eared bat). The only detector to record all five species was located near a watercourse on the eastern boundary of the Site.

**8.198** At both the consented Bhlaraidh Wind Farm Extension and the Proposed Development, the potential for habitat fragmentation and disturbance due to construction activities has been considered. No tree removal will take place at either the consented Bhlaraidh Wind Farm Extension or the Proposed Development. However, disturbance of woodland edge habitat along the existing access track may occur due to vehicle movement and lighting, and activities to construct watercourse crossings may result in short term fragmentation or disturbance to commuting and foraging routes.

**8.199** In summary, given the relatively low numbers of common bat species recorded at both sites, combined with the proposed approaches that will conform to standard best practice with regards bats, cumulative effects are considered unlikely and **not significant**.

#### Otter

**8.200** Evidence of otter recorded during ecology surveys for the consented Bhlaraidh Wind Farm Extension was limited to a single spraint and feeding remains on the Allt Saigh in the south-east of the Site. No resting sites were identified, although the habitats onsite were considered suitable for occasional use by foraging and commuting otter. Given the secrecy of holts, particularly of natal holts, pre-construction surveys have been recommended at the consented Bhlaraidh Wind Farm Extension and the Proposed Development.

**8.201** Potential effects on otter include collisions with site vehicles, disturbance (from construction activities) and watercourse pollution. Good practice construction measures across both the consented Bhlaraidh Wind Farm Extension and the Proposed Development, including buffer zones from watercourses, will reduce the risk at both locations. Cumulative effects are therefore considered unlikely and **not significant**.

#### Badger

**8.202** No signs of badger were recorded during surveys at the consented Bhlaraidh Wind Farm Extension and the species was scoped out from further assessment. This species was confirmed to be present from a sighting within the ESA at Loch Liath, and so is also likely to pass through the consented Bhlaraidh Wind Farm Extension on occasion. However, it is expected to be at very low density.

**8.203** Given the availability of more favourable habitats in the wider landscape, and with suitable measures in place including pre-construction surveys and the appointment of an ECoW, cumulative effects are considered unlikely and **not significant**.

<sup>36</sup> Figures sourced from Table 5.11 in Chapter 5 of the consented Bhlaraidh Wind Farm Extension Environmental Statement. In the current assessment with regards the Proposed Development, direct habitat loss is not considered to be temporary, and so a single figure for direct habitat loss is reported for the consented Bhlaraidh Wind Farm Extension combining the figures reported for direct (permanent) and direct (temporary) habitat loss.

## Pine Marten

**8.204** The surveys at the consented Bhlaraidh Wind Farm Extension did not record any evidence of pine marten and the species was scoped out from further assessment. This species was confirmed to be present within the Site, and in the wider landscape to the north and to the south-east.

**8.205** Pine marten prefer old growth woodland with a varied age and species structure, with mature trees which offer cavities in which they can shelter and breed. Habitat suitability is generally sub-optimal at both the consented Bhlaraidh Wind Farm Extension and the Proposed Development as this habitat type is not present within either location. However, pine marten have large home ranges<sup>24</sup>, and are expected to utilise habitats in Glen Moriston, albeit at low density. It is therefore likely that pine marten occasionally utilise the habitats within the consented Bhlaraidh Wind Farm Extension. With best practice methods implemented at both sites, including pre-construction surveys, the risk to pine marten will be minimised.

**8.206** For the above reasons, adverse cumulative effects on pine marten are considered unlikely, and therefore **not significant**.

## Water Vole

**8.207** Evidence of water vole was recorded at the consented Bhlaraidh Wind Farm Extension in the form of numerous burrows, some with signs of recent activity such as latrines and runs. Water vole signs have also been confirmed at the Proposed Development. The species occurs as a metapopulation in upland habitats, and local colonisations and extinctions across years are to be expected.

**8.208** The two sites are on either side of a ridge; as such, the watercourses at which water vole signs were noted in each site are not directly hydrologically linked. However, as the sites are adjacent to each other, the sites are within the known dispersal distances of water vole, which is reported to be a 1-2km radius in the lowlands and up to as much as 8km in the uplands<sup>31</sup>.

**8.209** The potential effects identified for the Proposed Development on water vole include habitat fragmentation and mortality, and these effects could also occur within the consented Bhlaraidh Wind Farm Extension. Standard mitigation measures have been identified for both the Proposed Development and the consented Bhlaraidh Wind Farm Extension, including a commitment to maintaining a 50m buffer on watercourses wherever possible (and particularly where there are known water vole populations), designing watercourse crossings to allow continued mammal movement, pre-construction surveys, appointment of an ECoW, SPPs, and pollution prevention measures. On this basis, any new or existing colonies effected by the proposals at either site would be expected to be identified, and suitable licensing and mitigation implemented. The risk of habitat fragmentation and of mortality of water voles will thereby be reduced. Cumulative effects on water vole are considered unlikely and **not significant**.

## Predicted Cumulative Effects during Operation

**8.210** Bats are the only ecological feature considered in the cumulative assessment of operational effects.

## Protected Species

### Bats

**8.211** Habitats across both the Proposed Development and the consented Bhlaraidh Wind Farm Extension are dominated by open upland habitats. The networks of watercourse and waterbodies within both sites will offer some foraging and commuting potential. However, open upland habitats are generally considered low value to bats as they offer less profitable foraging (due to fewer insects) and fewer roosting opportunities (due to the absence of suitable features e.g. buildings and trees with cavities/crevices) than other habitats such as natural woodlands. This habitat assessment is supported by the absence of roosts and the low to moderate levels of bat activity recorded across both developments.

**8.212** Of the bat species that were recorded, the most common species for both developments were common pipistrelle and soprano pipistrelle. According to the most recent NatureScot guidance<sup>2</sup>, these species are high-risk in terms of collision<sup>37</sup> and their populations are considered to have medium vulnerability in Scotland. The remaining species recorded at both sites, brown long-eared and *Myotis* spp., are considered to have a low risk of collision<sup>2</sup>.

**8.213** It is widely accepted that common bat species favour linear features such as forest edges and watercourses for commuting and foraging. Any turbines located on, or close to, these features may increase risk of mortality to bats. Both sites lack any woodland

edges, but each have numerous watercourses. The potential operational effects considered at the consented Bhlaraidh Wind Farm Extension, and at the Proposed Development, were mortality and habitat fragmentation.

**8.214** Despite the low to moderate levels of bat activity and the absence of roosts, there is potential for there to be a cumulative adverse effect on bats during operation. Given the status of the most common species recorded as high-collision risk, and the species' population vulnerability (medium), together with the survey evidence that bat populations across the developments are relatively low, the loss of a small number of bats from a small local population has the potential to have a significant effect.

**8.215** However, there are mitigation measures that have been embedded into the design of both the consented Bhlaraidh Wind Farm Extension and the Proposed Development with the aim of avoiding/minimising bat fatalities. In accordance with NatureScot guidance<sup>2</sup>, a 50m (minimum) buffer will be preserved between blade tip and key habitat features such as watercourses to minimise collision risk and barotrauma at both sites. At the consented Bhlaraidh Wind Farm Extension, the turbine closest to the location of highest bat activity, the Allt Saigh, has been sited a minimum of 200m away. At the Proposed Development, the detector that recorded by the highest level of activity (near Loch Aslaich, approximately six times the activity of the detector with the next highest level) is located almost 1.9km away from the nearest turbine.

**8.216** Assessments of the Proposed Development and the consented Bhlaraidh Wind Farm Extension have concluded that effects on bats will be not significant and that, given the nature of the species and their relatively low use of each site, the local bat population will remain viable. As such, cumulative effects on bats during operation are considered unlikely and **not significant**.

## Interrelationship between Effects

**8.217** The potential for interrelationships between effects has been considered, specifically inter-relationships between effects described in **Chapter 9** and effects described in **Chapter 7**. No notable inter-relationships have been identified in this assessment with the exception of the discussion on hydrological connectivity of habitats noted above.

## Further Survey Requirements and Monitoring

**8.218** The development of an integrated monitoring plan for the Site is a key commitment in the OREP (**Appendix 8.5**). Implementation of the monitoring required under this plan will be the responsibility of the Restoration and Enhancement Steering Group (RESG).

**8.219** The need to update protected species surveys prior to construction will be addressed in the SPPs. This will include the following:

- Pre-construction surveys of all watercourse crossings during the survey season immediately prior to construction for water vole, and no more than six months prior to construction for otter.
- Pre-construction surveys of proposed infrastructure locations no more than six months prior to construction to assess the current status with regards badger and pine marten.

## Opportunities for Enhancement

### Outline Restoration and Enhancement Plan (OREP)

**8.220** The OREP sets out initial proposals for the restoration of habitats and the overall enhancement of the biodiversity of the Site. The main aim of the OREP is to improve the quality of existing bog and heathland habitats, and to establish and maintain native broadleaved woodland, riparian woodland and montane scrub within the Site. The OREP sets out objectives for the creation, enhancement and management of habitats of conservation interest, opportunities for habitat creation and management, and outline prescriptions to achieve these goals.

**8.221** A key measure of the OREP is the identification of areas of damaged and eroded peat proposed for restoration through measures including reprofiling and infill. The area of peatland proposed for reinstatement and restoration is approximately 8.7ha; this represents compensation for the identified direct loss of blanket bog habitats (approximately 8.9ha). Additional areas of possible peatland restoration have been identified within the wider Site comprising 6ha in total, although it is likely that the additional areas will not all be suitable for restoration. On the basis of the detailed assessment of restoration areas in the Outline PMP, it is estimated that

<sup>37</sup> In NatureScot guidance, 'collision' is taken to mean any form of injury or mortality associated with the operation of wind turbines, i.e. it includes barotrauma.

approximately 2ha of additional peatland restoration may be deliverable as enhancement within the wider Site. This indicates that full compensation for loss of blanket bog habitats can be achieved, with potential for additional meaningful enhancement.

**8.222** The OREP proposes the creation of extents of native broadleaved woodland, riparian woodland, and montane scrub. Riparian woodland and montane scrub represent SBL priority habitats, and montane tree species are listed as a priority in the Highland BAP. The Highland BAP includes a 50-year vision for the uplands, envisaging a mosaic of healthy and functioning habitats, with a natural transition from woodland to heath and montane scrub. Measures in the OREP have been developed to enhance the Site and contribute towards this vision.

**8.223** The woodland and scrub features will enhance the diversity and connectivity of habitats within the Site, thereby benefitting a range of ecological features including bats, pine marten and mountain hare; these species are listed on the SBL and are priority species in the Highland BAP. Otter and badger will also benefit from the additional connectivity and shelter, and both species are listed on the SBL.

**8.224** The OREP includes a programme of monitoring to ensure the efficacy of measures associated with peatland restoration, and habitat creation and management.

**8.225** In addition, a programme of monitoring regarding water vole is proposed, to allow an assessment of density and variation of the population, to explore its stability and/or vulnerability and allow for identification of any issues regarding predation. This species is listed on the SBL and is a priority species of the Highland BAP.

## Summary of Significant Effects

### Residual Effects Following Mitigation Measures

**8.226** The process of consultation, desk study and field study identified the following ecological features for assessment:

- Designated sites;
- Habitats;
- Bats;
- Otter;
- Badger;
- Pine marten; and
- Water vole.

**8.227** The assessment took into account embedded mitigation in the form of mitigation by design, micro-siting, and good practice measures.

**8.228** Construction effects on habitats and water vole were considered significant in EclA terms at the Local and Study Area level respectively, and operational effects on bats were considered significant in EclA terms at the Study Area level. However, with reference to **Table 8.4**, these are considered minor and not significant in an EIA context. As such, no significant effects in EIA terminology were identified on any ecological features.

### Residual Effects Following Enhancement Measures

**8.229** The measures detailed in the OREP will give rise to a greater diversity of habitats and resource availability, thereby resulting in benefits for ecological features considered in the assessment including habitats, bats, otter, pine marten and water vole. These effects are minor positive, and not significant.