

## 7 ECOLOGY

### 7.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Ackron Wind Farm (the Development) on the Ecological resource. This assessment was undertaken by Nicholas Wright, Principal Ecologist, at Arcus Consultancy, who is a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM), and a Chartered Environmentalist (CEnv) with the Society for the Environment (SocEnv). The Chapter has been technically reviewed Heather Kwiatkowski, Principal EIA Consultant at Arcus and by Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

Analysis and assessment of baseline ecological data have enabled the identification of appropriate mitigation and compensation measures to prevent, reduce, or offset potential adverse ecological effects, as well as provide enhancement, where possible.

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 Technical Appendices:

- Technical Appendix A7.1: Habitats and Botany Surveys;
- Technical Appendix A7.2: Protected Species Surveys;
- Technical Appendix A7.3: Bat Surveys; and
- Technical Appendix A7.4: Fisheries Habitat Survey

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a EIA Report Figures:

- Figure 7.1: Designated Sites;
- Figure 7.2: Extended Phase 1 Habitats Survey Results;
- Figure 7.3: Probable Ground Water Dependent Terrestrial Ecosystems (GWDTes);
- Figure 7.4: Bat Static Survey Locations; and
- Figure 7.5: Fish Habitat Survey Locations.

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects;
- Statement of Significance; and
- Glossary.

Potential ecological effects are often related to effects on ornithology, hydrology, geology and forestry. This Chapter should, therefore, be read in conjunction with **Chapter 4: Development Description; Chapter 5: EIA Methodology; Chapter 8: Ornithology; Chapter 12: Hydrology and Hydrogeology and; Chapter 13: Geology and Peat.**

## 7.2 LEGISLATION, POLICY AND GUIDANCE

The following key guidance, legislation and information sources have been considered in carrying out this assessment;

### 7.2.1 Legislation

- Council Directive 92/43/EEC (the Habitats Directive)<sup>1</sup>;
- Council Directive 2000/60/EC (Water Framework Directive)<sup>2</sup>;
- Wildlife and Countryside Act 1981 (as amended)<sup>3</sup>;
- Conservation (Natural Habitats, & c) Regulations 1994 (the Habitat Regulations)<sup>4</sup>;
- Wildlife and Natural Environment (Scotland) Act 2011<sup>5</sup>;
- Protection of Badgers Act 1992<sup>6</sup>;
- Nature Conservation (Scotland) Act 2004<sup>7</sup>; and
- Salmon and Freshwater Fisheries Act 2003<sup>8</sup>.

### 7.2.2 Policy and Guidance

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine<sup>9</sup>;
- General Pre-application/ Scoping Advice to Developers of Onshore Wind Farms<sup>10</sup>;
- Decommissioning and Restoration Plans for wind farms<sup>11</sup>;
- Good Practice During Wind Farm Construction<sup>12</sup>;
- Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems<sup>13</sup>;

<sup>1</sup> European Commission (1992) Council Directive 92/43/EEC the Conservation of Natural Habitats and of Wild Fauna and Flora [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN> (Accessed 09/07/20)

<sup>2</sup> European Commission (2000) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy [Online] Available at: [https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF) (Accessed 09/07/20)

<sup>3</sup> UK Government (1981) Wildlife and Countryside Act 1981, Chapter 69. Part 1 [Online] Available at: <http://www.legislation.gov.uk/ukpga/1981/69/section/1> (Accessed 09/07/20)

<sup>4</sup> Scottish Government (1994) The Conservation (Natural Habitats, &c.) Regulations 1994 [Online] Available at: <http://www.legislation.gov.uk/ukSI/1994/2716/contents/made> (Accessed 09/07/20)

<sup>5</sup> Scottish Government (2011) Wildlife and Natural Environment (Scotland) Act 2011 [Online] Available at: <http://www.legislation.gov.uk/asp/2011/6/contents/enacted> (Accessed 09/07/20)

<sup>6</sup> UK Government (1992) Protection of Badger Act 1992 [Online] Available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents> (Accessed 09/07/20)

<sup>7</sup> Scottish Government (2014) Nature Conservation (Scotland) Act 2004 [Online] Available at: <http://www.legislation.gov.uk/asp/2004/6/contents> (Accessed 09/07/20)

<sup>8</sup> Scottish Government (2003) Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 [Online] Available at: <http://www.legislation.gov.uk/asp/2003/15/contents> (Accessed 09/07/20)

<sup>9</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine [Online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> (Accessed 09/07/20)

<sup>10</sup> SNH (2020) General pre-application/ scoping advice to developers of onshore wind farms [Online] Available at: <https://www.nature.scot/general-pre-application-and-scoping-advice-onshore-wind-farms> (Accessed and)

<sup>11</sup> SNH (2016) Decommissioning and Restoration Plans for Wind Farms [Online] Available at: <https://www.nature.scot/sites/default/files/2019-10/Guidance%20-%20Decommissioning%20and%20restoration%20plans%20for%20wind%20farms%20-%20Feb%202016.pdf> (Accessed 09/07/20)

<sup>12</sup> Scottish Renewables, SNH, SEPA, Forestry Commission Scotland, Historic Environment Scotland (2015). Good Practice during Wind Farm Construction [Online] Available at: <https://www.nature.scot/sites/default/files/2019-05/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf> (Accessed 09/07/20)

<sup>13</sup> SEPA (2017) Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31. Version 3, [Online] Available at: <https://www.sepa.org.uk/media/144266/lups-qu31-guidance-on->

- Planning Guidance on On-shore Windfarm Developments<sup>14</sup>;
- European Union (EU) Biodiversity Strategy<sup>15</sup>;
- 2020 Challenge for Scotland's Biodiversity<sup>16</sup>; and
- Scottish Biodiversity List (SBL)<sup>17</sup>.

In addition to the above, guidance relating to the ecology of species and habitats and to survey and assessment methods are cited in full, where appropriate, in the relevant parts of this Chapter and associated Technical Appendices. Work has been carried out in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development<sup>18</sup> by ecologists working to the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct<sup>19</sup>.

## 7.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### 7.3.1 Scoping Responses and Consultations

Consultation was undertaken with a number of organisations. A summary of key Statutory responses, as well as a reference to where these comments are addressed the Chapter are presented in Table 7.1, below.

**Table 7.1 Consultation Responses**

Consultee	Date	Summary of Consultation Response	Addressed within Chapter
The Highland Council (THC)	6 <sup>th</sup> June 2020 (scoping response)	The ES should provide a baseline survey of the plants (and fungi) and trees present on the site to determine the presence of any rare or threatened species.	Section 7.4.2: Baseline Survey Methodology
		The ES should identify rare, protected, threatened and priority habitats. Habitat enhancement and mitigation measures should be included.	Section 7.4.2: Baseline Survey Methodology  Section 7.6.5: Outline Habitat Management Plan in Enhancements
		The ES needs to address the aquatic interests within local watercourses, including down-stream interests that may be affected by the development. The ES should evidence consultation input from the local fishery board(s) where relevant.	Section 7.3.1 Scoping Responses and Consultation  Section 7.4.2: Baseline Survey Methodology
NatureScot <sup>20</sup>	6 <sup>th</sup> May 2019 (scoping response)	NatureScot advise that any Otter surveys undertaken should be assessed and presented in the context of	Section 7.4.2: Baseline Survey Methodology

[assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf](#) (Accessed 09/07/20)

<sup>14</sup> SEPA (2014) Planning guidance on on-shore windfarm developments. Land Use Planning System SEPA Guidance Note 4. Version 9 [Online] Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf> (Accessed 09/07/20)

<sup>15</sup> European Commission (2011) EU Biodiversity Strategy [Online] Available at: [http://ec.europa.eu/environment/nature/biodiversity/strategy/index\\_en.htm](http://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm) (Accessed 09/07/20)

<sup>16</sup> Scottish Government (2015) Scotland's Biodiversity, a Route Map to 2020 [Online] Available at: <https://www.gov.scot/publications/scotlands-biodiversity-route-map-2020/> (Accessed 09/07/20)

<sup>17</sup> Scottish Government (2013) Scottish Biodiversity List [Online] Available at: <https://www2.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL> (Accessed 09/07/20)

<sup>18</sup> BSI Group (2013). BS 42020:2013 – a code of practice for biodiversity in planning and development. BSI.

<sup>19</sup> CIEEM (2019). Code of Professional Conduct [Online] Available at: <https://cieem.net/resource/code-of-conduct/> (Accessed 09/07/20)

<sup>20</sup> Scottish Natural Heritage (SNH) rebranded in August 2020 as NatureScot. Where relevant reference is still made to SNH within this chapter in respect of guidance which remains valid and is yet to be republished etc.



### **7.3.2 Scope of Assessment**

The key issues for the assessment of potential Ecological effects relating to the Development are as follows;

- Direct and indirect impacts on nearby designated sites and their qualifying interests, including those which may result in adverse effects on the integrity of Caithness and Sutherland SAC and Ramsar;
- Direct and indirect habitat loss and disturbance - temporary or permanent loss to terrestrial and aquatic habitats;
- Turbine-related bat mortality - death or injury by collision with the turbine blades; and;
- Indirect and direct effects on protected fauna including, but not limited to, otter, pine marten, water vole, and Salmonid fish

### **7.3.3 Scope of Assessment**

In summary, the scope of the Ecological Impact Assessment (EcIA) includes the following elements:

- Identification of designated sites of nature conservation interest;
- Identification of records of rare, notable or protected species or habitats;
- Consideration of the likely significant effects on ecological features arising due to the Development;
- Description of measures required to mitigate adverse effects on ecological features within or adjacent to the Site, with the aim to avoid, reduce or compensate for the effect, or offer an opportunity for enhancement; and
- Identification of residual effects on ecological features, including those considered to be significant, taking into account the above mitigation.

The principal ecological issues considered in this EcIA include:

- Potential effects on sites designated for nature conservation;
- The harm and disturbance, both direct and indirect, to habitats and species arising from the construction, operation and decommissioning of the Development; and
- The potential legal implications of the above impacts.

## **7.4 BASELINE METHODOLOGY**

### **7.4.1 Desk Study Methodology**

A desk study was conducted in October 2019 to obtain information about relevant designated nature conservation sites and records of habitats and species. The desk study searched for records of statutory and non-statutory sites of nature conservation, protected species, and priority habitats and species for nature conservation listed in the LBAP and the SBL. The Desk Study Area (DSA) comprised of a variety of areas around the Site, as follows:

- A radius of 5 km from the Site was searched for internationally designated statutory sites for nature conservation (e.g. SAC or Ramsar sites) and nationally designated statutory sites (e.g. SSSIs);
- A radius of 2 km from the Site was searched for non-statutory sites;
- A radius of 5 km from the Site was searched for records of notable or protected species; and
- A radius of 2 km from the Site was searched for records of invasive, non-native species.

Information on the above was requested from the following:

- The Highland Biological Recording Group (HBRG); and
- Flow Country Rivers Trust (FCRT).

Additional information was obtained from publicly available sources and is cited in the relevant parts of this Chapter and Technical Appendices, where relevant.

#### **7.4.2 Baseline Survey Methodology**

Baseline ecology surveys were undertaken between February 2019 and January 2020. An overview of the survey methods is provided below and full details are presented in Appendices A7.1-A7.4.

##### **7.4.2.1 Phase 1 Habitat Survey**

A Phase 1 Habitat Survey of the Site, including a 250 m buffer, was undertaken by Botanaeco, on behalf of Arcus, in June and September 2019 and followed standard Joint Nature Conservation Committee (JNCC) survey methods<sup>21</sup> (Appendix A7.1). Phase 1 Habitat Survey is a standard method for classifying and mapping British habitats.

In addition, the Phase 1 Habitat Survey aimed to identify wetland habitats in accordance with the habitat's descriptions given in 'A Functional Wetland Typology for Scotland' guidance<sup>22</sup>. Where wetland habitats were identified, further detailed surveys were undertaken for identification of vegetation communities with potential groundwater dependency in accordance with Scottish Environment Protection Agency (SEPA) guidance<sup>23</sup>.

##### **7.4.2.2 National Vegetation Classification Survey**

A National Vegetation Classification (NVC) survey was undertaken on all wetlands and habitats of conservation value recorded during the Phase 1 Habitat survey. The NVC survey involved mapping distinct areas of homogenous vegetation and recording detailed descriptions of the vegetation communities, with reference to published community descriptions<sup>24,25,26</sup>. Full methods are presented in Appendix A7.1.

##### **7.4.2.3 Protected Species Survey (excluding bats)**

Protected Species Surveys, with the exclusion of wildcat surveys, were carried out between May and September 2019 (Appendix A7.2). A Wildcat Walkover Survey was undertaken in January 2019 (Appendix A7.2). The Protected Species Surveys encompassed all land within the Site and extended up to a 250 m radius (Ecology Survey Area), in line with NatureScot guidance<sup>27</sup>. The 250 m radius included all species considered likely to be present, but the area surveyed for each species varied depending on species-specific survey guidelines and best practise<sup>27</sup>, as outlined below:

---

<sup>21</sup> JNCC (2010) Handbook for Phase 1 Habitat Survey: A technique for environmental audit. 5<sup>th</sup> Edition

<sup>22</sup> SNIFFER (2009) WFD95: A Functional Wetland Typology for Scotland – Field Survey Manual. Version 1.

<sup>23</sup> SEPA (2009) Land Use Planning Systems SEPA Guidance Note 4 Planning Guidance on on-shore windfarms developments [Online] Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf> (Accessed 09/07/20)

<sup>24</sup> Rodwell, J. S (ed.) (1991 *et seq.*). *British Plant Communities. Vol 1–5*. Cambridge University Press

<sup>25</sup> Elkington, T., Dayton, N., Jackson, D. L. and Strachan, I. M. (2001). *National Vegetation Classification: Field Guide to Mires and Heaths*. Joint Nature Conservation Committee, Peterborough

<sup>26</sup> Averis, B., Birks, J., Horsefield, D., Thompson, D. and Yeo, M. (2004). *An Illustrative Guide to British Upland Vegetation*, JNCC, Peterburgh

<sup>27</sup> SNH (2020) Protected Species Advice for Developers. Guidance on Planning and Protected Animals [Online] Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species>

- Badger (*Meles meles*): Suitable habitats within the Site and extending up to 100 m from the Site;
- Otter (*Lutra lutra*): Suitable riparian habitats within the Site and extending up to 200 m up- and downstream of watercourses potentially impacted by the Development;
- Pine marten (*Martes martes*): Suitable habitats within the Site and extending up to 250 m from the Site;
- Water vole (*Arvicola amphibius*): Suitable riparian habitats within the Site and extending up to 50 m up- and downstream of watercourses potentially impacted by the Development; and,
- Wildcat (*Felis silvestris*): Suitable habitats within the Site and extending up to 200 m from the Site.

#### **7.4.24 Bat Surveys**

Bat surveys were carried out with reference to NatureScot guidelines published in 2019<sup>28</sup>, between April and October 2019 (the Survey Season), with all survey work undertaken by Arcus. The Site was considered to be of low risk to bats. This was established with consideration of the site risk assessment criteria as presented within NatureScot survey guidelines<sup>28</sup> (full details are provided in Appendix A7.3) in conjunction with the professional opinion of Arcus' bat ecologists.

##### *Automated Static Surveys*

The Survey Season comprises of the following three seasonal Survey Sessions, which current NatureScot guidance defines as follows;

- Survey Session 1: April/May (Spring);
- Survey Session 2: June-mid-August (Summer); and,
- Survey Session 3: Mid-August-October (Autumn).

A total of ten full spectrum Anabat Swift bat detectors (hereby referred to as Anabats), were deployed at ground level (detectors secured to 1 m high posts) for a minimum of ten consecutive nights across a range of habitat types, as per NatureScot guidance (see Figure 7.4: Bat Static Survey Locations). The AnaBats were set to record from approximately half an hour before sunset until approximately half an hour after sunrise.

In order to collect comparative data, AnaBats were deployed at the same six Remote Static Survey Locations across the three Survey Sessions. However, due to changes in turbine layout during surveying, Session 2 and 3 had four different locations to Session 1 and did not record at four RSSLs that were previously recorded in Session 1.

AnaBats were also located to allow for comparisons in recorded bat activity between two broad dominant habitat types; these are defined as open (i.e. open areas lacking high value linear habitat features with 50 m), or edge (i.e. within 50 m of woodland edges, or a linear feature such as a hedgerow or watercourse).

Limitations: Due to a change in turbine layout, four survey locations (E, H, I & J) were changed after Session 1. Although this reduced some of the comparative value of temporal data, it increased the spatial coverage of survey data over the entire survey period. This is considered to have had a negligible impact on the robustness of the data collected, and will not affect the accuracy of the assessment for which it helped inform.

Due to an unprecedented data storage error, all data for Session 1, originally carried out in April 2019, was lost. As a result, Session 1 had to be carried out again in the 1<sup>st</sup> week June 2019. As the survey period was only one week outwit the advised spring survey

---

<sup>28</sup> SNH (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019. Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, ScottishPower Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust

period, it is considered a minor deviation from guidance that had a negligible impact on the robustness of the data collected, and will not affect the accuracy of the assessment for which it helped inform.

Additionally, NatureScot reported via consultation that in their opinion, the late timing of the spring survey was unlikely to make much difference to the overall findings, given the exposed and north location of the Site. Furthermore, the necessary amendments to the summer and autumn surveys were not likely to alter the conclusions, especially as the preliminary bat assessment in July and August suggested very low levels of foraging activity.

#### *Roost Surveys*

No specific Roost Surveys were carried out. However, initial walkovers of the Site, including during Phase 1 Surveys and Protected Species Surveys, did not identify any features with suitability to support roosting bats within the Bat Survey Area. This was due to the dominance of habitats within the Site by coniferous plantation woodland. Coniferous trees generally show low to negligible potential to support bats due to their lack of potential roosting features.

### **7.4.25 Fisheries Surveys**

Fisheries Habitat Surveys were carried out in September 2019 by Mhor Environmental. The aim of the Fish Habitat Surveys was to undertake a detailed assessment of watercourse bankside and habitat quality along the Giligill Burn, Akran Burn, Halladale River and various tributaries within and in close proximity to the Site, to determine the potential of watercourses to support sensitive fish species such as salmonid fish (Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*)), lamprey species, European eel (*Anguilla anguilla*) and freshwater pearl mussel (*Margaritifera margaritifera*)

Surveys were carried out across a total of ten Survey Locations (see Figure 7.5) including, the Giligill Burn and its associated tributaries, the Akran Burn and a single 'control' site, located outwith the Site Boundary on the River Halladale.

Fisheries Habitat Survey used a 'combined' survey methodology incorporating several a widely used survey and assessment methods to characterise in-stream habitats for potentially sensitive species. These include Scottish Fisheries Co-ordination Centre (SFCC) (2007) walkover protocols, methods developed by Hendry and Cragg-Hine (1997) and methods endorsed by Environment Agency (2003) to determine the Fish Utilisation Potential (FUP) and Fish Habitat Quality (FHQ) of watercourse that may be impacted by the Development.

To determine FUP, various habitat criteria detailed within the above methodologies were considered, including, but not limited to, cover provided by habitat, barriers to fish migration, channel modifications, and point and diffuse pollution. To determine FHQ, flow and substrate types were considered to determine the value of each instream habitat for fish species of consideration concern, considering the habitat requirement for various life stages.

#### *Limitations*

Due to a minor change in the Site Boundary following the completion of surveys, three Survey Locations (AK 1, 3 and 5, see Appendix 7.4) which were originally within the Site Boundary now lie marginally (50-200m) outside it. As the Survey Locations and the Site Boundary share such close proximity are all still directly connected to watercourse within the Site, the assessment of these watercourses has not been compromised by the minor post survey change in Site Boundary.



## 7.5 ASSESSMENT METHODOLOGY

The approach taken to impact assessment follows guidance for EcIA<sup>9</sup> which sets out the process for assessment broadly through the following stages:

- Determining importance of baseline ecological features, including identification of Important Ecological Features (IEFs);
- Identification, assessment and characterisation of ecological effects;
- Incorporation of measures to mitigate identified effects;
- Assessment of significance of residual effects following mitigation;
- Identification of appropriate compensation to offset significant residual effects; and
- Identification of opportunities for ecological enhancement.

### 7.5.1 Determining Importance

One of the key challenges in EcIA is to decide which ecological features are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be most important and potentially affected by the project. In EcIA, 'importance' of an ecological feature is a synonymous with 'sensitivity', and is defined within a geographical context. Some examples of the criteria used to determine importance are defined in Table 7.2.

Upon the identification of the potential direct and indirect effects from the Development, it was necessary to undertake a systematic assessment of importance to determine the IEFs. IEFs are ecological features that could be 'significantly' affected by the Development, both negatively and positively.

In this EcIA, only ecological features with regional importance and above (as defined in Table 7.2 below) were considered sufficiently important to be determined as IEFs, and in accordance with guidance published by the CIEEM<sup>29</sup>, only these IEFs required assessment for potential significant effects.

**Table 7.2: Geographic Context of Important Ecological Features**

Level of Importance/ Sensitivity	Determination Criteria
International Very High Importance	<p>The population has little or no ability to absorb change without fundamentally altering its present character (e.g. a rare and sensitive species in substantial decline)</p> <p>An internationally designated site (e.g. an SAC) or a site meeting criterion for international designations.</p> <p>Species present in internationally important numbers (&gt; 1 % of biogeographic populations).</p>
National (i.e. Scotland) High Importance	<p>The population has low ability to absorb change without fundamentally altering its present character (e.g. an uncommon or rare species in decline, or a common species in substantial decline)</p> <p>A nationally designated site (e.g. SSSI) or a site meeting criterion for national designations.</p> <p>Species present in nationally important numbers (&gt; 1 % Scottish population).</p> <p>Large areas of priority habitats listed on Annex I of the Habitats Directive and smaller areas of such habitats that are essential to maintain the viability of that ecological resource.</p>

<sup>29</sup> CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management, Winchester.

Level of Importance/ Sensitivity	Determination Criteria
Regional Importance (i.e. Highland Council Area) Medium Sensitivity	The population has moderate capacity to absorb change without significantly altering its present character (e.g. an uncommon or rare but stable species, or a common/widespread but declining species). Species present in regionally important numbers (> 5 % Highland population). Sites not meeting criteria for SSSI selection but of greater than the regional criteria below. Priorities within the Highland Local Biodiversity Action Plans (LBAP), where they occur in sufficient abundance to maintain the local resource.
Local Importance (i.e. Caithness West Community Council Area) Low Sensitivity	The population is tolerant of change without detriment to its character (a common/widespread species with a stable population status, or an uncommon species with an improving status). A species or habitat of low conservation value. Scottish Wildlife Trust (SWT) Reserves and Local Nature Reserves (LNRs). Areas of habitat or species considered to appreciably enrich the ecological resource within the area local to the Site.
Less than Local Importance (Site wide) Negligible Sensitivity	The population is resistant to change (e.g. a common/widespread species that is improving its range and abundance). Population of little conservation value. Usually widespread and common habitats and species. Loss of such a species from the Site would not be detrimental to the ecology of the local area.

Habitats and species of nature conservation importance are identified through policies and legislation. For example, habitats and species of international importance are listed on Annex I of the Habitats Directive. Where these are considered of principal importance for biodiversity in Scotland, these features are also listed in the Nature Conservation (Scotland) Act. Other features of importance may be listed on the Scottish Biodiversity List or as LBAP priorities. These elements provided a crucial starting point for the identification of IEFs requiring consideration in EcIA; however, they did not solely determine the level of importance assigned, (with the exception of internationally designed Natura 2000 sites).

Expert judgement also was applied to determine the level of importance and to identify IEFs. When determining the importance in the context of EcIA, contextual information regarding the value of the site to the species as well as distribution and abundance of a given species was considered. For example, an uncommon species is recorded, but it is known to be widespread and common locally, and its range is regionally and nationally stable (regional importance as per Table 7.2), but habitats on Site are of low value to the species, the local population may be determined to be of local importance, or potentially less than local.

Alternatively, a population of an uncommon species is improving regionally and nationally (local importance as per Table 7.2), but habitats on site are of high value and relatively rare regionally, the species is likely to constitute a notable proportion of a regional population, and therefore the local population may be considered to be of at least regional importance.

Additionally, in accordance with CIEEM guidance, where a legally protected species was present within the zone of influence and there is potential for a breach of legislation, such species was considered to be an IEF.

### 7.5.1.1 *Characterisation of Potential Effects*

In line with the CIEEM EcIA guidance where possible, consideration is given to the following characteristics when identifying potential effects of the Development on IEFs:

- **Nature of effect:** whether it is positive (beneficial) to IEFs, e.g. by increasing species diversity or extending habitat, or negative (detrimental), e.g. by loss of, or displacement from, suitable habitat;
- **Extent:** the spatial or geographical area over which the effect may occur;
- **Duration:** the duration of an effect as defined in relation to ornithological characteristics (such as a species' life cycle) as well as human timeframes. It should also be noted that the duration of an activity may differ from the duration of the resulting effect; e.g. if short-term construction activities cause disturbance to breeding birds, there may be long-term implications from failure to reproduce that season;
- **Frequency:** the number of times an activity occurs may influence the resulting effect; and
- **Timing:** this may result in an impact on an ecological feature if it coincides with critical life stages or seasons.

### 7.5.2 *Magnitude of Effect*

The magnitude of potential effects will be identified through consideration of the above effect characteristics, to determine the degree of change to baseline conditions predicted as a result of the Development. The criteria for assessing the magnitude of an effect are presented in Table 7.3.

**Table 7.3 Framework for Determining Magnitude of Effects**

Magnitude of Effects	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material, partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

### 7.5.3 *Significance of Effect*

Significance is a concept related to the weight that should be attached to effects when decisions are made. A significant effect is simply an effect that is sufficiently important to require that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission.

To determine significance in other chapters within this EIA Report a matrix approach has been used. This is widely used in EIA to provided consistency across all the topics and clarity to decision makers. However, as CIEEM guidance discourages the use of the matrix approach, it has not been used within this Chapter.

For the purposes of the EcIA, the significance of effect was defined as an effect that either supports or undermines biodiversity conservation objectives for IEFs, or for biodiversity in general. Conservation objectives may be specific, broad or wide-ranging; therefore, effects can be considered as significant at a wide range of geographic scales.

For defined sites or ecosystems, significant effects encompass impacts on the structure and function of such systems. For designated sites, it is necessary to assess whether or not an impact will affect the integrity of a site or ecosystem (and is therefore significant). This is achieved through understanding whether the changes arising from the

Development are likely to move the baseline conditions closer to, or further from, the condition which constitutes integrity for that specific system.

For habitats and species, consideration of conservation status is required to determine whether or not an effect on a habitat or species is likely to be significant. For habitats, conservation status is determined by the sum of influences acting on the habitat that may affect its extent, structure and functions, in addition to its distribution and typical species composition within a given geographical area. For species, conservation status is determined by the sum of influences acting on the species concerned, which may affect its abundance and distribution within a given geographical area. When assessing potential effects on conservation status, the known or likely background trends and variations in status are taken into account. Estimation is also given to the level of ecological resilience or conditions that would allow the population of a species or area of habitat to continue to exist at a given level, such as to increase along an existing trend or to reduce a decreasing trend.

Where identified, the significant effects should be qualified with reference to an appropriate geographic scale. It is important to note that the geographic scale of the significant effect, may not be the same as the geographic scale in which the feature is considered important. This enables consistency in scale when determining appropriate mitigation or compensation solutions.

Significance of the potential effects on each identified IEF is determined through professional judgement, by considering both the nature conservation importance of each feature and the degree to which it may be affected (the effect magnitude) by the Development.

#### **7.5.4 Cumulative Effects**

Cumulative effects can result from individually insignificant, but collectively significant actions, taking place over a period of time or concentrated in a location. Within EcIA, cumulative effects are particularly important as many ecological features are exposed to background levels of threat or pressure and may be close to reaching critical thresholds where further impact could cause irreversible decline. It is recognised that different actions can cause cumulative effects as follows:

- Additive/incremental effects: multiple activities/projects may give rise to a significant effect due to their proximity in time and space. These may be additive or synergistic effects; and
- Ancillary: ancillary developments may include different aspects of the project which may be authorised under different consent processes, these will be included as part of the cumulative assessment.

#### **7.5.5 Residual Impacts**

Following the assessment of effects, including incorporation of embedded mitigation, all attempts will be made to avoid and mitigate significant effects. Where significant effects are predicted, further specific, applied mitigation is detailed. Following the application of this mitigation, an assessment of residual effects will be undertaken to determine the final significance of effects.

Where residual effects remain significant or require application of compensatory measures, these will be considered against the relevant policy and legal objectives to determine the outcome of the application.

## 7.6 EMBEDDED MITIGATION & GOOD PRACTISE

Application of the 'mitigation hierarchy' has been achieved throughout the Development process, with the identification and incorporation of methods for the avoidance of impacts and application of embedded mitigation. Measures to avoid or reduce potential ecological effects has been incorporated into the design of the Development ('embedded mitigation'). This includes 'mitigation by design' whereby aspects of the Development have been re-designed to avoid or reduce ecological effects. This type of mitigation is particularly beneficial for ecological resources as there is greater certainty that it will be delivered.

Mitigation by 'good practice' is the active implementation of widely used good practise measures during the Development process. Although not 'embedded mitigation' by definition, mitigation by good practise forms an integral part of the development process.

As 'mitigation' is only applied to prevent, reduce or offset any specific significant adverse effects on IEFs, mitigation by good practise is introduced to ensure the safeguarding or the wider natural environment, including features that may have not been included in the EIA process, either as they were absent, and/or not considered of sufficiently important at the time.

Embedded mitigation, including the implementation of good practise, is taken into consideration when undertaking the assessment of significant effects. If significant effects are predicted further 'mitigation' is required to be detailed.

### 7.6.1 Mitigation by Design

Ecological features have been considered at all stages of the Development design, from initial feasibility to final layout. This has helped to avoid or greatly reduce impacts on IEFs and other ecological features. A critical design consideration has been the avoidance of habitats with high conservation value and potential groundwater dependency, which has been largely achieved by siting the majority of the Development infrastructure in coniferous plantation and making use of existing forestry tracks.

The sensitive designs (e.g. of watercourse crossing and culverts) presented in **Chapter 4: Development Description** of this EIA Report have been developed to safeguard the water environment, will also help effectively mitigate construction-related direct and indirect impacts to fish and other aquatic features.

Good practice design mitigation measures will be adopted to minimise the risk of bats colliding with operational turbines, in accordance with NatureScot published guidance<sup>Error! Bookmark not defined.</sup>. Turbines will have a 50 m separation distance between blade tips and high-value bat habitats, such as woodland, riparian habitats, and forest edges.

### 7.6.2 Mitigation by Good Practice:

#### 7.6.2.1 Construction

In addition to the incorporation of effective mitigation through Development design, the following sections outline mitigation of Development impacts through practice, particularly with the aim of safeguarding of protected species during Development construction and operation and to restore and enhance peatland habitats. It is anticipated that these elements will be included in a Habitat Management Plan (HMP) (see Section 7.6.5 below) and relevant Protection Plans, as part of the wider environmental management of Development construction and operation.

### *Ecological Clerk of Works*

A suitably qualified and experienced Ecological Clerk of Works (ECoW) will be appointed to provide ecological and environmental advice during construction, including the monitoring of compliance with the recommendations of this EIA Report and subsequent planning conditions.

Before construction begins, the ECoW and the project hydrologist will undertake a review of design and drainage plans to inform the requirement for micro-siting, to minimise the potential for effects to habitats of conservation concern, and to assist in the identification of appropriate locations for commencement of habitat restoration works. Where possible, the ECoW will advise on the drainage design to minimise hydrological disruption and reduce the risk of scour and erosion. The ECoW will also monitor and advise on the implementation of pollution prevention and good working practices throughout construction, to protect both terrestrial and aquatic ecosystems from accidental pollution.

### *Construction Phase Mitigation for Protected Species*

Pre-construction Surveys for protected species, such as otter, badger, pine marten and water vole, will be undertaken to provide up-to-date information about the distribution and abundance of the protected species identified in the baseline. The results of the surveys will inform the need for and scope of Species Protection Plans and associated mitigation and licencing requirements, all of which will be developed in line with NatureScot guidance.

### *Construction Phase Mitigation for Habitats*

A detailed HMP will be produced to inform and guide the commencement of practical habitat creation and restoration techniques during Development construction, with the aim of effective management of construction activities and commencement of restoration works. In accordance with NatureScot guidance<sup>30</sup>, the role of the HMP will be to set out how the works will mitigate or compensate for the impacts of the Development and to outline how the natural heritage interest (i.e. the peatland habitats) of the area will be enhanced.

### *Construction Phase Mitigation for GWDTEs*

Good practice design and construction and measures outlined in the Water Construction Environmental Management Plan (provided as an appendix in the CEMP in Appendix A4.1) will minimise potential indirect effects of the Development on GWDTEs during construction phase.

Prior to access track construction, site operatives will identify flush areas, depressions or zones which may concentrate water flow. These sections will be spanned with plastic pipes or drainage matting to ensure hydraulic conductivity under the road, and reduce water flow over the road surface during heavy precipitation.

If required, wind turbine foundations may be dewatered, temporarily lowering water levels in the superficial deposits and near-surface groundwater. The dewatering process would involve the treatment of any extracted water to remove any sediment and redistributing the water onto a vegetated surface in proximity to the excavation. This process would not involve any net loss of water from the hydrological system and would ensure that the water being treated is of the same (or similar) quality to what was extracted. Hence, there would not be an unacceptable effect on groundwater or near-surface water supplying GWDTEs.

---

<sup>30</sup> SNH (2016) Planning for development: what to consider and include in habitat management plans. Version 2 [Online] Available at: <https://www.nature.scot/guidance-planning-development-what-consider-and-include-habitat-management-plans> (Accessed 29/11/19)

Further information on the embedded hydrological migration measures are detailed in EIA Report **Chapter 12: Hydrology and Hydrogeology**.

### **7.6.2.2 Construction Phase Mitigation for Aquatic Habitats**

Mitigation presented with in **Chapter 12: Hydrology and Hydrogeology** of this EIA Report to safeguard the water environment, will also effectively mitigate construction-related impacts to fish such as the direct and indirect effect of pollution and sedimentation from in-stream works and surface water run-off.

As part of an ongoing monitoring assessment it is recommended that pre-construction (baseline) fully-quantitative electrofishing surveys fish fauna surveys are undertaken. It is recommended that they are completed at survey locations AK3, AK4, AK5, AK6, AK7, AK8, AK9 and AK10 plus an additional survey location downstream of the confluence between the Halladale River and Akran Burn. Should results of pre-construction surveys indicate salmonid populations within watercourses, it is recommended that further monitoring is carried out annually during construction and for two years post-construction.

This monitoring will compliment water quality monitoring recommended in **Chapter 12: Hydrology and Hydrogeology** to ensure the safeguarding of the water environment and important aquatic features.

### **7.6.3 Mitigation by Practice: Operation**

To minimise the risk of bats colliding with operational turbines, the 50 m separation distance between blade tips and high-value bat habitats implemented during construction, will be maintained throughout the operational life of the Development by ensuring that tree regeneration does not encroach on the buffer.

### **7.6.4 Mitigation by Practice: Decommissioning**

Decommissioning activities are anticipated to be of a similar character to those of Development construction and so the construction phase embedded mitigation outlined above is considered appropriate to the decommissioning phase.

### **7.6.5 Enhancement**

#### **7.6.5.1 Outline Habitat Management Plan**

Habitat Management will be implemented in accordance with the Ackron Wind Farm HMP. It is anticipated that with the detailed HMP will be written and developed in full following consent, and in consultation with NatureScot and the Highland Council, where relevant, however a high-level summary is outlined below.

Upon consent, the development of the HMP will be informed, where necessary, by further site appraisal to ensure the appropriate methods and plans are to be implemented.

Once developed, the HMP will remain an active document and will be reviewed on a regular basis by appropriate stakeholders.

#### *Blanket Bog Restoration*

Peatland habitats are extensive across the Site and include some areas of good quality and near natural blanket bog; however, away from the near-natural hollows, the blanket bog vegetation has been extensively modified by a combination of grazing, drainage and peat-cutting.

The HMP, which will be fully developed post-consent, will aim to increase the biodiversity value of areas of degraded habitats within the Site, by restoring damaged and degraded blanket bog from the long-term management effects, but will, as a minimum, compensate for the direct loss of blanket bog habitats as a result of the Development.

In addition, the gradual degradation of these peatlands results in the slow release of carbon into the atmosphere; a contributor to global warming. As a result, the Scottish Governments Draft Climate Change Plan details its policy to “*increase the annual rate of peatland restoration to 20,000 hectares per year*”. Restoring of peatlands within the Site would contribute to reducing the impacts to global warming and positively contribute to the Scottish Government’s aim.

The Bog Restoration Area is yet to be fully defined, but it is considered likely to include restorable peatland habitats outwith close proximity to turbines, in north-east of the Site near Giligill Burn, which currently comprises of drained peatland habitats (defined as ‘3 Drained’ peatland in T.A 7.1). Other potential areas include areas of drained peatland in the south-east of the Site, adjacent to the SAC boundary.

The Bog Restoration Area will be considered a suitable on the following basis:

- Peat depth data indicated that the Bog Restoration Area comprises peat depths suitable for restoration (greater than 0.5 m);
- If possible, the Bog Restoration Area will be of sufficient scale to increase the current coverage of blanket bog in the Site, bringing additional benefit, but will be, as a minimum, equivalent in extent to the area of blanket bog to be lost by the Development;
- Focus on restoring historically drained and degraded peatland habitats currently at greatest risk of contributing to climate change through the release of carbon into the environment;
- Restoration of blanket bog will increase the value of the habitats to support rare plants, invertebrates, mammals and birds; and
- Restoration of blanket bog will not increase the potential risk of the Development to ground nesting birds associated with the adjacent Caithness and Sutherland Special Protection Area (SPA).

Further details regarding the effect of the bog restoration on local species, habitats and designated sites are detailed in Section 7.6 of this Chapter and **Chapter 8: Ornithology** of the Ackron Wind Farm EIA Report.

It is important to note that the assessment of the effects of bog restoration measures will be precautionary, as the full extent and scope of HMP works are yet to be determined. The assessment will assume that as a minimum the HMP will compensate for the direct loss of blanket bog as a result of the Development. However, as the direct loss of blanket bog is minimal (see Section 7.9.2), it is reasonable to assume that the HMP will more than compensate for direct losses.

Extensive areas of the Site are considered suitable for deer grazing, and this is likely to have at least in part led to the notable degradation of peatland habitats. Therefore, to ensure the success of habitat management, mitigation of the impacts of deer on bog restoration, and any consequent implications on local deer management, will need to be appropriately considered within the HMP.

## **7.7 BASELINE CONDITIONS**

### **7.7.1 Desk Study Results**

#### **7.7.1.1 Statutory Designated Sites**

Six statutory designated sites were recorded within the DSA. Information relating to these statutory designated sites is provided in Figure 7.1, provided in Volume 2a, and in Table 7.4 below.



**Table 7.4: Statutory Designated Sites within 5 km of the Site**

Name	Designation	Approximate Distance and Direction from the Site	Relevant Key Designated Features
Caithness and Sutherland Peatlands	SAC	Adjacent to South	<ul style="list-style-type: none"> <li>• Acid peat-stained lakes and ponds</li> <li>• Blanket bog</li> <li>• Clear-water lakes or lochs with ... poor to moderate nutrient levels</li> <li>• Depressions on peat substrates</li> <li>• Marsh saxifrage</li> <li>• Otter</li> <li>• Very wet mires often identified by an unstable `quaking` surface</li> <li>• Wet heathland with cross-leaved heath</li> </ul>
	Ramsar		<ul style="list-style-type: none"> <li>• Blanket bog</li> </ul>
East Halladale	SSSI	Adjacent south-east (included within Caithness and Sutherland Peatlands)	<ul style="list-style-type: none"> <li>• Blanket bog</li> </ul>
Strathy coast	SSSI	0.8km north-west	<ul style="list-style-type: none"> <li>• Machair</li> <li>• Maritime cliff</li> <li>• Sand dune</li> <li>• Saltmarsh</li> <li>• Vascular plant assemblage</li> </ul>
Red Point Coast	SSSI	1.3 km north	<ul style="list-style-type: none"> <li>• Maritime cliff</li> <li>• Scottish primrose (<i>Primula scotica</i>)</li> </ul>
West Halladale	SSSI	1.9km south-west	<ul style="list-style-type: none"> <li>• Blanket bog</li> </ul>
Sandside Bay	SSSI	1.9 km north	<ul style="list-style-type: none"> <li>• Sand dunes</li> </ul>

### 7.7.1.2 Non-statutory Sites

There were no non-statutory Designated sites, such as Local Nature Reserves or Local Wildlife Sites in the DSA.

The Carbon and Peatland Map predicts extensive peatland across the Site (See TA 7.1, Map 3). In the eastern parts of the Site, the peatland is predicted to be 'Class 1' and in the west, 'Class 2'. Class 1 and 2 peatland defines "*nationally important carbon-rich soils, deep peat and priority peatland habitat*". They are distinguished by Class 1's likelihood of "high conservation value" and Class 2's "potentially high conservation value and restoration potential"<sup>31</sup>.

There are no Ancient Woodland Inventory Sites within the Site. The closest such site is 2.6 km to the north-east.

Under the Water Framework Directive (WFD) the Halladale River, located west of the Site, is classified by SEPA as having an overall status of Moderate, with an overall

<sup>31</sup> SNH (2016) Carbon-rich soils, deep peat and priority peatland habitat mapping Consultation analysis report. Available online at: <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> (Accessed online 20/10/2020)

ecological status of Moderate (and good status for fish ecology)<sup>32</sup>. Furthermore, Marine Scotland Science define both the Akran Burn and Halladale River as designated 'Scottish Salmon Rivers'<sup>33</sup>.

### 7.7.13 Proposed Flow Country World Heritage Site

It is acknowledged that an application has been made to designate the peatland within Caithness and Sutherland (defined as 'The Flow Country') as a 'World Heritage Site' (WHS). A WHS is a landmark or area with legal protection by an international convention administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Although the area has not yet been defined and its determination remains outstanding, it is assumed that existing sites designated for blanket bog (such as the Caithness and Sutherland Peatlands SAC and East Halladale SSSI will constitute parts of the WHS.

### 7.7.14 Protected and Notable Species Records

Table 7.5 provides a summary of recent (2000-2020) records of protected species within the DSA identified in the HBRG data and publicly available data resources. This which included recent records of three internationally protected and two nationally protected species of conservation priority, as well as other notable or protected species.

**Table 7.5: Protected Species Records in the Desk Study Area**

Species	Key Conservation/ Legal Status	Number of Record(s) and Date(s) of Record(s)
Atlantic salmon	HR, SBL	1 record (2008)
Common pipistrelle	HR, SBL	2 roost records/6 bats (2006)
Eurasian badger	PBA, SBL	1 (sett) record (2010)
European Otter	HR, SBL	23 (signs only) records (2006-2011)
European water vole	WCA, SBL	5 (burrows) records (2005-2008)
Freshwater pearl mussel	WCA, SBL	1 record (2006)
Wildcat	HR, SBL	1 (NatureScot approved sighting) record (2010)
<p><i>Key: HR: The Conservation (Natural Habitats, and c.) Regulations 1994; WCA: Wildlife and Countryside Act 1981; SBL: Scottish Biodiversity List; PB, Protection of Badgers Act 1992</i></p>		

No records of invasive, non-native species were identified during the desk study. Other notable protected species recorded included; common lizard (*Zootoca vivipara*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), mountain hare (*Lepus timidus*), European rabbit (*Oryctolagus cuniculus*), stoat (*Mustela erminea*), red fox, (*Vulpes Vulpes*), Eurasian common shrew, Eurasian pygmy shrew (*Sorex Araneus/ minutus*), large heath butterfly (*Coenonympha tullia*), lamprey species, brown/sea trout and European eel (*Anguilla Anguilla*).

### 7.7.2 Baseline Survey Results

#### 7.7.2.1 Habitats and Botany

The results of Phase 1 Habits Surveys overlain with the Development layout and infrastructure is presented in Figure 7.2. Full survey results and detailed figures, are provided in Appendix A7.1; however, a summary of the Habitat and Botany survey results is presented below and in Table 7.6.

<sup>32</sup> <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> (Accessed online – 05/05/2020)

<sup>33</sup> <https://marinescotland.atkinsgeospatial.com/nmpi/> (Accessed online – 05/05/2020)

Peatland habitat was the most widely recorded habitat type, and collectively comprised 79 % of Survey Area. The most abundant peatland habitat recorded was blanket bog, which represented 37 % of the Survey Area, and as such was the dominant habitat recorded within the Survey Area. Blanket bog was most extensive in the south-east but was generally confined to basins elsewhere. Other peatland habitats included wet heath, wet heath mosaics, wet modified bog, and wet modified bog mosaics. Wet heath was extensive in the north and west and more patchily distributed in the south-east on watersheds and moderate slopes unsuitable for the formation of deep peat.

Water draining across the peatland areas meant that small patches of acid/neutral flush frequently recorded. Two NVC communities were determined to be associated with this habitat: M32 which was dependent upon groundwater, and M6 which was associated with surface water. Areas of flush and spring habitat determined to be associated with NVC sub-community M10a, were also recorded.

Small areas of marshy grassland habitat were recorded in areas associated with surface water, in topographic locations unlikely to support groundwater emergence, particularly in the west. The steepest slopes and mounds or ridges are associated with patches of dry heath across 13 hectares with and on the lower ground dominated by both unimproved and semi-improved acid grassland and bracken, however also very small areas of neutral grassland were also recorded

Some small areas of woodland were recorded with conifer plantation to the west of the turbines with much smaller areas of scattered scrub and broadleaved trees recorded amongst the other habitats. Some of these areas are believed to have been planted as part of the woodland grant scheme (RDC-Woodland planted in 2013); however, much of it is failing or slow to establish. These are not considered to be primary habitats features. Areas of hard surfacing associated with tracks and a quarry were also recorded in the western half of the site.

Five potential GWDTE associated NVC communities were recorded, these were

- MG10 (MG10c *Holcus lanatus*-*Juncus effusus* rush-pasture, *Iris pseudacorus* sub-community);
- M25 (M25a *Molinia caerulea*-*Potentilla erecta* mire, *Erica tetralix* sub-community);
- M15 (M15b, c *Trichophorum cespitosum*-*Erica tetralix* wet heath/*Cladonia* spp. sub-communities);
- M6 (M6a,b,c and d *Carex echinata*-*Sphagnum fallax/denticulatum* mire/ *Carex echinata* / *Nardus stricta*/ *Juncus effuses*/*Juncus acutiflorus* sub-communities); and
- M32 (M32b-type spring).

A figure showing all potential GWDTEs recorded is presented in Appendix 7.1; however not all of these communities are understood to be dependent on groundwater within the Site. An evaluation of site-specific groundwater dependency is detailed in Appendix 7.1, and summarised in Table 7.6. The outcomes of this assessment, overlain with the Development layout and infrastructure, is presented in Figure 7.3: Probable Groundwater Dependent Terrestrial Ecosystems.

This Page Intentionally Left Blank

**Table 7.6: Summary of the Phase 1 Habitats and their Absolute and Relative Areas within the Site<sup>34</sup>**

Phase 1 Code and Title	Summary Description	Associated NVC Communities	Area of Habitat	
			Absolute (ha)	Relative (%)
A1.1.1: Broadleaved woodland	Semi-natural woodland includes areas that do not obviously originate from planting. There are only two small areas of continuous woodland cover on the lowest ground, amongst semi-improved acid grassland. In addition to these two small blocks of woodland, there are scattered alder and birch trees in the enclosed plantation area.	W11	0.62	0.07
A1.2.2: Coniferous woodland - plantation	A single area of conifer plantation is present in the centre-west. It is dominated by spruce and beneath its serried ranks, there is a ground cover of moss and fallen needles.	N/A	10.37	1.09
A3.1: Scattered scrub	Scrub is composed of native shrubs forming an open (scattered) or continuous canopy of around 5 m tall, or less. Occasional trees may also be present. This habitat was predominantly gorse, which was continuous along the watercourses on the lowest ground amongst acid grassland.	W23	1.33	0.14
B1.1: Acid grassland - unimproved	Unimproved acid grassland was typically unenclosed hill-grazing land that is present on acid soils. It is usually species-poor and often grades into wet or dry, dwarf shrub heath. Unimproved acid grassland was located in the west of Survey Area, amongst dry heath and bracken on well-drained slopes. Grazing maintained the acid grassland in these locations that would otherwise be associated with dry heath.	U4a	7.36	0.78
B1.2: Acid grassland - semi-improved	Semi-improved grassland habitat included habitat modified by fertilisers, intensive grazing and/or drainage. It was located on the lowest ground in the west where it is enclosed and comprises the infield of farms.	U4b	48.02	5.06
B1.1-B1.2 mosaic	Mosaics of semi-improved and improved acid grassland (as above)	U4a-U4b mosaic	8.08	0.85
B1.2-E1.6.1 mosaic	Mosaics of semi-improved grassland (as above) and blanket bog (see below)	M17a-U4b mosaic	0.96	0.10

<sup>34</sup> Note that these areas exclude the Phase 1 habitat & NVC plant communities within the GWDTE buffer (i.e. they are calculated for the area of the Site alone). Absolute Area is the total hectareage of the habitat recorded within the Site. The Relative Area is the percentage of the total area of the Site that comprise of the habitat.

Phase 1 Code and Title	Summary Description	Associated NVC Communities	Area of Habitat	
			Absolute (ha)	Relative (%)
B2.1: Neutral grassland - unimproved	Neutral grassland was typically enclosed and usually more intensively managed than acid or calcareous grassland, except on roadside verges. This habitat was grazed and extremely species-poor, uneven and indistinctive, and largely comprised of stands of tufted hair-grass grass on damp ground associated with depressions adjacent to watercourses in the west of the Survey Area.	MG9	2.42	0.25
B5: Marsh/marshy grassland	Marshy grassland is a poorly-defined habitat which includes grasslands rich in purple moor-grass, rushes, sedges, and tall herbs. They are typically located on wet, gleyed or peaty soils that are waterlogged rather than covered by water. This habitat was found in the west of the survey area, scattered along the line of surface water movement including minor watercourse and field drains, in topographic locations unlikely to support groundwater emergence on shallow peat. Associated NVC Communities are considered to be potential GWDTEs.	M25a MG10c	4.65	0.49
C1.1: Bracken - continuous	Continuous bracken behaves invasively by suppressing the vegetation beneath its living or shed fronds. There are areas where the bracken frond litter has accumulated to a considerable depth so that other vegetation is suppressed. Only one NVC community is assigned to the bracken habitat; U20a.	U20a	18.87	1.99
D1.1: Dry dwarf shrub heath - acid	Acid, dwarf shrub heath is usually associated with well-drained podsols and has a greater than 25% cover of heather and other sub-shrubs. It is confined to well-drained situations so at Ackron and Golval, it is generally located on steep slopes, especially along the escarpment in the west, above the road. Habitats were recorded to be generally species poor, and in the west, where sheep grazing is concentrated the heather is extremely close-cropped	H - Non-NVC heath H12c H12a-M15b mosaic	50.09	5.28
D1.1-D2 mosaic	Mosaic between dry dwarf shrub heath - acid and wet dwarf shrub heath	H-M15a mosaic H-M15b mosaic	106.23	11.20
D1.1-D2-E1.6.1 mosaic	Mosaic between dry dwarf shrub heath – acid (see above), wet dwarf shrub heath and blanket bog (see below).	H-M15b-M19 mosaic	20.58	2.17

Phase 1 Code and Title	Summary Description	Associated NVC Communities	Area of Habitat	
			Absolute (ha)	Relative (%)
D2: Wet dwarf shrub heath	Wet dwarf shrub heath has a more than 25% cover of heather and other sub-shrubs but it differs from the dry heath in having a range of peatland species, including Sphagnum. It is typically found between the basins and depressions occupied by bog habitat and the better drained slopes vegetated with dry heath or acid grassland. Much of the wet heath is influenced by grazing, especially in the west where stock is maintained on the neighbouring acid grassland. Associated NVC Communities are considered to be potential GWDTEs	M15a M15b	242.13	25.53
D5: Dry heath/acid grassland	Mosaic between dry heath and acid grassland (as above).	H12c-U4a mosaic H-U4a mosaic	12.61	1.33
D6: Wet heath/acid grassland	Mosaic between wet heath and acid grassland (as above).	M15b-U4a mosaic	13.91	1.47

Phase 1 Code and Title	Summary Description	Associated NVC Communities	Area of Habitat	
			Absolute (ha)	Relative (%)
E1.6.1: Blanket Sphagnum bog	<p>Blanket bog habitat is distinctive for its accumulations of deep peat (&gt;0.5 m) beneath a variable vegetation composition that includes sub-shrubs, sedges, and most importantly, Sphagnum mosses. It is dependent upon a precipitation and topography that favours waterlogged conditions. Blanket bog is extensive in the south-east of the Survey Area, but eastward becomes more confined to basins</p> <p>The two primary NVC communities identified within the blanket bog habitat are M17 and M19. M17 was the dominant type of blanket bog recorded, and reflects relatively undisturbed conditions while the M19 reflects a degree of disturbance and habitat change towards modified bog habitat.</p> <p>Two sub-communities of the M17 community were recorded, M17a is the most extensive and M17b is more restricted to areas of high quality or eroded blanket bog. The extensive M17a sub- community is moderately species-rich, very even and distinctive. In the north, west and south-east, the occupation of basins has made the M17a resistant to drainage. In addition, these areas are unattractive to grazing animals; and resistant to burning. As a result, these areas of peatland represent some of the least disturbed habitats recorded. Erosion of the peat was rare and localised to drains.</p> <p>Areas of M17b vegetation are mapped as mosaics with bog pools (M2) or bare, eroded peat with common bog-cotton (M3). In association with the eroded peat, the M17b has a low cover of Sphagnum.</p> <p>Two small neighbouring areas of the M19a sub-community were located in the north-east. These were identified by their tussocky appearance of vegetation, and were closer to wet modified bog than the sphagnum mosses typically associated with blanket bog.</p>	M17a M17a-M2-M3 mosaic M17b-M2 mosaic M17b-M2-M3 mosaic M17b-M3 mosaic M19a	350.16	36.92
E1.6.1-E1.7 mosaic	Mosaic between blanket bog (as above) and wet modified bog (see below).	M17a-M25a mosaic M19a-M25a mosaic M20	9.92	1.05



Phase 1 Code and Title	Summary Description	Associated NVC Communities	Area of Habitat	
			Absolute (ha)	Relative (%)
E1.7: Wet modified bog	This habitat typically comprises bog vegetation with little or no Sphagnum, often with bare peat. It is mainly found on drying and degraded blanket bogs, and may resemble wet heath, but is distinguished by having a peat depth greater than 0.5 m.	M20-M25a mosaic M25a	10.66	1.12
E1.7-E2.1 mosaic	Mosaic between wet modified bog (as above) and flush and spring -acid/neutral (see below).	M25b-M6c mosaic	0.6	0.06
E2.1: Flush and spring - acid/neutral flush	Acid/neutral, flush/spring habitat is species-poor and supported by surface water or groundwater emerging from non-basic rock or deposits. The vegetation is variable but usually dominated by mosses and grasses, rushes and/or sedges. Two NVC communities associated with this habitat were recorded, one (M32-type) which was assessed to be dependent upon groundwater (a GWDTE) at a spring and the other (M6) is associated with surface water.	M32b M6a M6a-M6c-M6d mosaic M6b M6c	4.78	0.50
E2.2: Flush and spring - basic flush	Basic flushes typically support a carpet of pleurocarpous 'brown mosses', often without Sphagnum, overlain by patchy sward of small sedges. One distinctive NVC sub-community M10a was recorded including amongst wet heath where surface water flows contact the underlying, mineral substrate and was assessed to be subject to seasonal periods of desiccation and variable flow regime. Associated NVC Communities are considered to be potential GWDTEs	M10a	0.19	0.02
G1.3: Standing water - oligotrophic	Two large lochs are crossed by the site boundary in the south-east. They are oligotrophic and peat-strained with very limited vegetation	N/A	21.88	2.31
I2.1: Quarry	An active quarry is present on the north-western boundary. It has a gravel surface bare of vegetation	N/A	1.24	0.13
J5: Other habitat	'Other habitat' includes gardens and other surface associated with the curtilage of homes and farming activity. It flanks the road in the west	N/A	0.88	0.09
			948.53	100

This Page Intentionally Left Blank

### 7.7.2.2 *Protected Species*

Terrestrial and aquatic habitats within the Survey have some potential to support the protected species, albeit to varying degrees. Akran Burn and Loch Akran, both provided suitable commuting, sheltering and foraging opportunities for otter and evidence of the species was identified. No evidence of badger, pine marten, red squirrel, or wildcat was recorded; however, (with the exception for wildcat) areas of suitable habitat were identified. Other species recorded include numerous sightings of common lizards and a single observation of common frog (*Rana temporaria*).

Further summary of the Protected Species Survey results is presented below. Full survey results are presented Appendix A7.2.

#### *Badger*

No evidence or sightings of badger were recorded with the Survey Area; however, as the species were recorded during within the Desk Study, occasional use by the species cannot be ruled out. Although coniferous plantation can provide suitable habitats in which badgers can excavate setts, it is typically considered suboptimal, and due to the density of the stands recorded, the coniferous plantation with the Survey Area were considered to be of low suitability to support badger setts. Badgers are most commonly associated with deciduous woodland, arable farmland and intensive grassland.<sup>35</sup> Due to the dominance of bog and upland habitats, Survey Area is considered to be of low value to local badger population.

#### *Otter*

The Akran burn which is located in the west the Survey Area has particular suitability for otter foraging and commuting due to the size and flow rate, coupled with the suitability of this watercourse to support fish, the main source of prey for otter<sup>36</sup>. Presence of otter was established along the length of Akran Burn and at Loch Akran, but was not recorded elsewhere. Evidence of otter presence was recorded in the form of spraints, anal jelly and a couch (above ground resting place). Evidence of otter was also found outside of the Survey Area at Loch Akran, along with a possible holt.

#### *Pine Marten*

No evidence or sightings of pine marten were recorded; however, as suitable habitat for the species exists within the Survey Area and the surrounding environment, their presence in low densities cannot be ruled out. The large areas of coniferous plantation forestry within Survey Area have the potential to provide potential den habitat for pine marten, due to the presence of suitable denning features such as wind-blown trees, as well as suitable habitats for prey species such as birds and rodents<sup>37</sup> (including some potential for red squirrel, see below). Non-forest habitats (such as forest rides) within the Survey Area offer suitable foraging and hunting habitat for pine marten.

#### *Red Squirrel*

No evidence of red squirrel was recorded; however, some suitable habitats were recorded in the Survey Area. Coniferous plantation can provide suitable drey habitat and foraging opportunities where adequate cone crop is available; however, red squirrel generally favours woodland habitats with a mixture of tree species, providing a more reliable food source. Additionally, areas of the coniferous plantation are dominated by dense Sitka

---

<sup>35</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. Scottish Badgers and Biomathematics and Statistics Scotland

<sup>36</sup> Harris, S. & Yalden, D. W. eds. (2008). Mammals of the British Isles: Handbook, 4th Edition.

<sup>37</sup> Hanniffy, R. (2016). A native enigma: the pine marten. Vincent Wildlife Trust

spruce (*Picea sitchensis*) which is less favourable to this species compared to woodland dominated by pine species (*Pinus* sp.)<sup>38</sup>.

#### *Water vole*

No water vole burrows or latrines were found within the Survey Area. Despite a water vole record 2.2 km from the Survey Area the majority of the watercourses within the Site were determined unsuitable for water vole. Akran Burn varied in its ability to support water vole due to variation in bankside vegetation and substrate. Lengths of the watercourse alternated between sub-optimal to unsuitable, having stony or rocky substrate and banksides with limited opportunity for water vole burrow construction and fast to very fast flowing water.

#### *Wildcat*

No confirmed or possible evidence of wildcat, confirmed dens or dens with the potential to be used or accessed by wildcats were recorded within the Wildcat Survey Area. Although the species was recorded in the Desk Study, habitats recorded during the Wildcat Walkover Survey were assessed to be largely of low value to hunting, commuting and denning wildcats, primarily due to the exposed and waterlogged nature of the majority of the Site, and the absence of suitable woodland and linear features. The coniferous plantation woodland was deemed unsuitable for the species, due to the dense, inaccessible and wet conditions within, as well as relatively isolated nature of the woodland itself within an extensively open and exposed peatland landscape.

#### *Other species*

Blanket bog, scrub, felled plantation and forest rides were present throughout the Survey Area, all of which offer foraging, refuge and hibernation resources for reptiles, including adder (*Vipera berus*) and common lizard<sup>39</sup>. Multiple sightings of common lizard were recorded throughout the Protected Species Survey Area and the species was recorded in the Desk Study. A single common frog was recorded during the Protected Species Surveys, however prevailing wet underfoot conditions throughout the Survey Area provides ample aquatic and terrestrial habitat for common amphibian species, such as common frog and common toad (*Bufo bufo*)<sup>40</sup>.

### **7.7.23 Bats**

A summary of the Bat Survey results is presented below. Full survey results and supporting data are provided Appendix A7.3.

The Site was dominated by open heathland, which is a habitat of very low value to foraging, commuting and roosting bats, with only small patches of plantation woodland areas in the vicinity, which are also of low value compared to broadleaved woodland, or non-commercial coniferous woodland.

A total of 662 bat passes were recorded over a total of 3,981.50 survey hours across the Survey Season, giving a total mean BAI of 0.166 passes per hour (pph) for the Site. This represents 1 bat pass every 40 mins in real time.

Of the activity recorded, the majority (99.85%) was attributed to common pipistrelle, which are a common and widespread species in Scotland and of moderate sensitivity to wind farm development<sup>12</sup>. The remaining activity was attributed to myotis sp; all species in this genus are of low sensitivity to wind farm development.

<sup>38</sup> Gurnell, J. Lurz, P. and Pepper, H. (2009). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission, Surrey.

<sup>39</sup> The Herpetological Conservation Trust (2007). National Amphibian and Reptile Recording Scheme, Habitat Recording Guide

<sup>40</sup> Joint Nature Conservation Committee (2014) Common Standards Monitoring Guidance for Reptiles and Amphibians, Version February 2004. JNCC, Peterborough.

Activity was recorded at all survey location with the exception of E, F, H and I; however, activity was evident at just two survey locations (G and N) constituted 94% of all bat passes recorded. Location N was situated within woodland edge habitat and in close proximity to a watercourse, while; G was recorded in open heathland habitat. The highest number of bat passes was recorded in Session 3, which constituted 53% of all bats recorded.

Based on Ecobat assessment<sup>41</sup>, applied as per NatureScot guidance, activity recorded across all survey location varied greatly between the low activity category (0-20th median percentiles and the moderate to high activity category (61st-80th median percentile). However, activity at 80% of the survey locations were within the low or low to moderate activity categories, with moderate activity recorded at Location G only, and moderate to high activity recorded at Location N only. The median percentile of activity recorded across the Site (the median value of all survey location) was 25.5%, which represents a Site wide activity category within the lower range of the low to moderate activity category (21st-40th percentiles).

There are no known records of any hibernaculum (winter hibernation roosts) within the Bat Survey Area (BSA) or the wider local area. Pipistrelle bats have a tendency to hibernate in trees and buildings<sup>42</sup>. As no buildings exist within the BSA and any coniferous plantation generally offers poor roost potential<sup>42</sup>, it is considered very unlikely that hibernation is taking place in close proximity to the survey area.

### 7.7.24 Fisheries

A summary of the Fisheries Survey results is presented below. Full survey results and supporting data are provided in Appendix A7.4

Fish Habitat Surveys (FHS) recorded variable habitat suitability to support salmonid fish across the ten survey locations monitored. Of the nine non-control Survey Locations, six were assessed to have some suitability to support juvenile or spawning salmonids, and one was assessed to have some, albeit sub-optimal potential to support lamprey.

Table 7.7 presents a summary of the prominent habitat characteristics recorded during the FHS (September 2019). Results of the FHS are presented in Figure 1 in Appendix A7.4) and present the FUP and FHQ and each survey site.

**Table 7.7: Summary Fisheries Habitat Survey Results**

Survey Location	Within Site Boundary	FUP	FHQ	Characteristics
Giligill Burn				
AK1	Immediate Proximity	Low	Poor	Not suitable for salmonid fish.
AK2	Yes	Low	Poor	Not suitable for salmonid fish.
AK3	Immediate Proximity	Low/ Moderate	Poor/ Moderate	Salmonid Parr habitat.
AK4	Yes	Moderate	Moderate	Salmonid Parr habitat.
Tributary of Giligill Burn				
AK5	Immediate Proximity	Low/ Moderate	Poor/ Moderate	Not suitable for migratory fish. Small section considered sub-optimal lamprey habitat.

<sup>41</sup> <http://www.ecobat.org.uk/about-ecobat>

<sup>42</sup> Dietz, c & Keifer, A. (2016). Bats of Britain and Europe, Bloomsbury Publishing Plc, London ISBN: PB:978-1-4729-2202-1

Survey Location	Within Site Boundary	FUP	FHQ	Characteristics
AK6	Yes	Low/ Moderate	Poor/ Moderate	Limited juvenile salmonid habitat.
Akran Burn				
AK7	Yes	Moderate /High	Moderate	Juvenile salmonid habitat with areas upstream of bridge considered suitable for spawning.
AK8	Yes	Moderate /High	Moderate /Good	Juvenile salmonid habitat
AK9	Yes	Moderate /High	Moderate	Salmonid Parr habitat.
Halladale River				
AK10	No (Control Site)	High	Good	Adult/Juvenile salmonid habitat with patches of potential spawning habitat.

#### *Salmonid Suitability Summary*

The upper and mid reaches of the Giligill Burn (AK1-2) were classed as having low FUP and poor FHQ. The watercourse improves slightly at survey location AK3; however, areas remain low FUP and poor FHQ with the classification being increased to moderate downstream. At the double culvert (A836 crossing), survey location AK4, the FHQ and FUP improves to moderate. The majority of all survey locations within the Giligill Burn was considered unsuitable for migratory fish.

The tributary of Giligill Burn was assessed to be unsuitable for migratory salmonids. At AK5, habitats were assessed to be predominantly unsuitable for salmonid production, however small sections of the burn are considered suitable for resident brown trout (AK6).

The upper reaches of the Akran Burn were considered suitable for salmonid populations, with suitable parr (juvenile salmon) habitat recorded at AK9. In the lower reaches, small patches of juvenile salmonid habitats and spawning habitat were recorded throughout survey locations AK7 and AK8. Although a concrete abutment was recorded that may prevent upstream migration during periods of low flow, the potential barrier is considered passable during moderate to high water levels.

The 'control' Survey Location within Halladale River (AK10) was considered suitable for salmonid populations and classed as having high FUP and good FHQ, spawning habitat was also recorded within this section.

#### *Lamprey Suitability Summary*

Limited suitable habitat for juvenile lamprey was identified during the habitat survey of sampled watercourses. A small section was recorded within survey location AK5; however, this was insulated. Lamprey are considered unlikely to be present within the Survey Area or wider local area with potential connectivity to the Development.

#### *Freshwater Pearl Mussel Suitability Summary*

Limited suitable habitat for freshwater pearl mussel was identified during the habitat survey of sampled watercourses, and thus it was assessed that it is unlikely that freshwater pearl mussel is present within the Survey Area or wider local area with potential connectivity to the Development.

## **7.8 DETERMINATION OF ECOLOGICAL IMPORTANCE**

Table 7.8. evaluates the importance of ecological features associated with Development and determines which ecological features, based on both their intrinsic value and their potential to be affected by wind farm development, are considered to be IEFs. Each ecological feature has been assigned a level of importance in accordance with the geographical scale outlined in Table 7.2.

Features of Local or Less than Local value, and those to which impacts can be categorically ruled out, are scoped out of further assessment. However, if impacts to such features – even if not significant in terms of EcIA – may result in legal offences then suitable safeguards will be presented in Section 7.9.

This Page Intentionally Left Blank



**Table 7.8.: Evaluation of Ecological Importance**

<b>Nationally and Internationally Designated Statutory Sites</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
Caithness and Sutherland Peatlands SAC	<ul style="list-style-type: none"> <li>The Caithness and Sutherland Peatlands SAC contains a large proportion of the Caithness and Sutherland peatlands, which form the largest and most intact area of blanket bog in Britain. Blanket bog is rare in world terms and Britain has a significant proportion of the total world resource. Blanket bog was widespread across the Site, so this feature is scoped in for further assessment with the context of a Habitat regulation Appraisal (HRA).</li> <li>The feature 'Depressions on peat substrates' is associated with NVC communities recorded (M2 mosaic with M17<sup>43</sup>), and is thus scoped into the HRA assessment (see HRA screening).</li> <li>The feature 'Wet heathland with cross-leaved heath' is not associated with NVC communities recorded (M14<sup>44</sup>), and is thus scoped out of the HRA assessment.</li> <li>Otter was recorded within the Site so this feature of the SAC is also scoped in to the HRA.</li> <li>The SAC is also designated for Marsh saxifrage, Acid peat-stained lakes and ponds Clear-water lakes or lochs, however none of these features were recorded with the Site, so they are scoped out of further assessment.</li> <li>The associated core NVC types for transition mire and quaking bog (M4, M5, M8, M9 and S27)<sup>45</sup> were not recorded, so the feature 'Very wet mires often identified by an unstable 'quaking' surface' is also scoped out.</li> <li>The location of the SAC at the southern and eastern boundaries of the Site suggests a high degree of hydrological and ecological connectivity between the related habitats.</li> <li>As this is an internationally designated site, it is considered of international importance, and therefore is scoped in for further assessment.</li> <li>Furthermore, as a Natura 2000 Site, an HRA screening is required to determine if the development will result in a 'likely significant effect' on the integrity of the SAC or its qualifying features (QFs).</li> </ul>	<b>International</b>	<b>Yes. Scoped into assessment.</b>
Caithness and Sutherland Peatlands Ramsar	<ul style="list-style-type: none"> <li>The Ramsar Site fall within the boundary of the SAC, however is designated for blanket bog features only.</li> <li>As above, an HRA screening is required to determine if the development will result in a 'likely significant effect' on the integrity of the Ramsar or its QFs</li> </ul>	<b>International</b>	<b>Yes. Scoped into assessment.</b>
East Halladale	<ul style="list-style-type: none"> <li>East Halladale SSSI is a nationally designated site, lies within the footprint of the Caithness and Sutherlands Peatlands SAC, and is designated for the presence of blanket bog.</li> </ul>		<b>Yes.</b>

<sup>43</sup> <https://sac.jncc.gov.uk/habitat/H7150/>

<sup>44</sup> <https://sac.jncc.gov.uk/habitat/H4010/>

<sup>45</sup> <https://sac.jncc.gov.uk/habitat/H7140/>

<b>Nationally and Internationally Designated Statutory Sites</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<ul style="list-style-type: none"> <li>Due to its immediate proximity, there is a likely hydrological connection between the SSSI and the Site, which could potentially affect the blanket bog component of the SSSI. For this reason, East Halladale SSSI is scoped in for further assessment on the basis of the blanket bog designation only.</li> </ul>	<b>National</b>	<b>Scoped into assessment.</b>
Strathy coast	<ul style="list-style-type: none"> <li>This national designation is located 0.8km north-west of the Site, and is designated for coastal habitats and botany; machair, maritime cliff, sand dune saltmarsh and vascular plant assemblage.</li> <li>As the designation lies outwith the Site boundary in the coastal environment, it thus does not share any ecological features with those recorded at the Site, is it considered to be out with the likely zone of influence of the Development.</li> </ul>	Local	No. Scoped out of assessment
Red Point Coast	<ul style="list-style-type: none"> <li>This national designation is located 1.3km north of the Site, and is designated for coastal habitats and botany; Maritime cliff and Scottish primrose.</li> <li>As the designation lies outwith the Site boundary in the coastal environment, it thus does not share any ecological features with those recorded at the Site, is it considered to be out with the zone of influence of the Development.</li> </ul>	Less than Local	No. Scoped out of assessment
West Halladale	<ul style="list-style-type: none"> <li>West Halladale SSSI is a nationally designated site and is designated for the presence of blanket bog and is located 1.9 south-west of the Site within the boundary of the SAC.</li> <li>Due to its relatively distant proximity on the other side of the A897 road from the Site, there is a no likely notable hydrological connection between the SSSI and the Site which could potentially affect the blanket bog component of the SSSI.</li> </ul>	Local	No Scoped out of assessment
Sandside Bay	<ul style="list-style-type: none"> <li>This national designation is located 1.9km north of the Site, and is designated for coastal sand dune habitats.</li> <li>As the designation lies outwith the Site boundary in the coastal environment, it thus does not share any ecological features with those recorded at the Site, is it considered to be out with the zone of influence of the Development.</li> </ul>	Less than Local	No Scoped out of assessment

<b>Phase 1 Habitats within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
A1.1.1 Broadleaved woodland	<ul style="list-style-type: none"> <li>Widespread habitat regionally to Internationally.</li> <li>Distinctive forms (not recorded in Survey) are included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and the Habitats Directive, however only a relatively small area (0.6 ha) of species-poor, uneven and indistinctive habitat was recorded.</li> <li>Habitat is considered on Less than Local Importance.</li> </ul>	Less than Local	No Scoped out of assessment
A1.2.2 Coniferous woodland - plantation	<ul style="list-style-type: none"> <li>Widespread, extensive, temporary and often non-natural habitat across Scotland, the Highlands and Sutherland.</li> <li>Typically, of low ecological value compared to other woodland types.</li> <li>Area of habitat recorded was moderate in size area (10.4 ha) species-poor and uneven habitat dominated by commercial, non-native species and isolated for other woodland in the wider local area.</li> <li>Habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No Scoped out of assessment
A2: Scrub	<ul style="list-style-type: none"> <li>Habitat is not included within the Highland Biodiversity Action Plan, Scottish Biodiversity List or Habitats Directive.</li> <li>Widespread habitat regionally to Internationally.</li> <li>Habitat typically of low to moderate ecological value.</li> <li>Only small (1.3 ha), frequently scattered areas of species-poor, native scrub of low species-richness, evenness and distinction were recorded.</li> <li>Habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No Scoped out of assessment
B1.1 Acid grassland - unimproved	<ul style="list-style-type: none"> <li>Included within the Highland Biodiversity Action Plan as a target for biodiversity enhancement</li> <li>Common and widespread habitat nationally and regionally, with moderate ecological value.</li> <li>Exists as a secondary habitat derived from dry heath through grazing, with scattered areas (2.4 ha in total) of species-poor, moderately even, indistinctive vegetation recorded.</li> <li>Habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment
B1.2 Acid grassland - semi-improved	<ul style="list-style-type: none"> <li>Habitat is included within the Highland Biodiversity Action Plan as a target for biodiversity enhancement.</li> <li>Common and widespread habitat nationally and regionally, and typically of low to moderate ecological value.</li> <li>Moderate area (48.0 ha) of low species-richness, evenness and distinctiveness recorded.</li> <li>Habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment
B2.1 Neutral grassland - unimproved	<ul style="list-style-type: none"> <li>Not included within the Highland Biodiversity Action Plan, Scottish Biodiversity List or Habitats Directive.</li> <li>Common and widespread habitat nationally and regionally, and typically of low ecological value.</li> </ul>	Less than Local	No. Scoped out of assessment

<b>Phase 1 Habitats within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<ul style="list-style-type: none"> <li>Small area (&lt;2.4 ha) of low species-richness and evenness, but relatively distinctive for the tall sward of yellow iris recorded.</li> <li>Habitat is considered of Less than Local Importance.</li> </ul>		
B5 Marsh/marshy grassland	MG10 extents: <ul style="list-style-type: none"> <li>Habitat included within the Scottish Biodiversity List but not the Highland Biodiversity Action Plan or Habitats Directive.</li> <li>Common and widespread habitat nationally and regionally, and typically of moderate ecological value.</li> <li>Small area (&lt;0.1 ha) of low species-richness and evenness, but relatively distinctive for the tall sward of yellow iris recorded.</li> <li>Habitat/sub-community is considered of Local Importance.</li> </ul>	Local	No. Scoped out of assessment
	M25 extents: <ul style="list-style-type: none"> <li>Habitat included within the Scottish Biodiversity List but not the Highland Biodiversity Action Plan or Habitats Directive in this 'marshy grassland' form (cf. 'wet modified bog').</li> <li>Common and widespread habitat nationally and regionally, and typically of low to moderate ecological value.</li> <li>Small area (4.6 ha) of low species-richness and evenness, and moderate distinctiveness recorded.</li> <li>Habitat/sub-community is considered of Less Than Local Importance, and thus is not an IEF, however, the importance of its associated NVC communities are assessed further in the context of GWDTEs below.</li> </ul>	Less than Local	
C1.1 Bracken - continuous	<ul style="list-style-type: none"> <li>Not included within the Highland Biodiversity Action Plan, Scottish Biodiversity List or Habitats Directive.</li> <li>Common and widespread habitat nationally and regionally, and typically of low ecological value.</li> <li>Recorded to be moderately extensive (18.9 ha) across numerous patches but species-poor, uneven and indistinctive vegetation dominated by a single, invasive species.</li> <li>Habitat is considered of Less Than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.

<b>Phase 1 Habitats within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
D1.1 Dry dwarf shrub heath - acid	<p>Non-NVC extents:</p> <ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and Habitats Directive.</li> <li>The habitat is widespread and common in Scotland, especially in the uplands where it dominates very large areas, especially in the east coast.</li> <li>Upland heathland habitat has been estimated to cover between 1,700,000 and 2,500,000 hectares in Scotland.<sup>46</sup></li> <li>Habitats recorded were generally extremely species-poor, uneven and indistinctive vegetation dominated by a single species.</li> <li>Habitat is considered of Local Importance and therefore it is not an IEF.</li> </ul>	Local	No. Scoped out of assessment.
	<p>NVC associated extents (H10b/H12c/H16)</p> <ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and Habitats Directive.</li> <li>The habitat is widespread and common in Scotland, especially in the uplands where it dominates very large areas, especially in the east coast.</li> <li>Small areas (~8.5 ha) of patchy habitat of low to moderate species-richness, evenness and distinctiveness were recorded.</li> <li>Habitat is considered of Local Importance and therefore it is not an IEF.</li> </ul>		
D2 Wet dwarf shrub heath	<ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and Habitats Directive.</li> <li>The habitat is widespread and common in Scotland, especially in the uplands where it dominates very large areas especially in the west coast.</li> <li>Upland heathland habitat has been estimated to cover between 1,700,000 and 2,500,000 hectares in Scotland.</li> <li>Extensively recorded habitat (242.2 ha) but generally of low to moderate species-richness, evenness and distinctiveness, however, south-eastern parts are bounded by, but outwith of, the Caithness and Sutherland Peatland SAC.</li> <li>Habitat is considered of Local Importance and therefore it is not an IEF; however, potential effects will be assessed in the context of the SAC and, the importance of its associated NVC communities are assessed further in the context of GWDTes below.</li> </ul>	Local	No. Scoped out of assessment

<sup>46</sup> <https://www.nature.scot/sites/default/files/2018-02/Priority%20Habitat%20-%20Upland%20Heathland.pdf>

<b>Phase 1 Habitats within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
E1.6.1 Blanket Sphagnum bog	<ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and Habitats Directive.</li> <li>Blanket bog is widespread and common habitat in Scotland, covering 1.8 million hectares in Scotland, accounting for 23% of the total land area.</li> <li>Blanket bog is extremely widespread in Caithness and Sutherland with its coverage equating to an area of 40,000 ha<sup>47</sup>.</li> <li>The Habitat is of notable value for biodiversity as well as carbon capture.</li> <li>Habitat was extensively recorded; however, it was generally of low to moderate species-richness, evenness and distinctiveness with influence from grazing, drainage and erosion all recorded.</li> <li>South-eastern parts are bounded by the Caithness and Sutherland Peatland SAC and therefore are likely to share hydrological connectivity.</li> <li>In light of the above, Habitat is considered of Regional Importance.</li> </ul>	Regional	<b>Yes. Scoped into assessment.</b>
E1.7 Wet modified bog	<ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan, Scottish Biodiversity List and Habitats Directive.</li> <li>Small areas of habitat were recorded (totalling 10.7 ha) showing very low species-richness, evenness and distinctiveness.</li> <li>South-eastern parts are bounded by the Caithness and Sutherland Peatland SAC and therefore are likely to share some hydrological connectivity.</li> <li>In light of the above, Habitat is considered of Local Importance, and thus is not an IEF, however, the importance of its associated NVC communities are assessed further in the context of GWDTEs below.</li> </ul>	Local	No
E2.1 Flush and spring - acid/neutral flush	<p>M6:</p> <ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan and Scottish Biodiversity List but not the Habitats Directive.</li> <li>• Small scattered areas totalling 4.8 ha recorded showing poor to locally moderate species-richness, evenness and distinctiveness.</li> <li>In light of the above, the habitat is considered of Local Importance and thus is not an IEF, however, the importance of its associated NVC communities are assessed further in the context of GWDTEs below.</li> </ul>	Local	No. Scoped out of assessment.

<sup>47</sup> <https://www.nature.scot/sites/default/files/2017-05/A306327%20-%20Natural%20Heritage%20Futures%20-%20The%20Peatlands%20of%20Caithness%20and%20Sutherland.pdf>

<b>Phase 1 Habitats within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<p>M32:</p> <ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan and Scottish Biodiversity List but not the Habitats Directive.</li> <li>Single, small area of moderate species-richness and evenness, but highly distinctive recorded.</li> <li>In light of the above, the habitat is considered of Local Importance and thus is not an IEF, however, the importance of its associated NVC communities are assessed further in the context of GWDTEs below.</li> </ul>		
E2.2 Flush and spring - basic flush	<ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan and Scottish Biodiversity List but not the Habitats Directive.</li> <li>Small areas (totalling 0.2 ha) of moderate species-richness and evenness; and local distinctiveness recorded.</li> <li>In light of the above, the habitat is considered of Local Importance and thus is not an IEF, however, the importance of its associated NVC communities are assessed further in the context of GWDTEs below.</li> </ul>	Local	No. Scoped out of assessment.
G1.3 Open water	<ul style="list-style-type: none"> <li>Habitat included within the Highland Biodiversity Action Plan and Scottish Biodiversity List but not the Habitats Directive.</li> <li>Common and widespread habitat internationally to locally.</li> <li>Lies out with Site boundary.</li> <li>In light of the above, the habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.
J5 Other habitat	<ul style="list-style-type: none"> <li>Artificial or highly modified built, curtilage and farming-related areas.</li> <li>Distinctive for the presence of some common ruderal herbs.</li> <li>In light of the above, the habitat is considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.

<b>Groundwater Dependent Terrestrial Ecosystems</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
MG10c/M25a sub-communities (B5 habitat)	<ul style="list-style-type: none"> <li>• Potential GWDTE of moderate dependency.</li> <li>• Located in the line of watercourses and obviously associated with surface water.</li> <li>• Located in topographic situations where a suitable aquifer or point of discharge would not typically be present.</li> <li>• Not a GWDTEs within Site.</li> </ul>	Less than Local	No. Scoped out of assessment.
M15a-c sub-communities (D2 habitat)	M15a <ul style="list-style-type: none"> <li>• Potential GWDTE of moderate dependency.</li> <li>• Small, localised areas of moderate groundwater dependency confirmed with Site.</li> <li>• Located on a steep, well-drained slope that would otherwise be well-drained without inputs of groundwater.</li> <li>• Distinctive, sedge-rich vegetation lacking in base-rich indicators suggests the groundwater is not base-rich, or that it forms a 'cushion' beneath the vegetation surface without influencing its chemistry and floristic composition.</li> <li>• For this reason, the M15a areas within the Site are classified as 'moderate GWDTE' and thus considered on Local Importance.</li> </ul>	Local	No. Scoped out of assessment.
	M15b/M15c <ul style="list-style-type: none"> <li>• Extensive areas of habitat located on rain-fed, water-shedding slopes; and often above the likely zone of groundwater emergence.</li> <li>• There are no floristic elements (e.g. yellow-sedges) that suggest base-enrichment derived from groundwater.</li> <li>• Not a GWDTEs within Site and thus considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.
M25a sub-community (E1.7 habitat)	<ul style="list-style-type: none"> <li>• Potential GWDTE of moderate dependency.</li> <li>• Located in depressions and shallow valleys where surface water collects within wet heath.</li> <li>• Not a GWDTEs within Site and thus considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.
M6a-d and M32 communities (E2.1 habitat)	M6a-d <ul style="list-style-type: none"> <li>• Potential GWDTEs of high dependency.</li> <li>• Located in shallow, waterlogged depressions amongst blanket bog and in riparian settings.</li> <li>• Not associated with obvious, diffuse or point sources of groundwater emergence.</li> <li>• There are no floristic elements (e.g. yellow-sedges) that suggest base-enrichment derived from</li> </ul>	Less than Local	No. Scoped out of assessment.



<b>Groundwater Dependent Terrestrial Ecosystems</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<p>groundwater.</p> <ul style="list-style-type: none"> <li>• Not a GWDTE within the Site, and thus considered of Less than Local Importance.</li> </ul>		
	<p>M32b</p> <ul style="list-style-type: none"> <li>• Single, very small area recorded adjacent to watercourse.</li> <li>• Potential GWDTEs of high dependency.</li> <li>• Partly associated with springhead discharging groundwater from a point source.</li> <li>• Mainly dependent on surface water run-of and rainwater, associated with unnamed watercourse and ephemeral/ intermittent watercourse.</li> <li>• The habitat underlain by low productivity aquifer and areas of glacial till (superficial) deposits.</li> <li>• Associated with presence of faults which have potential to yield small quantities of groundwater.</li> <li>• With the application of good practise measures to ensure the maintenance of hydrological connectivity, given the very small, very localised extent of this feature, it is considered of Local Importance.</li> <li>• Further information provided in Chapter 12: Hydrology and Hydrogeology.</li> </ul>	Local	No Scoped out of assessment
M10 community (E2.2 habitat)	<ul style="list-style-type: none"> <li>• Small, localised areas of high groundwater dependency partially associated with groundwater emergence at springs.</li> <li>• Mainly dependent on surface water run-of and rainwater, associated with unnamed watercourse.</li> <li>• The community is underlain by low productivity aquifer and areas of glacial till (superficial) deposits.</li> <li>• Associated with presence of faults which have potential to yield small quantities of groundwater.</li> <li>• With the application of good practise measures to ensure the maintenance of hydrological connectivity, given the very small, very localised extent of this feature, it is considered of Local Importance.</li> <li>• Further information provided in Chapter 12: Hydrology and Hydrogeology.</li> </ul>	Local	No Scoped out of assessment

<b>Protected and Notable Species within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
Bats	<ul style="list-style-type: none"> <li>All bats in Scotland are protected under the Conservation (Natural Habitats, and c.) Regulations 1994 as European Protected Species. Bats are also priority species in the LBAP and the SBL.</li> <li>The Site was dominated by open heathland, which is a habitat of very low value to foraging, commuting and roosting bats, as well as conifer plantation, a typically low value woodland habitat. However, it should be noted that in more northern aspects of species ranges where populations are smaller, and where broadleaved habitats are less abundant (such as in Caithness and Sutherland), coniferous plantation is likely to be of higher local value to bats, when compared to other parts of their range where higher quality habitats are more abundant<sup>48</sup>.</li> <li>Activity was strongly spatially limited and based on Ecobat assessment, represented the lower end of the 'low to moderate' bat activity level.</li> <li>Activity recorded was limited two species and strongly dominated by common pipistrelle a widespread as common species with an estimated UK population of 3,040,000 in stable and favourable condition in Scotland<sup>49</sup>.</li> <li>Although from a behavioural perspective common pipistrelle is regarded to be of medium risk from wind turbine developments, the species are regarded as low risk from a population point of view<sup>28</sup>.</li> <li>The other species recorded was a member of the Myotis genus, as of which are consider of low risk from wind turbine developments. The only myotis species found in Caithness and Sutherland is Daubenton's bat (<i>Myotis daubentonii</i>) a species in stable and favourable condition in Scotland.</li> <li>Both species are listed on the International Union for Conservation of Nature (IUCN) Red list as of 'Least Concern' in mainland UK<sup>49</sup>.</li> <li>Both bat species recorded are at the very north of it given range, a small population could be considered potentially more sensitive to effects of the Development than larger populations present in areas of the country where bats and local resources are more abundant, and population are potentially more stable.</li> <li>Small populations are more sensitive to change than larger populations. Although effects on these small populations may not impact on the conservation status of the species as a whole, given the lack of resources for bats in Caithness, the effects of the Development may have an impact on the relatively small and sensitive bat populations. Therefore, bats should be considered of <u>Regional Importance</u>.</li> </ul>	<b>Regional</b>	<b>Yes Scoped into assessment</b>

<sup>48</sup> Dietz, c & Keifer, A. (2016). Bats of Britain and Europe, Bloomsbury Publishing Plc, London ISBN: PB:978-1-4729-2202-1

<sup>49</sup> Mathews F, Kubasiewicz LM, Gurnell J, Harrower CA, McDonald RA, Shore RF. (2018) A Review of the Population and Conservation Status of British Mammals: Technical Summary. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.

<b>Protected and Notable Species within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
Badger	<ul style="list-style-type: none"> <li>Badger is legally protected by the Protection of Badgers Act 1992 (as amended). The species is at risk of persecution but it not recognised as a high conservation priority.</li> <li>Badger are a widespread species throughout the UK with a stable and inclining estimated population of 562,000<sup>49</sup>. In Scotland and the Highlands, the species has shown a similar increase in size. Although still widespread in Caithness and Sutherland, populations are understood to be less dense than other parts of the country, largely due to the prevalence of upland and peatland habitats the species least favoured habitat.</li> <li>The species is listed on the IUCN Red list as of 'Least Concern' in mainland UK<sup>49</sup>.</li> <li>No evidence of badger was recorded and no setts were identified. Habitats were considered to have limited suitability to support badgers.</li> <li>In light of the above, badger therefore is considered of Local Importance.</li> </ul>	Local	No. Scoped out of assessment
Deer Species	<ul style="list-style-type: none"> <li>Deer are not a protected species (in terms of conservation legislation); however, they are protected from certain forms of killing by the Deer (Scotland) Act 1996.</li> <li>Evidence of deer was present on the Site, and deer species known to be present in the wider local area in include red deer and roe deer.</li> <li>Red deer are abundant across much of Scotland, and the wider UK, with an estimate population of 346,000. They are increasing in their range; population size and their habitat remain in a stable status<sup>49</sup>.</li> <li>Roe deer are abundant across much of Scotland, and the wider UK, with an estimate population of 265,000. Their range, population size and habitats all remain in a stable status<sup>49</sup>.</li> <li>Extensive area of the Site as consider suitable for deer grazing, and this is likely to have at least in part led to the notable degradation of peatland habitats. Furthermore, their presence has the potential to compromise peatland restoration measures.</li> <li>As the result of the above, the species is considered of Less Than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment
Otter	<ul style="list-style-type: none"> <li>Otter is protected under the Conservation (Natural Habitats, and c.) Regulations 1994 as a European Protected Species. Furthermore, the local otter population is a designated feature of the Caithness and Sutherland Peatlands SAC<sup>50</sup>. Otter is also a priority species in the LBAP and the SBL.</li> <li>Both in UK and Scottish otter population is in a favourable and inclining condition. The Scottish otter population is estimated to be around 8,000 otter<sup>51</sup>, approximately 73% of the UK population (~11,000)<sup>49</sup>.</li> <li>Otter are listed on the IUCN Red List as 'Vulnerable' in Scotland<sup>49</sup>.</li> </ul>	Regional	Yes. Scoped into assessment.

<sup>50</sup> SNH, 2002. Natural Heritage Futures. The Peatlands of Caithness and Sutherland. Published Version, 2002.

<sup>51</sup> SNH (2015) Trend Note Number 23: Trends of Otters in Scotland. November 2015

<b>Protected and Notable Species within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<ul style="list-style-type: none"> <li>Surveys identified plentiful suitable habitats for otter and, although limited to a single spraint, evidence of otter presence was found within the Site. Due to the close proximity of the Caithness and Sutherland SAC, it is likely that otter using habitats within the Site and surrounding environment are part of SAC population. Within the SAC here is extensive habitat suitable for otter and this is reflected in the presence of a good population, representative of the northern mainland of Scotland.</li> <li>Presence of otter within the Site Boundary was limited to the Akran Burn, where a single couch was recorded, but the species was not recorded elsewhere.</li> <li>In light of the abundant and inclining status of otter in Scotland and the Northern highlands, and extensive local habitat suitability outwith the Site, the Site is not considered to be of notable value to otter. However, as otter is a European Protected Species and is present within the potential zone of influence the Development, there is a minor risk of a breach of legislation.</li> <li>In light of the above, otter is considered of <u>Regional Importance</u>.</li> </ul>		
Pine marten	<ul style="list-style-type: none"> <li>Pine marten is legally protected under the Wildlife and Countryside Act 1981 (as amended). Pine marten is also a priority species in the SBL.</li> <li>Although the status on the species in England and Wales is poor, in Scotland the species is favourable and can now be found in all regions of Scotland with the exception of the central belt and the south-east coast<sup>49</sup>.</li> <li>The species is listed on the IUCN Red list and 'Least Concern' in Scotland, but 'Critically Endangered' elsewhere in the mainland UK<sup>49</sup>.</li> <li>Scotland's population is estimated at 3,700 adult pine martens, which represent approximately 99% of the known UK population<sup>52</sup>.</li> <li>Recent studies have confirmed that pine martens are widespread in Sutherland and Caithness<sup>52</sup>.</li> <li>No evidence of pine marten and limited suitable habitat for pine marten was recorded within the Site. Although it is acknowledged that the species can occasionally utilise peatland habitats in northern Scotland, and thus occasional presence of the species cannot be entirely ruled out, it is therefore deemed unlikely that the Site is of any notable value to the local pine marten population.</li> <li>In light of the above, the species is considered of <u>Local Importance</u>.</li> </ul>	Local	No. Scoped out of assessment.
Red squirrel	<ul style="list-style-type: none"> <li>Red squirrel is protected under the Wildlife and Countryside Act 1981 (as amended) and is a priority species in the LBAP and SBL.</li> </ul>	Less than Local	No. Scoped out of assessment.

<sup>52</sup> Croose, E., Birks, J.D.S. & Schofield, H.W. 2013. Expansion zone survey of pine marten (*Martes martes*) distribution in Scotland. Scottish Natural Heritage Commissioned Report No. 520.

Protected and Notable Species within the Site			
Ecological Feature	Evaluation Rationale	Scale of Importance	IEF/Action
	<ul style="list-style-type: none"> <li>Although declining across the UK, the Scottish population is stable and expanding in many regions. However, the Site is currently located beyond the northern limit of the UK red squirrel range<sup>49</sup>.</li> <li>The species is listed on the IUCN Red list as 'Near Threatened' in Scotland, but 'Endangered' elsewhere in the mainland UK<sup>49</sup>.</li> <li>No evidence of red squirrel was recorded and no dreys were identified and the Site was considered to have low potential to support red squirrel.</li> <li>In light of the above, the species is considered of Less than Local Importance.</li> </ul>		
Water vole	<ul style="list-style-type: none"> <li>Water vole is legally protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is a priority species in the LBAP and the SBL.</li> <li>Although the current UK population (132,000) is believed to have declined by 50% since 1998, and the species are in decline in both England and Wales, the Scottish population, which is largely genetically and phenotypically distinct, is in fact inclining in size with a stable range<sup>49</sup>.</li> <li>The species is listed on the IUCN Red list and 'near threatened' in Scotland, but 'endangered' elsewhere in the UK<sup>49</sup>.</li> <li>No water vole burrows or latrines were found within the Site, and riparian habitat provided limited opportunity for water vole burrow construction.</li> <li>As the species are locally present, some minor future colonisation of water vole cannot be entirely ruled out, however it is unlikely that the Site plays a notable role in the ecology of the local water vole population. As the result, the species is considered of <u>Less than Local Importance</u>.</li> </ul>	Less than Local	No Scoped out of assessment
Amphibians	<ul style="list-style-type: none"> <li>In Scotland the great crested newt, a European Protected Species, is found predominantly in Dumfries and Galloway, the Borders, Central Lowlands and around Inverness. Although Caithness and Sutherland is outwith the native range for the species, small populations in Sutherland are present as a result of introductions. However, as none were recorded in Desk Study, the Site is considered to be within the range of common and widespread amphibian species only.</li> <li>Common amphibian species are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional or reckless killing and injuring.</li> <li>Common frog was recorded during the baseline surveys and wet conditions throughout the Site provides ample aquatic and terrestrial habitat for common amphibian species, which also includes common toad.</li> <li>In light of the above, amphibians are considered of Less than Local Importance.</li> </ul>	Local	No Scoped out of assessment.
Reptiles	<ul style="list-style-type: none"> <li>Only common and widespread species are found on mainland Scotland.</li> </ul>	Less than Local	No.

<b>Protected and Notable Species within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<ul style="list-style-type: none"> <li>Common reptiles' species; the common lizard, slow-worm (<i>Anguis fragilis</i>), and adder are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional or reckless killing and injuring. The aforementioned reptile species are all included on the SBL and adder is included on the LBAP.</li> <li>Common lizard was recorded in numerous occasions within the Site, and habitats offering foraging, refuge and hibernation resources for reptiles were widespread.</li> <li>In light of the above, amphibians are considered of Less than Local Importance.</li> </ul>		Scoped out of assessment.
Wildcat	<ul style="list-style-type: none"> <li>Wildcat is a 'European Protected Species' (EPS) and is therefore afforded a high level of legal protection afforded to this species under the Conservation (Natural Habitats, and c.) Regulations 1994. Scottish wildcat is a Priority Species listed in the Species Action Framework (SAF) for Scotland<sup>53</sup>.</li> <li>The wildcat is an extremely rare species, with an estimated steadily population ranging between 30 to 430 individuals, principally as a result of through hybridisation with domestic cats<sup>49</sup>.</li> <li>The species is listed on the IUCN Red list and 'Critical Endangered' in Scotland, but 'extinct' elsewhere in the UK<sup>49</sup>. Recent IUCN research has suggested that the species in Scotland is on the verge of extinction, and that its population is no longer genetically viable, and thus urgent conservation action is required<sup>54</sup>.</li> <li>The Development Site lies within the accepted range of wildcat the species, however no evidence of wildcat was recorded within the Site and no recent records of the species were identified within the Desk Study.</li> <li>As many habitats were too wet or too densely vegetated to support the species, as well as the isolated nature of the woodland within the Survey Area, the presence of wildcat within the Site is considered very unlikely. As the result, the species is considered of Local Importance.</li> </ul>	Local	No. Scoped out of assessment.
Atlantic Salmon	<ul style="list-style-type: none"> <li>Atlantic salmon is legally protected (in freshwater only) under the Schedule 3 of the Conservation (Natural Habitats, and c.) Regulations 1994 and is listed as a priority in the LBAP and SBL.</li> <li>The Scottish salmon population has seen a decline in recent years as a result of numerous pressures, the key pressure being climate change which may affect both the marine and freshwater phases of the species<sup>55</sup>. In addition, the Scottish Government have published twelve</li> </ul>	<b>Regional</b>	<b>Yes Scoped into assessment.</b>

<sup>53</sup> SNH, 2007. A Five-Year Species Action Framework: Making a difference for Scotland's species. Scottish Natural Heritage. Redgorton, Perth.

<sup>54</sup> Breitenmoser, U., Lanz, T., and Breitenmoser-Würsten, C. (2019). Conservation of the wildcat (*Felis silvestris*) in Scotland: Review of the conservation status and assessment of conservation activities. IUCN SSC Cat Specialist Group, Bern, Switzerland.

<sup>55</sup> <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781444327755.ch16>

Protected and Notable Species within the Site			
Ecological Feature	Evaluation Rationale	Scale of Importance	IEF/Action
	<p>high level pressure on the Scottish salmon population, six of which occur in the riparian (freshwater) environment, the remainder are marine based<sup>56</sup>.</p> <ul style="list-style-type: none"> <li>• When viewed in the context of long-term trends over several decades (1952-2019), the numbers of adult salmon returning to Scottish rivers have in fact slightly increased<sup>57,58</sup>, however the total reported rod catch (retained and released) for 2018 was the lowest since records began in 1952<sup>59</sup>, and despite an improvement in 2019, declines since 2010 have been notable.</li> <li>• Watercourses within the Site are connected to the River Halladale, which under the Conservation of Salmon (Scotland) Regulations 2016, is categorised as a Grade 1 river. Within Grade 1 rivers exploitation is considered sustainable and no management action is currently required, as existing non-statutory local conservation management has been effective<sup>60,61</sup>.</li> <li>• Rod catch data from River Halladale recorded between 1952 and 2000 shows a relatively stable trend between 652 (1952) and 668 catches (2000), however after this catch dramatically increased to a peak of 5,3003 catches in 2010. Recent catch data from 2019, shows a notable reduction in catches (3,803) but still notable higher than they have been historically.</li> <li>• According to MSS it is not yet clear whether declines are part of a longer-term trend or a short-term fluctuation, however, it is understood that this long-term increase reflects an acknowledged decline in marine survival being offset by positive management measures, such as the significant reduction in the netting industry<sup>62,57</sup>.</li> <li>• 70% of watercourses surveyed were assessed to have some, albeit variable, suitability, to support juvenile or spawning salmonids (including salmon), however these were largely limited to the Akran Burn and the River Halladale, which is located outwith the Site boundary.</li> <li>• Although no salmon were seen during surveys, the MMS define both the Akran Burn and Halladale River as designated 'Scottish Salmon Rivers' and therefore the species are considered likely to be present within the Site Boundary.</li> </ul>		

<sup>56</sup> <https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/fishreform/licence/status/Pressures>

<sup>57</sup> Marine Scotland Science Report 01/15 (2015): Status of Scottish Salmon and Sea Trout Stocks

<sup>58</sup> Marine Scotland. 2020. Salmon and Sea Trout fishery statistics: 2019 Season - reported catch and effort by method. DOI: 10.7489/12280-1

<sup>59</sup> <https://www.gov.scot/publications/salmon-fishery-statistics-2018-season/>

<sup>60</sup> Scottish Government (2016) The Conservation of Salmon (Scotland) Regulations 2016. Available online: <https://www.legislation.gov.uk/ssi/2016/115/contents/made>

<sup>61</sup> Marine Scotland Science Data. Available online; <https://scotland.shinyapps.io/sq-salmon-conservation/>

<sup>62</sup> Todd, C.D., Hughes, S.L., Marshall, C.T., MacLean, J.C., Loneragan, M.E. and Biuw, E.M. (2008), Detrimental effects of recent ocean surface warming on growth condition of Atlantic salmon. *Global Change Biology*, 14: 958-970.

<b>Protected and Notable Species within the Site</b>			
<b>Ecological Feature</b>	<b>Evaluation Rationale</b>	<b>Scale of Importance</b>	<b>IEF/Action</b>
	<ul style="list-style-type: none"> <li>Although the species is widespread, and the salmon population are historically high both across Scotland and locally, recent declines locally and nationally mean that the species should be considered of Regional Importance.</li> </ul>		
Brown Trout	<ul style="list-style-type: none"> <li>Neither form of trout (sea trout or brown trout) receives much protection within conservation legislation, however some protection exists in the form of exploitation controls exist within fisheries legislation, and the species are listed on the SBL.</li> <li>Brown trout are a common, widespread and adaptable species found across a wide variety of watercourses, either as part as a resident population, or the migratory anadromous forms, however the species have been in decline across Scotland for many decades as result of numerous pressures such as changes in land use, and more recently climate change.</li> <li>Based on rod catch data, catches across Scotland have declined by two thirds since recorded began in 1952, and the total reported rod catch (retained and released) of sea trout in Scotland for 2019 was the third lowest on record and 88% of the previous 5 year average<sup>63</sup>.</li> <li>Locally, although catches are higher than they were in 1952, significant recent declines are also evident when compared to the recent peaks recorded between 2009 and 2012.</li> <li>Although the species is widespread, notable recent local declines mean that the species should be considered of Regional Importance.</li> </ul>	<b>Regional</b>	<b>Yes Scoped into assessment.</b>
Freshwater Pearl Mussel	<ul style="list-style-type: none"> <li>Freshwater pearl mussel is a rare and historically declining species across the UK as well as their global range, largely due to pollution, land use changes and illegal poaching<sup>64</sup>.</li> <li>Scotland is the remaining European stronghold for the species, supporting functional populations in over 50 rivers, mainly in the Highlands<sup>65</sup>.</li> <li>The species are protected by the Wildlife and Countryside Act 1981 (as amended) and by the Nature Conservation Act 2004.</li> <li>Limited suitable habitat for freshwater pearl mussel was identified during the habitat survey of sampled watercourses, and no recorded were returned in the Desk Study, and thus it considered unlikely that freshwater pearl mussel are present within the Survey Area or wider local area with potential connectivity to the Development.</li> <li>In light of the above, the species is considered of Local Importance.</li> </ul>	Local	No. Scoped out of assessment

<sup>63</sup> <https://www.gov.scot/publications/sea-trout-fishery-statistics-2019/>

<sup>64</sup> Skinner A, Young M & Hastie L (2003). Ecology of the Freshwater Pearl Mussel. Conserving Natura 2000 Rivers Ecology Series No. 2 English Nature, Peterborough.

<sup>65</sup> <https://sac.jncc.gov.uk/species/S1029/>



Protected and Notable Species within the Site			
Ecological Feature	Evaluation Rationale	Scale of Importance	IEF/Action
Lamprey species	<ul style="list-style-type: none"> <li>Three lamprey species can be found using aquatic habitats in Scotland and the UK, these are; the brook lamprey (<i>Lampetra planeri</i>), the river lamprey (<i>Lamprey fluviatilis</i>) and the sea lamprey (<i>Petromyzon marinus</i>).</li> <li>River lamprey are listed on Schedule 3 of the Conservation (Natural Habitats, and c.) Regulations 1994 (as amended).</li> <li>Limited suitable habitat for juvenile lamprey was identified during the habitat survey of sampled watercourses, with only a small Section recorded at one survey location. Lamprey are considered unlikely to be present within the Survey Area, or wider local area with potential connectivity to the Development.</li> <li>In light of the above, the species is considered of Less than Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.
European eel	<ul style="list-style-type: none"> <li>The European eel is widely distributed within European freshwaters and can be found in a wide variety of freshwater and estuarine habitats in the UK. The European eel hasn't been heavily exploited in Scotland, yet eel numbers in Scotland are thought to have fallen by more than 90% since the 1990s<sup>66</sup>.</li> <li>The IUCN Red List now regards the species as 'Critically Endangered'.</li> <li>Although not a protected species, the widespread decline in European eels has led the European Commission to develop an eel recovery plan, which has been incorporated in Scotland since 2008.</li> <li>Two records of European eel were identified in the Desk Study, and although none were recorded during baselines surveys the species can potentially be found across a wide variety of aquatic habitat, including poor quality, and polluted watercourse, so presence within the Site cannot be ruled out.</li> <li>In light of the above, the species is considered of Local Importance.</li> </ul>	Less than Local	No. Scoped out of assessment.

<sup>66</sup> <https://www.nature.scot/plants-animals-and-fungi/fish/freshwater-fish/european-eel>

This Page Intentionally Left Blank

### **7.8.1 Scoped Out of the Assessment of Potential Effect**

Following the systematic evaluation of importance outlined in Table 7.8, the following ecological features are considered of Local Importance or below, and thus not considered to be IEFs, and have therefore been scoped out of inclusion with Section 7.9: Assessment of Potential Effects;

- Strathy Coast, Red Point Coast, West Halladale and Sandside Bay SSSIs;
- Broadleaved woodland and coniferous plantation woodland habitats;
- Scrub habitat;
- Unimproved and semi-improved Acid grassland, unimproved and semi-improved neutral grassland and marsh grassland habitats;
- Continuous bracken habitat;
- Dry and Wet dwarf shrub heath habitat;
- acid/neutral and basic flush and spring habitat
- Open water habitat and other habitat;
- GWDTES;
- Badger;
- Deer species;
- Pine marten;
- Red squirrel;
- Water vole;
- Amphibians;
- Reptiles;
- Wildcat;
- Freshwater Pearl Mussel;
- Lamprey species; and
- European eel.

Although the above IEFs have been scoped out of further assessment within this Chapter, measures to mitigate or avoid potential effects on these IEFs have been included within Embedded Mitigation to help ensure legislative compliance of works as well as adherence to accept industry good practise (see Section 7.8).

### **7.8.2 Scoped Into the Assessment of Potential Effect**

Following the systematic evaluation of importance outlined in Table 7.8, the following ecological features are considered of Regional Importance or above, and thus are considered to be IEFs and have been scoped into Section 7.9: Assessment of Potential Effects;

- Caithness and Sutherland Peatlands SAC;
- Caithness and Sutherland Peatlands Ramsar;
- East Halladale SSSI;
- Blanket bog;
- Bats;
- Otter; and
- Salmonid Fish (Atlantic salmon and brown/sea trout).

## 7.9 ASSESSMENT OF POTENTIAL EFFECTS

### 7.9.1 Overall Habitat Loss Summary

The construction of the Development will cause the loss of and disturbance to habitats during construction and the effects may be both permanent and temporary. Permanent losses are straightforward to calculate based on the Development layout, but estimates of temporary losses, such as those caused by construction activities (e.g. vehicle movements and stockpiling) in the areas surrounding built infrastructure, are more difficult. However, temporary losses can be assumed to be relatively limited in extent, based on experience of the construction of similar developments, and so are assumed, on a precautionary principle, to equate to approximately 20% of the areas permanently lost.

In total, an estimated 10.85 Ha of habitats will be permanently lost, equating to 1.22 % of the habitats recorded in the Survey Area (944.48 Ha). In terms of absolute loss, the majority will consist of wet dwarf scrub heath (46.40% of total loss), the second most abundantly recorded habitat type (25.53% of habitats recorded) after blanket bog (36.92% of habitats recorded). Due to the extensive nature of these two habitats, these absolute losses represent a loss of 2.90% of wet heath habitat, and 0.32% of blanket bog habitat.

In terms of the most notable relative habitat loss, the greatest extent of loss occurring to any one habitat is the 4.44% loss predicted to occur across semi improved/unimproved acid grassland (B1.1-B1.2) mosaic, a common and widespread habitat of low ecological value, assessed to be of less than local value. The only IEF habitats to be impacted directly by habitat loss is blanket bog.

An assessment of the potential effect of this loss is assessed below. A summary of the predicted habitat loss is presented in Table 7.9, below.

**Table 7.9: Summary of Phase 1 Habitat Loss by Infrastructure**

Phase 1 Habitat	Infrastructure	Habitat Loss		
		Area (Ha)	% of Habitat	% of all Habitats
A1.2.2: Coniferous woodland (plantation)	Laydown Area	0.01	7.30	0.08
	Bat Offset Buffer	0.75		
B1.1-B1.2 (mosaic)	Access Track	0.35	4.44	0.04
	Substation	0.01		
B1.1: Acid grassland (unimproved)	Access Track	0.05	0.00	0.00
	Crane Hardstanding	0.00		
B5: Marsh/marshy grassland	Crane Hardstanding	0.01	1.05	0.00
C1.1: Bracken (continuous)	Access Track	0.01	1.05	0.02
	Borrow Pit	0.18		
	Laydown Area	0.00		
D1.1-D2-E1.6.1 (mosaic)	Access Track	0.72	9.45	0.21
	Borrow Pit	0.82		
	Crane Hardstanding	0.29		
	Crane Pads	0.04		
	Laydown Area	0.07		

Phase 1 Habitat	Infrastructure	Habitat Loss		
		Area (Ha)	% of Habitat	% of all Habitats
D1.1-D2 (mosaic)	Access Track	0.23	0.54	0.06
	Crane Hardstanding	0.25		
	Crane Pads	0.01		
	Laydown Area	0.09		
D1.1: Dry dwarf shrub heath	Access Track	0.15	2.90	0.15
	Borrow Pit	1.27		
	Crane Hardstanding	0.00		
	Crane Pads	0.03		
D2: Wet dwarf shrub heath	Access Track	2.33	2.09	0.54
	Borrow Pit	0.67		
	Crane Hardstanding	1.45		
	Crane Pads	0.19		
	Laydown Area	0.42		
D6: Wet heath/acid grassland	Access Track	0.05	0.41	0.01
	Substation	0.01		
E1.6.1: Blanket bog	Access Track	0.35	0.32	0.12
	Borrow Pit	0.37		
	Crane Hardstanding	0.25		
	Crane Pads	0.01		
	Laydown Area	0.13		
E1.7: Wet modified bog	Access Track	0.03	0.34	0.00
E2.1: Flush and spring (a/n flush)	Access Track	0.01	0.18	0.00
G1.3: Standing water	Access Track	0.00	0.00	0.00
<b>Total Loss</b>		<b>11.65 Ha</b>	<b>1.22% of all Habitats</b>	

## 7.9.2 Blanket Bog

Blanket bog habitats were recorded widely across the Site but were particularly dominant in the South of the Survey Area. Although some areas of higher quality, near natural blanket bog are present, the majority of the blanket bog vegetation has been extensively modified and degraded by a combination of grazing, drainage and peat-cutting. Despite the extensive coverage of blanket bog in the Survey Area, site design has avoided much of the extensive (and thus typically higher value) areas of blanket bog in the south-east, and placed the Development predominantly in the north of the Site where blanket bog is not as extensive, and largely avoids encroaching on the habitat (see Figure 7.2).

### 7.9.2.1 Construction Phase Impacts

The Development will result the permanent loss of 1.11 Ha of blanket bog habitat as the result of the construction of access tracks (0.35 Ha), borrow pit (0.37 Ha), crane hardstanding/pads (0.26 Ha) and the turbine laydown area (0.13). This loss in total equates to 0.32 % of the total area of bog habitat recorded within the Survey Area

(349.98 Ha), and represents 10.24 % of the total area of direct habitat loss associated with the Development.

The Development design has avoided all areas of near natural blanket bog and is only located on areas of poor quality modified or drained blanket bog. The Development is located largely on relatively small fragmented patches of modified blanket bog, areas that lack the value of the more extensive tracts of bog found predominantly in the south of the Site, or those in depression that are more resistant to drainage. Turbines 6 and 7 and aspects of their associated infrastructure are located at the northern edge of a large expanse of M17a blanket bog. M17a communities within this habitat were recorded to be of low to moderate species-richness and were dominated by degraded, drained blanket bog, so it is considered of low value when compare to less disturbed peatland found occasionally elsewhere, such as in the north and west of the Site, outwith the footprint of the Development.

As discussed above, the proposed HMP will aim to restore blanket bog to its original quality, to a scale at least equal to the scale of blanket bog to be lost. As the blanket bog to be lost is degraded, proposed peatland restoration is considered likely to compensate for short term loss, and over a medium to long term, increase the ecological value of blanket bog in habitats in the Site, to the benefit of local ecology.

Although the benefits of restoration are unlikely to be evident during the construction phase, HMP prescriptions are likely to commence during construction and will aim to avoid excessive ground disturbance to help provide optimal conditions peatland restoration. Additionally, where feasible, the HMP will aim to incorporate the use of excavated peat into its prescriptions.

Embedded mitigation and good practice measures, such as the use of floating roads, the adoption of pollution prevention measures, and measures to ensure the maintenance of hydrological connectivity, will reduce the likelihood of any potential direct or indirect effects of the Development on blanket bog. Additionally, micrositing, informed by the ECoW will help to further reduce impacts.

In light of the above, the detrimental effects of Development related construction on blanket bog habitat will be temporary, reversible and of negligible magnitude, therefore are considered to be **not significant** in terms of the EIA Regulations.

### **7.9.22 Operational Impacts**

Development operation is not anticipated to involve any works which will directly or indirectly impact blanket bog habitat. Blanket bog restoration works will take place on Site throughout the lifecycle of the Development and will likely have a long-term positive impact on the blanket bog resource on Site, which may bring benefit to species beyond the boundary of the Site.

In light of the above, no significant detrimental operational effects on blanket bog habitat are predicted. Although it is reasonable to anticipate that the successful implementation of the proposed restoration measures, would result in a positive operational effect, as a scale and success of these measures are yet to be determined, it is considered that the effects will, at a minimum, be neutral, and thus **not significant** in terms of the EIA Regulations.

### **7.9.23 Decommissioning Phase Impacts**

Impacts to the blanket bog habitats from decommissioning works are anticipated to be of a similar nature to the construction phase impacts, but of lower magnitude. Although successful blanket bog restoration will mean that the future baseline condition of habitats in the Site are higher value that they are currently, these improvements will take place outwith the Development footprint, so will be unaffected by decommissioning. Decommissioning impacts to blanket bog habitats are considered temporary, reversible,

of negligible magnitude and considered to be **not significant** in terms of the EIA Regulations

### **7.9.3 Bats**

Spatially variable but overall low to moderate levels of bat foraging and commuting activity of common and widespread bat species of low to moderate population vulnerability were recorded within the Site; however, no bat roosts were recorded within the Site. The Development may result in direct and indirect effects to bats including displacement caused by loss of foraging and commuting habitats, disturbance and harm through loss of roosts during construction, and direct operational effects such as mortality and harm caused by turbine collisions and possibly barotrauma.

#### **7.9.3.1 Construction Phase Impacts**

##### ***Habitat Change***

A small area of coniferous plantation will be lost as a result of the Development infrastructure. This will be carried out to mitigate the effects of turbine collision of bats (see Section 7.9.3 below) however no other habitats of value to bats (namely watercourses) will be lost. The coniferous plantation edge represents one of highest value areas for bats within the Site, where the levels of activity recorded were amongst the greatest recorded. Not all woodlands will be lost, the volume of edge habitat lost will be minor, and key riparian features will remain; however; the loss of coniferous plantation will result in a minor loss of the foraging, commuting and shelter value of the habitats within the Site, which could lead to a minor reduction in utilisation potential of habitats within the Site, as small numbers of foraging or commuting bats are displaced. This short-term displacement may result in a minor reduction in fitness to individual bats; however, this detrimental effect will be offset notable by the benefits of reducing collision risk in the medium and long term (see Section 7.9.3).

Due to the low levels of bat activity recorded, the lack of suitability offered by coniferous plantation for roosting bats, and the overall benefits of embedded mitigation recommendations, the magnitude of any displacement effects on the local bat population is considered short term and likely to only impact small numbers of bats within the Site and immediate surrounding area (within 2 km). Therefore, the overall effects of habitat change on bats are considered to be of low magnitude and therefore **not significant** in terms of the EIA Regulations.

##### ***Roost Loss***

Bats within the Site may be impacted through the direct loss of bat roosts, and via direct harm or indirect disturbance to roosting bats, as a result of felling activities and the associated noise and vibration. Although no bat roosts were identified within the Site and coniferous plantation woodland generally offers few roosting opportunities for bats, felling during the construction of the Development may result in the removal of a very small number of unrecorded, isolated features with bat roost potential. Such unlikely losses of roosting habitat are considered to be a permanent, long-term, adverse effect, but of very low magnitude, and therefore the effect is **not significant** in terms of the EIA Regulations.

#### **7.9.3.2 Operational Impacts**

##### ***Turbine Collision***

Perceptible operational effects of the Development on bats are restricted to accidental mortality or injury to bats in flight, through direct collision with moving turbine blades, or possibly barotrauma. The potential for this impact is difficult to characterise because there is a limited evidence base specific to bats and wind farms in the UK. Effects have therefore been assessed on a precautionary basis.

Recent Multi-stakeholder guidance<sup>67</sup>, published by NatureScot in 2019, sets out a points-based framework to assess the risk a turbine development is likely to pose to bats, and scores and categorises sites through consideration of the habitats present and the scale of the development. Surveys were carried out ahead of the publication of this guidance, however it is similar to the previous BCT approach that informed the bat survey scope.

Based on this assessment criteria the Site is considered to have a Low Habitat Risk, and a Medium Project Scale, giving the site two points (2 points = low Site Risk). Guidance recommends that this score should then be combined with the level of activity recorded. When Activity Score (low to moderate activity=2 points) is combined with the above Site Risk score, it gives an overall assessment score of 4 points, concluding the Development is overall of Low Risk.

Activity was recorded at the majority of survey locations; however, no activity was recorded at locations E, F, H and I (all located in open upland habitats). Activity at just two survey locations (G and N) constituted 94 % of all bat passes recorded. Location N was situated within woodland edge habitat located in close proximity to Akran Burn. This area represents the highest value bat habitat recorded with the Site and is with immediate proximity to Turbine 2. Location G was in open heathland habitat, but in close proximity to Caol-Loch, which connects to the eastern reaches of the Akran Burn outside the south-eastern boundary of the Site. It is therefore possible that bats utilise Akran burn to forage at Caol-Loch. However as both habitat features are beyond 50 m from the turbine locations, based on the current understanding of habitat use by pipistrelle and myotis bats, all turbines are out with the likely range of bat using these habitat features.

As stated above, an area of high bat activity is located within immediate proximity to Turbine 2. However, in accordance with Natural England good practise guidance<sup>68</sup>(adopted by NatureScot), embedded mitigation (see Section 7.6) will ensure that a 50 m separation distance between high-value bat habitats (such as woodland edges) and blade tips is established and that this off set buffer is maintained throughout operation.

To calculate the necessary stand-off distance between the centre of the turbine (the turbine location) guidance advises the use of the following equation:

$$b = \sqrt{(50+bl)^2 - (hh-fh)^2}$$

Based on candidate turbine parameters utilising a Vestas 136 to calculate blade length (bl) of 68m and hub height (hh) of 82m, feature height (fh) was assumed to represent a 'worst case' scenario of 17m for the tree heights within the Site:

$$b = \sqrt{(50+68)^2 - (82-17)^2}$$

Therefore, based on the above equation the turbine stand-off distance to be implemented during construction and maintained through operation is 98.5m.

Further to the above, the typical flight height for common pipistrelle (the dominant species recorded on site) is 3-10 m above the ground. Therefore, with a rotor sweep height of 14 m the majority of bats continuing to utilise the Site are unlikely to fly at rotor height, and are therefore at less risk from turbine collision.

Bat activity is generally low across the Site but is strongly localised to two locations, only one of which is located near any proposed turbines. Where the risk of bat interaction with turbines currently exists, the risk of collision will be notably reduced through the

---

<sup>67</sup> Scottish Natural Heritage, Natural England, Natural Resources Wales, Renewable UK, ScottishPower Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (2019): Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019.

<sup>68</sup> Mitchell-Jones, T, Carlin, C (2014) Natural England Technical Information Note TIN051 - Bats and onshore wind turbines Interim guidance (3rd Edition), Natural England 2014, ISBN 978-1-78354-095-2



implementation of embedded mitigation ensure turbines are out with areas likely to be used by bats.

Due to the low levels of bat activity recorded, and the overall benefits of embedded mitigation recommendations, the magnitude of effects of turbine collision on the local bat population is likely to be negligible. Despite this, due to the lack of data regarding bat interactions with turbines, impacts on low numbers of bats cannot be ruled out. As a result, operational effects are considered to be of low magnitude, and therefore **not significant** in terms of the EIA Regulations.

### **7.9.3.3 Decommissioning Phase Effects**

Decommissioning activities are considered to be of a similar nature to those of Development construction; however, as no habitats used by bats are likely to be impacted, the potential for detrimental impact to bats is considered likely to be on a significantly notably smaller scale, and therefore effect are likely to be **not significant** in terms of the EIA Regulations.

### **7.9.4 Otter**

Otter were only recorded on one watercourse with the Site, the Akran Burn; however, the species may potentially utilise other lower value watercourse within the Site, albeit on a less regular and potentially seasonally basis, and thus exposure to Development related impact cannot be ruled out.

#### **7.9.4.1 Construction Phase Effects**

##### *Habitat Loss, Disturbance and Degradation.*

During the construction phase there are potential impacts that may result from the occurrence of ground works in close proximity to watercourse used by otter. These include the detrimental impacts of habitats loss and disturbance, siltation, sedimentation and accidental pollution. These impacts could detrimentally affect the local otter population indirectly by reducing habitat suitability for prey species, thus reducing prey availability, or by directly damaging habitats used to otter for resting and commuting. Both effects could result in the displacement of otter from the Site, reduction of connectivity to the wider local area, and a minor reduction of fitness in members of the otter population, due to decreased resources and the subsequent increase in competition for resources.

The overwhelming majority of construction will take place in upland habitats of limited to no value to otter, and outwith close proximity to watercourses, and only one new watercourse crossings (NWC) will be constructed as part of the Development. This will occur on the unnamed tributary of Giligill burn at the centre of the Site, where otter was not recorded. The burn is relatively small and shallow, and is predominantly of low value to prey fish species, however small sections of the burn are considered suitable for resident brown trout, a potential prey item for otter.

Following the application of Embedded Mitigation measure outlined in Section 7.6, and construction phase pollution prevention measures (as detailed in **Chapter 12: Hydrology and Hydrogeology**) which will form part of Pollution Prevention Plan (PPP), it is anticipated the current low value of watercourse to otter will not be notably detrimentally impacted by construction activities and will be short term, and so effects to critical prey resources and general habitat quality are unlikely.

The construction phase effects of habitat loss, disturbance and degradation are considered to be adverse and temporary, and thus of low magnitude, and therefore are considered to be **not significant** in terms of the EIA Regulations.

### *Disturbance and Displacement of Breeding otter*

Under the Habitat Regulations (the Conservation (Natural Habitats, and c.) Regulations 1994) otter resting sites are protected from deliberate or reckless disturbance. Potential development related disturbance and displacement by result from an increase in noise, vibration, traffic and the presence of people, in close proximity to areas used by otter. In accordance with NatureScot guidance<sup>69</sup>, disturbance is likely to constitute any construction activity taking place within 30 m of for holts and shelters where otter are not breeding, but up to 200 m for breeding holts. Aquatic otter typically establish resting areas in close proximity to the riparian corridor, and therefore watercourses represent the areas of greatest risk to disturbance.

Otter typically breed in areas where there is access to an abundant food supply, where disturbance is minimal and where more than one resting area suitable to be used as a natal holt is already available<sup>70</sup>. As established above, no resting areas have been recorded within the Site, habitats within the site are largely of limited value to the species, and otter has only been recorded on one watercourse, therefore the Site is considered to be unsuitable to support a breeding holt. Although the presence of other future non-breeding holt or shelter cannot be ruled out, with the exception of the single new water crossing, the vast majority of Development is located beyond 50 m from watercourses (and in many areas considerably further away), outwith the like range of disturbance.

Based on the existing baseline, Development related construction work, including the construction of the watercourse crossing over the tributary of the Giligill burn, will not impact any known resting area for otter. Although the likelihood of a resting area becoming established in the future ahead of construction within 30 m of the water crossing works is considered low, with adherence to embedded mitigation such as pre-construction surveys and ECoW supervision of works, the risk is considered to be negligible. As discussed, habitats within the Site are largely of limited value to the species, and the vast majority of works are outwith proximity of watercourses. The only areas where otter have been recorded are on Akran Burn where water crossings are not proposed.

Through the implementation of embedded mitigation measures, including pre-works ECoW monitoring and surveys, the implementation of 50m riparian buffers from working area, and the adoption of good practise working practises and emergency procedures the risk of detrimental effects of disturbance and displacement on both the existing and future baseline is negligible. Therefore, the effects of disturbance and displacement impacts are considered to be of low magnitude, and are therefore **not significant** in terms of the EIA Regulations.

### *Interaction with Construction Traffic and Plant*

In addition to construction phase disturbance, the direct increase of traffic and plant movements and operation from Development construction have the potential to result in a temporary increase in the risk accidental collisions and otter injury and fatality.

As otter are largely crepuscular and nocturnal, the risk is largely limited to periods when construction is taking place at night, or during low light levels during the winter months. Additionally, as habitats are largely of low value to otter, no otter resting places were identified within the Site, activity is limited to one watercourse within the Site and works will largely take place outwith proximity to watercourses, the risk is considered to be low.

This risk is likely to be further reduced through the implementation of embedded mitigation measures, such as pre-construction surveys, the implementation of good

---

<sup>69</sup> <https://www.nature.scot/sites/default/files/2019-10/Species%20Planning%20Advice%20-%20otter.pdf>

<sup>70</sup> Liles G (2003). Otter Breeding Sites. Conservation and Management. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough

practise working measures, and monitoring of works by the ECoW. As a result, it is considered that a potential impact is of negligible risk. Therefore, the effect of this impact is considered to be of low magnitude, and **not significant** in terms of the EIA Regulations.

#### *Entrapment in Construction Excavations.*

Construction phase excavations, if left uncovered and unattended, have the potential to injure or entrap wildlife including otter which could result in injury or mortality. As habitats are largely of low value to otter, activity is limited to one watercourse within the Site and works will largely take place outwith proximity to watercourses, the risk is considered to be very low.

Through the implementation of embedded mitigation measures, such as the implementation of good practise working measures such as covering excavation or leaving a suitable means of escape when unattended, as well as monitoring of works by the ECoW, the potential impact is of negligible risk. Therefore, the effect of this impact is considered to be of low magnitude, and **not significant** in terms of the EIA Regulations.

### **7.9.4.2 Operation Phase Impacts**

#### *Interaction with Operational Traffic and Personnel Presence*

Development maintenance is likely to result in occasional vehicle movements and personnel presence throughout the operation of the Development; however, this activity will be limited to the Development infrastructure and wind turbine generators, with no disturbance of the surrounding environment (including riparian habitats) expected. Due to the infrequency and localised nature of operational activities, and the low value and use of the Site by otter the potential detrimental effect is considered to be of negligible magnitude, and is therefore **not significant** in terms of the EIA Regulations.

### **7.9.4.3 Decommissioning**

Decommissioning activities are considered to be of a similar nature to those of Development construction; therefore, potential exists for direct and indirect effect to otter, where decommissioning works may take place in close proximity to riparian habitats. Decommissioning activities may result in a localised increase in noise, vibration, traffic and presence of people, potentially causing disturbance to commuting and foraging otter. However, this effect is considered to be of low magnitude and is therefore **not significant** in terms of the EIA Regulations.

### **7.9.5 Salmonid Fish (Atlantic salmon/brown trout)**

As discussed in Section 7.8, although trends in the Scottish salmonid (salmon and trout) population can fluctuate spatially and temporally, and are declines are less marked on a long term scale, it is important to acknowledge that recent salmonids populations across Scotland (and the wider North Atlantic) are in notable decline, and the reasons for this are not yet fully understood.

The Scottish salmon population has seen a decline in recent years with is likely to be the result of numerous marine and freshwater pressures, a key pressure being climate change, which is known to affect freshwater phases of the species by increasing water temperatures. As a result of climate change, water temperatures are expected to rise, and may already be having consequences for Scotland's salmonid populations. In addition, the Scottish Government have identified a further five high level pressures on the Scottish salmon population, these are:

- Changes in habitat and water quality as a result of acidification, point-source and diffuse pollution, changing rainfall patterns, eutrophication and oligotrophication;

- Changes in habitat and water quality as a result of abstraction, flow regulation, upland / agriculture land-use and drainage, and forestry drainage;
- Changes to instream habitats as a result of over sedimentation or the loss of sediment transfer, canalisation and dredging;
- Loss of riparian habitat as a result of afforestation and habitat loss/change; and
- Prevention of upstream/downstream migration and the access to spawning habitats, due to man-made barriers such as dams or other river modifications.

The Development has the potential to, at least in the short term, negatively contribute to some of these pressures, particularly those related to changes in habitat and water quality.

### **7.9.5.1 Construction Phase Effects**

#### *Habitat Loss, Disturbance, Degradation and Contamination*

During the construction phase, there are potential impacts that may result from the occurrence of ground works in close proximity to watercourse used by salmonids. These include the detrimental impacts such as spawning habitats loss and disturbance, siltation, sedimentation and accidental pollution, accelerated or exacerbated erosion, and hydrological changes. The effects of these impacts could detrimentally impact the local salmon population indirectly via the reduction of productivity by reducing the population's ability to utilise spawning areas, or directly through injury and mortality, which could also have an impact of population productivity.

Watercourses within the Site are connected to the River Halladale, which is categorised as a Grade 1 river (highest grade possible)<sup>61</sup>, and thus salmonid populations present are likely to have more tolerance to detrimental effects than less sustainable populations, particularly if the effects are temporary. However, based on MSS data<sup>57</sup> only the Akran burn falls within this categorisation, and salmon are unlikely to be present in any of the other watercourses within the Site. This is in line with the findings of the FHS which recorded the majority of salmonid habitat suitability within this watercourse.

Only one watercourse is located within direct connectivity with the Development, this is the unnamed tributary of Giligill burn at the centre of the Site, where the only new watercourse crossings will be constructed. At this watercourse (AK5 and AK6), habitats were recorded to be unsuitable for migratory salmonids, and thus populations will be limited to resident brown trout. At AK5, habitats were assessed to be predominantly unsuitable for salmonid production; however, small sections of the burn (at AK6) were considered suitable for juvenile trout.

With the exception of the watercourse crossing, no other direct impacts will occur, and all other watercourses are located at least 50 m outwith proximity of all Development related construction. As these potential impacts are likely to be relatively localised to their point source within the Site and their magnitude, and thus effects on salmonid fish, is likely to dissipate with increasing distance from source, the risk from direct and indirect effects are low.

As stated in Section 7.6, mitigation presented with in **Chapter 12: Hydrology and Hydrogeology** of this EIA Report to safeguard the water environment, will also effectively mitigate construction-related impacts to fish such as the direct and indirect effect of pollution and sedimentation from instream works and surface water run-off. Furthermore, the sensitive design of watercourse crossing and culverts presented in Chapter 4 of this EIA Report developed to safeguard the water environment, which will be construction in accordance with statutory regulations for instream works, will further reduce the risk construction-related direct and indirect impacts to fish and other aquatic features.

Pre-construction fish fauna monitoring will be carried out to inform the need for further construction and operational phase monitoring, as well as the need for further mitigation, such as seasonal timing of works to avoid sensitive periods for salmonids, such as the spawning season (November to January), to reduce the effect on spawning and juvenile salmonids. As spawning time can vary locally, consultation with the local District Salmon Fisheries Board is recommended to ensure the correct periods are avoided. Fish fauna monitoring will also complement any water quality monitoring being also being undertaken at the time, as detailed in Chapter 12.

Through the implementation of embedded mitigation measures, such as the implementation of good practise pollution prevention measures, adherence to statutory regulations for instream works, pre-construction fish fauna monitoring as well as monitoring of works by the ECoW, the risk of detrimental impacts is low. Therefore, the effect of construction phase impact is considered to be of low magnitude, and is **not significant** in terms of the EIA Regulations.

### **7.9.5.2 Operational Phase**

#### *Habitat Degradation*

During the operational phase, the Development has the potential to adversely affect salmonid fish through its impacts on drainage, erosion of watercourses and accessibility, and may result in the degradation of salmonid habitats. The effects of these impacts could detrimentally impact the local salmon population via the reduction of productivity by reducing the populations ability to utilise spawning areas. These impacts are likely to only have the potential to occur at the single watercourse crossing located on the unnamed tributary of Giligill burn at the centre of the Site, which is of relatively low value to local salmonids.

As stated in Section 7.6, the sensitive design of watercourse crossing and culverts presented in Chapter 4 of this EIA Report have been developed to safeguard the water environment in the long term. Furthermore, if salmonid fish are recorded during pre-construction or construction phase fish fauna monitoring, operational monitoring will be carried out to, and this will inform the need for further mitigation and will complement any water quality monitoring also being undertaken.

Through the implementation of embedded mitigation measures, including sensitive design and fish fauna monitoring the risk of detrimental operational impacts is low. Therefore, the effect of operational phase impact is considered to be of negligible magnitude, and is therefore **not significant** in terms of the EIA Regulations.

### **7.9.5.3 Decommissioning**

Decommissioning activities are considered to be of a similar nature to those of Development construction. Through the implementation of embedded mitigation measures, such as the implementation of good practise pollution prevention measures, adherence to statutory regulations for instream works and monitoring of works by the ECoW, the risk of detrimental impacts is low. Therefore, the effect of decommissioning phase impact is considered to be of negligible magnitude, and is **not significant** in terms of the EIA Regulations.

## 7.9.6 Designated Sites

### 7.9.6.1 Caithness and Peatland SAC and Ramsar

#### *Habitats Regulation Appraisal Screening*

In accordance with the requirements of the Habitats Directives, where a project is likely to have a significant effect on an SAC (or any Natura 2000 Site, and in Scotland, as Ramsar Site), while not directly connected with, or necessary to the nature conservation management of the SAC, that project shall be subject to HRA. This identifies any implications for the SAC in the respect of its conservation objectives.

The Development is not associated with the management of the SAC or Ramsar, and therefore must undergo HRA screening. The intention of this screening is to assist the consenting authority in their assessment of the potential for likely significant effects on the integrity of the SAC/Ramsar. Should a likely significant effect be determined, the Development is statutorily required to be subject to an Appropriate Assessment (AA) by a relevant competent authority.

Part of HRA screening involves establishing the likely 'Zone of Influence' (ZoI) of the Development. The ZoI will vary depending on the nature of the project as well as the character and ecology of the Qualifying Features (QF). For floral and habitat QFs, given the fixed nature of these features, potential effects are likely to be limited to those associated with direct impacts, such as construction related habitat loss and pollution on habitats, on, directly adjacent, or with direct connectivity to the Site, for example hydrologically. In light of this, it is considered that the ZoI should be limited to land with the potential to be directly affected by the Development and therefore the ZoI is limited to within 2 km of the Site boundary.

The only Natura 2000 sites which falls within the ZoI of the Development is the Caithness and Sutherland Peatlands SAC and Ramsar, which are part of the same boundary. As a result, 'likely significant effects' on the SAC are predicted in the context of an HRA, and the SAC has been scoped into Stage 2 of the HRA process (AA).

Although likely significant effects are predicted for the SAC as a whole, as the Caithness and Sutherland Peatlands SAC is designated for a number of QFs, each of which have a different ZoI, an assessment of effects on each of these QFs has been carried out, and is presented in Table 7.10.

**Table 7.10 Habitats Regulation Appraisal Screening Assessment**

Qualifying Feature	Screening Assessment	Likely Significant Effect
Blanket Bog	Blanket bog was widespread across the Site, and may share hydrological connectivity with the QF within the SAC (and the Ramsar). Development within likely ZoI.	Yes
Otter	Otter was recorded within the Site and as in riparian environments otter can inhabit territories of between 20-32 km <sup>71</sup> , it is considered likely that otter utilising the Site comprise part of the Caithness and Sutherlands SAC population. Development within likely ZoI.	Yes

<sup>71</sup> Chanin, P., (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

Qualifying Feature	Screening Assessment	Likely Significant Effect
Depressions on peat substrates'	The feature is associated with some habitats and NVC communities recorded (M2 mosaic with M17 <sup>72</sup> ) and therefore may share connectivity with the QF within the SAC. Development within likely ZoI.	Yes
Wet heathland with cross-leaved heath	The feature is not associated with habitats or NVC communities recorded <sup>73</sup> , and therefore does not share connectivity with the QF within the SAC. Development outwith likely ZoI.	No
Marsh saxifrage	None of these features were recorded and no connectivity with the QF within the SAC is predicted. Development outwith likely ZoI.	No
Acid peat-stained lakes		
Ponds Clear-water lakes or lochs		
Very wet mires often identified by an unstable 'quaking' surface	The associated core NVC types for transition mire and quaking bog (M4, M5, M8, M9 and S27) <sup>74</sup> were not recorded, and no connectivity with the QF within the SAC is predicted. Development within Potential ZoI.	No

As summarised above likely significant effects are predicted for blanket bog, otter, and depressions on peat substrates', and all other QFs have been scoped out of further assessment; therefore, only the aforementioned QFs have been scoped into the AA.

Although an AA must be carried out by a relevant competent authority, information to inform the AA (often referred to as a Shadow AA) has been provided in below.

#### *Shadow Appropriate Assessment*

As established in Section 7.8.1, the only Natura 2000 site which falls within the ZoI of the Development is the Caithness and Sutherland Peatlands SAC (and Ramsar). The SAC/Ramsar lies on the immediate eastern boundary of the Site, and is currently in 'unfavourable' condition for uplands habitats, including blanket bog, and in 'unfavourable' condition for otter<sup>75</sup>.

QFs to be scoped into the AA phase of the HRA were presented in Table 7.10. As not all feature within the ZoI will be impacted by the Development, Table 7.11 presents the rationale upon which QFs have been scoped in out further assessment within this stage of the HRA.

<sup>72</sup> <https://sac.jncc.gov.uk/habitat/H7150/>

<sup>73</sup> <https://sac.jncc.gov.uk/habitat/H4010/>

<sup>74</sup> <https://sac.jncc.gov.uk/habitat/H7140/>

<sup>75</sup> Scotland's Environment Website (2019) Available at: <https://www.environment.gov.scot/data/data-analysis/protected-nature-sites/?pagenumber=1&resetmap=true&siteid=8218> (Accessed 29/11/19)

**Table 7.11 Qualifying Features impacted by the Development**

Qualifying Feature	Screening Conclusion	Impacted by Development
Blanket Bog (SAC and Ramsar)	Blanket bog was widespread across the Site, and may share hydrological connectivity with the QF within the SAC (and the Ramsar).	Yes. Further detailed assessment required.
Otter (SAC only)	It is considered likely that otter utilising the Site comprise part of the Caithness and Sutherlands SAC population.	Yes. Further detailed assessment required.
Depressions on peat substrates' (SAC only)	The feature is associated with NVC communities recorded in Survey Area and therefore may share connectivity with the QF within the SAC.	No. QFs largely recorded in the south of the Survey Area, and outwith the Site. No further assessment required, singularly or cumulatively.

In light of the above it is considered that detailed assessment of adverse effects should be limited to following QFs:

- Blanket bog; and
- Otter

*Blanket Bog*

Construction

As detailed in Section 7.9.2, despite the extensive coverage of blanket bog in the Survey Area, Site design has avoided much of the extensive area of blanket bog, and placed the Development predominantly in the north of the Site. The Development will result the permanent loss of 1.10 ha of blanket bog, an area equivalent to 0.0008% of the total area of the SAC. Furthermore, loss is limited to areas of poor quality modified or drained blanket bog, and exclude areas of near natural blanket bog.

The majority of Development is sufficiently distant to be considered outwith connectivity to the SAC. However, four turbines (T5, T6, T7, and T12), are located in close proximity to the SAC boundary, and thus the Development may be impacting on habitats with direct or indirect (i.e. hydrological) connectivity to the SAC. T5 and T12 are located within close proximity to the SAC boundary on areas of near natural wet dwarf scrub heath. Although this habitat is not a QF, some hydrological connectivity between these locations and the SAC is feasible, so minor impacts from pollution and sediment run off are feasible. However, with the adoption of detailed embedded mitigation and good practice measures, the magnitude of these effects is considered to be negligible.

T8 and T7 are located on modified blanket bog drained blanket bog respectively. Although some hydrological connectivity with the SAC is feasible, minor impacts from pollution and sediment run off are feasible. However, with the adoption of detailed embedded mitigation and good practice measures, and consideration of the very minor scale of habitat loss, the magnitude of effects on the SAC are considered negligible, and therefore **no adverse effects** on the integrity of the SAC, either singularly or cumulatively, are predicted from to occur from Development construction.

Operation

Development operation is not anticipated to involve any works which will directly or indirectly impact blanket bog habitat connected with the SAC. As discussed above, the proposed HMP will focus on restoring blanket bog, and over a medium to long term, will increase the ecological value of blanket bog in habitats in the Site. Although at this stage the full scope of bog restoration has not been determined; if feasible, it will be designed



to improve connectivity between blanket bog habitat within the Site and the SAC/Ramsar, assisting in the recovery of SAC/Ramsar boundary habitats.

In light of the above, operational effects on the integrity of the SAC/Ramsar are considered to be, in the worst case negligible, and possibly with the beneficial implementation of HMP measures, positive, but minor, and therefore **no adverse effects** on the integrity of the SAC, either singularly or cumulatively, are predicted from to occur from the operation of Development

#### Decommissioning

Impacts to the SAC from decommissioning works are anticipated to be of a similar nature to the construction phase impacts; however, the magnitude will depend on the success of the implementation of the HMP, as this may increase the limited existing connectivity between habitats in the Site and the Site.

However, even in the worst case, with the adoption of embedded mitigation measures and good practice measures **no adverse effects** on the integrity of the SAC/Ramsar, either singularly or cumulatively, are predicted from to occur from decommissioning.

#### *Otter*

As stated above, it is assumed that the otter utilising the Site are part of the SAC population. Section 7.9.5 provides a detailed assessment of all perceptible Development related effects, and no further effects are required to be assessed in the context of an AA.

Otter were only recorded on one watercourse with the Site, the Akran Burn, and although the species may potentially utilise other lower value watercourse within the Site, it is likely to only be on an occasional basis. Although very minor Development related effects on otter cannot be ruled out, the risk is very low, and given the limited value of the Site for otter, the extensive availability of more suitable habitats in the wider local area, and the large extent of the SAC boundary, **no adverse effects** on the integrity on SAC otter population are predicted.

### **7.9.6.2 EIA Context of Assessment**

In addition to the prediction of no adverse effects on the integrity of the SAC/Ramsar in the context of the HRA, **no significant effects** (in terms of the EIA Regulations) on the SAC/Ramsar or its QFs in terms of the EIA regulations are predicted from to occur from the Development.

### **7.9.6.3 East Halladale SSSI**

The East Halladale SSSI lies within the boundary of the Caithness and Sutherland SAC, located to the south-east of the Site, and is designated for blanket bog. For this reason, connectivity and potential for effects are considered to be similar, and thus, the assessment of the effects on the SSSI are considered to be of a similar magnitude and the same significance as for the SAC (see Section 7.9.6.1. Therefore, the detrimental effects of Development on the SSSI are assessed to be low magnitude and **not significant** in terms of the EIA Regulations.

## **7.10 RESIDUAL EFFECTS**

As following the implementation of embedded mitigation no significant effects on any IEFs are predicted, no significant residual effects are predicted in terms of the EIA Regulations.

## 7.11 CUMULATIVE EFFECT ASSESSMENT

The EIA Regulations require the cumulative effects of the Development with other relevant projects or plans to be assessed. In considering cumulative effects, it is necessary to identify any effects that may be not significant in isolation but that may be significant in combination with other developments.

This assessment considers that cumulative effects can result from effects that were individually assessed as non-significant, but in combination with effects or actions taking place over time, or across a wider spatial range (such as where the zone of influence of other developments or actions may overlap the with Development) non-significant effects may cumulatively be considered significant.

Cumulative effects are particularly important in EcIA as ecological features may be already exposed to background levels of threat or pressure and may be close to critical thresholds where further impact could cause irreversible decline.

### 7.11.1 *Blanket Bog*

Blanket bog habitats are found extensively in the local area and Development related losses even of Site scale are very low, and focussed on already degraded habitats. Therefore, due to the very low magnitude of this non-significant effect, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

### 7.11.2 *Bats*

Given the potential foraging and commuting range for bats; the Site lies within the ZoI of two local windfarm clusters<sup>76</sup>: Drum Hollistan 2 (in planning), Limekilns (approved) and Limekilns Extension (in planning). However due to the open and exposed nature of the Site, and local habitats, there is no obvious commuting connectivity between the Site and local proposed windfarms.

Therefore, despite the proximity to a number of other existing or future windfarms, due to lack of clear connectivity and the low magnitude of predicted non-significant effect, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

### 7.11.3 *Otter*

Given the potential foraging and commuting range of otter, the Site lies within the ZoI of seven local approved or pre-consent windfarms<sup>77</sup>, which are: Drum Hollistan 2 (in planning), Baillie (constructed) Limekilns (approved), Limekilns Extension (in planning), South Shebster (refused), Strathy North (constructed), Strathy South (consented) and Strathy Wood (in planning).

The presence of otter within was limited to the Akran Burn, where a single couch (above ground, non-breeding, resting area) was recorded, but the species was not recorded elsewhere. Extensive local habitat suitability outwith the Site exists for the species which are abundant and in an inclining status in the Northern Highlands and across Scotland. Therefore, despite the proximity to a number of other existing or future windfarms, due to the low magnitude of predicted non-significant effects, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

---

<sup>76</sup> Status of wind farms is as of 15 September 2020.

<sup>77</sup> Status of wind farms is as of 15 September 2020.

#### 7.11.4 *Salmonid fish*

Both Drum Hollistan 2 and Limekiln contain watercourses that are designated as Scottish salmon rivers and thus form part of the local salmonid population; however, all three sites lie in separate catchments and are therefore not hydrologically connected.

Due to the low magnitude of the predicted non-significant effects, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

### 7.12 SUMMARY OF EFFECTS

Table 7.12 provides a summary of the effects detailed within this chapter.

**Table 7.12 Summary of Effects on Important Ecological Features**

IEFs	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Caithness and Sutherland SAC/Ramsar	Indirect effects of pollution and sedimentation of blanket bog and otter foraging	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
	Otter Habitat Loss, Disturbance and Degradation	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
	Disturbance and Displacement of Breeding otter	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
	Otter Interaction with Traffic, Plant and personnel	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
	Otter entrapment in Excavations	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
Halladale SSSI	Indirect effects of pollution and sedimentation of blanket bog	Not Significant	Embedded Mitigation/Good Practise only	None
Bats	Habitat change	Not Significant	Embedded Mitigation/Good Practise only	None
	Roost loss	Not Significant	Embedded Mitigation/Good Practise only	None
Otter	Habitat Loss, Disturbance and Degradation	Not Significant	Embedded Mitigation/Good Practise only	None
	Disturbance and Displacement of Breeding otter	Not Significant	Embedded Mitigation/Good Practise only	None
	Interaction with Traffic, Plant and personnel	Not Significant	Embedded Mitigation/Good Practise only	None

IEFs	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
<b>Construction Phase</b>				
	Otter entrapment in Excavations.	Not Significant	Embedded Mitigation/Good Practise only	None
Salmonid Fish	Habitat Loss, Disturbance and Degradation	Not Significant	Embedded Mitigation/Good Practise only	None
<b>Operational Phase</b>				
Caithness and Sutherland SAC/Ramsar	Otter Interaction with Traffic, Plant and personnel	Not Significant/No Adverse Effect	Embedded Mitigation/Good Practise only	None
Bats	Turbine related mortality	Not Significant	Embedded Mitigation only	None
Otter	Otter Interaction with Traffic, Plant and personnel	Not Significant	Embedded Mitigation/Good Practise only	None
Salmonid Fish	Habitat degradation	Not Significant	Embedded Mitigation/Good Practise only	None

### 7.13 STATEMENT OF SIGNIFICANCE

No significant ecological effects have been identified for the construction and operation of the Development, either alone or in combination with other developments, and therefore these are not significant in relation to the EIA Regulations. Embedded Mitigation has been proposed to ensure the low magnitude of effects during the construction phase and to reduce the likelihood of legal offences and comply with good practice.