

8 Ecology Assessment

8.1 Introduction

8.1.1 This chapter of the EIAR considers the likely significant effects on ecology associated with the construction and operation of the Proposed Development. The specific objectives of the chapter are to:

- describe the current baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address any potential significant effects;
- assess the residual effects remaining following the implementation of mitigation measures.
- The assessment has been carried out by Sarah Richardson, of ITP Energised. Detail professional qualifications and any relevant code of practice have been followed.

8.1.2 The chapter is supported by the following technical appendices and figures which informed the basis for the individual steps involved as well as the impact assessment itself and are referenced throughout the text:

8.1.3 Technical Appendices:

- Technical Appendix 8.1 Bat Survey Report;
- Technical Appendix 8.2 Protected Species Report;
- Technical Appendix 8.3 National Vegetation Classification Survey Report;
- Technical Appendix 8.4 Fish Habitat Survey Report;
- Technical Appendix 8.5 Outline Biodiversity Enhancement and Management Plan; and
- Technical Appendix 8.6 Ecological Desk Study

8.1.4 Figures:

- Figure 8.1 - Designated Sites;
- Figure 8.2a - Bat Survey Results, Common Pipistrelle;
- Figure 8.2b - Bat Survey Results, Soprano Pipistrelle;
- Figure 8.3 - Protected Species Results;
- Figure 8.4 - National Vegetation Classification Survey Results; and

- Figure 8.5 - Areas of Potential Ground Water Dependant Terrestrial Ecosystems;

8.1.5 For the baseline survey details, analyses and assessments relating to ornithological features in connection with the Site please refer to **Chapter 9: Ornithology Assessment** and associated Technical Appendices.

8.2 Legislation, Policy and Guidance

Legislation

8.2.1 Full consideration has been given to all relevant nature conservation legislation when carrying out this assessment. This includes the following:

- The Conservation of Natural Habitats and Wild Flora and Fauna (the ‘Habitats Directive’) 1992 (92/43/3EEC), transposed into domestic law by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- Directive (2009/147/EC) of the European Parliament and of the Council on the conservation of wild birds (the ‘Birds Directive’), transposed into domestic law by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Nature Conservation (Scotland) Act 2004 (as amended);
- The Wildlife and Natural Environment (Scotland) (WANE) Act, 2011 (as amended); and
- The Protection of Badgers Act 1992, as amended by the Wildlife and Natural Environment (Scotland) Act 2011.

8.2.2 Legislation specific to badger, bats, birds, otter, water vole, red squirrel and pine marten including details of all actions which would constitute an offence, is detailed fully within **Technical Appendix 8.2**.

Policy Framework

8.2.3 The policies set out in **Appendix 8.6** are those relevant to nature conservation and include those from the National Planning Framework (NPF) 4 (Scottish Government, 2023), Onshore Wind Policy Statement 2022 (Scottish Government, 2022), Planning Advice Note 60: Planning for Natural Heritage (Scottish Government, 2000) and the Aberdeenshire Local Development Plan (Aberdeenshire Council, 2023). Consideration of the draft Scottish Biodiversity Strategy to 2045 (Scottish Government, 2022) is also made.

Best Practice Ecological Guidance

8.2.4 In preparing this work, cognisance has been taken of the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines for ecological impact assessment in the UK and Ireland (CIEEM, 2018) and individual survey methods. The extended UK Habitat Classification survey is based on the standard UK Habitat (UKHab) Classification methodology (Butcher, et al., 2020). In addition, cognisance has been taken of the following best practice guidelines and survey method publications in relation to protected and aquatic species listed in **Technical Appendix 8.2** and **8.4** respectively.

8.3 Biodiversity Priorities

8.3.1 Two biodiversity priorities have been discussed in **Technical Appendix 8.6**, these include the Scottish Biodiversity List (SBL) (Scottish Government, 2013) in 2005 to satisfy the requirements under Section 2(4) of the Nature Conservation (Scotland) Act 2004 and the local biodiversity reporting (North East Scotland Biodiversity Partnership, 2022a).

8.4 Consultation

Scoping

8.4.1 In August 2022 an EIA Scoping Report was submitted to the Scottish Government's Energy Consents Unit (ECU) to accompany a request for the Scottish Ministers to adopt an EIA Scoping Opinion under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (hereafter referred to as 'the EIA Regulations'). The EIA Scoping Report included for consideration of ecology.

8.4.2 In undertaking the ecological baseline and impact assessments, consideration has been given to ecological-specific consultee EIA Scoping Opinion responses. **Table 8.1** details those consultation responses that have been provided further consideration with regards to terrestrial ecology and outlines how they have been addressed. Please note that ornithological responses and actions are included and considered in full in **Chapter 9: Ornithology Assessment**.

Table 8.1 - Ecological Consultation Responses

Consultee	Responses of Relevance to Ecology	Applicant Action
NatureScot	Site boundary In Table 2.1 it states that the site boundary has been extended. From Figures 2.1, 2.2 and 2.3 it appears the site boundary is the same and it is not clear where this has been extended. The applicant should consider the need for bird or other species surveys in this additional area. We note that additional peat probing and habitat surveys will be undertaken.	The site boundary as shown in Figure 1.2 has been surveyed. In addition, appropriate survey buffers have been implemented for protected species surveys following the Guidance specified in Section 8.2 above.

Consultee	Responses of Relevance to Ecology	Applicant Action
		All ornithological considerations are addressed in Chapter 9: Ornithology Assessment . Peat considerations are addressed in Chapter 10: Geology, Hydrology, Hydrogeology Assessment .
	Demonstrating positive effects for biodiversity. National Planning Framework 4 (NPF4) sets out new requirements for development to deliver positive effects, primarily under Policy 3. For national and major developments, or those subject to Environmental Impact Assessment (EIA), Policy 3b notes that proposals will only be supported where it can be demonstrated that it will conserve, restore and enhance biodiversity, including nature networks, so they are in a demonstrably better state than without intervention. The policy requires that significant biodiversity enhancements are provided, in addition to any proposed mitigation. Only when actions result in biodiversity being left in a better state than before development are positive effects secured. Information on predicted losses and proposed offsetting and delivery of positive effects should be clearly summarised in the EIA report. These are new requirements and our guidance will be updated in due course, noting for example, that the Scottish Government is exploring options for measuring biodiversity specifically for use in Scotland.	Please refer to Section 8.7 of this ecology assessment chapter for consideration of the habitats found within the Study Area, their conservation value and the potential impacts associated with the Proposed Development. Technical Appendix 8.5: Outline Biodiversity Enhancement and Management Plan details the proposed enhancement measures and aims of prescribed habitat measures looking to significantly improve the biodiversity associated with the Site from the baseline conditions.
	Peatland The applicant has indicated that the EIA report will include an assessment of the impacts on peatland habitat, a Peat Management Plan and outline Habitat Management Plan (HMP). Where peatland is affected, there will need to be sufficient peatland restoration in order to mitigate losses and deliver biodiversity enhancement. The outline HMP should contain enough detail to demonstrate that proposals for peatland restoration are likely to be effective. Part of the site has undergone Peatland Action restoration works in 2020. From Figure 2.2 it appears T11, T12 and associated access tracks are either on or adjacent to this area. It is important that this Peatland Action area is fully considered in the EIA report. We advise that if the Peatland Action restoration footprint is affected, the applicant should clearly explain the implications, including in terms of Peatland Action funding and additional restoration works.	Detailed consideration is made in relation to NPF 4 (Scottish Government, 2023) as well as the NatureScot Guidance (June, 2023) advising on developments in carbon-rich soils and peatland habitats (refer to Section Error! Reference source not found. of this ecology chapter for consideration of the habitats found within the Study Area and their conservation status) and its management in the EIAR. Further specific details relating to peat and peat management can be found in Chapter 10: Geology, Hydrology and Hydrogeology Assessment and the Peat Management Plan (PMP) (Technical Appendix 10.2). Plans for peat enhancement measures and the restoration of eroded blanket bog habitats are presented in the Outline Biodiversity Enhancement

Consultee	Responses of Relevance to Ecology	Applicant Action
Scottish Environment Protection Agency (SEPA)	<p>Map and site layout including borrow pits with environmental constraints mapping. Figure 1.2: Preliminary Site Constraints & Layout: It is noted that only turbine locations are indicated and not other required infrastructure including access tracks and borrow pits. How will turbines T1, T2, T3 be accessed?</p> <p>It would be helpful to see a plan of all infrastructure (existing and proposed clearly shown) in relation to the detailed peat probing (Figure 7.2) and also NVC assessment. It is not clear if there is an existing underground cable (through an area of deep peat) or if this is proposed.</p> <p>Map based on NVC survey: We note that no habitat/NVC information is provided in the scoping report and “an extended National Vegetation Classification (NVC) survey will be undertaken within the footprint of proposed development and a minimum 250 m buffer (access permitting) and will include an assessment in terms of potential groundwater dependence (SEPA, 2017). If the layout of the wind farm results in turbines or borrow pits being proposed within 250 m of a potential GWDTE, or other wind farm infrastructure being proposed within 100 m of a potential GWDTE, then further assessment will be undertaken to verify if the potential GWDTE is indeed groundwater dependent.” We note that the layout may require alteration and amendment.</p> <p>We note that although aquatic or fisheries surveys are not included within the scope of assessment, this will be re-evaluated during the survey work.</p>	<p>Management Plan (Technical Appendix 8.5).</p> <p>Detailed consideration is made in relation to SPP (2014) as well as the NatureScot Guidance (June, 2023) advising on developments in carbon-rich soils and peatland (refer to Section Error! Reference source not found. of this ecology chapter for consideration of the habitats found within the Study Area and their conservation status) and its management in the EIAR, further details can be found in Chapter 10: Geology, Hydrology and Hydrogeology Assessment and the PMP (Technical Appendix 10.2).</p> <p>Figure 1.2 shows the proposed layout of all infrastructure associated with the Proposed Development including existing and proposed tracks as well as any floating tracks to be floated over areas of deeper peat.</p>

conservation concern, either nationally or specifically listed within the Local Biodiversity Action Plan (LBAP), ranging to 2 km from the Site. The search distance was increased depending upon the specific ecological feature (i.e. up to 10 km in the case of sensitive bat roosts).

- 8.5.2 The desk study appraised a range of publicly available information to provide an understanding of the ecological context of the Site from the following sources:
- NatureScot SiteLink (NatureScot, 2021);
 - Scotland’s Environment Map (Scotland's Environment Map, 2021);
 - National Biodiversity Network (NBN) Atlas (only records suitable for commercial use were reported) (NBN Atlas, 2021); and
 - North East Scotland Biological Records Centre (NESBReC, 2022).

8.5.3 **Figure 8.1** presents the Site boundary, regional context and the designated sites located within the search terms as referenced above.

Field Studies

8.5.4 The Study Area for field surveys varied depending on the nature of the feature in line with standard practise. Details of the extent of each Study Area are further described and presented in the corresponding Technical Appendix and associated Figures, as referenced in **Paragraph 8.1.2**.

Evaluation Methods for Ecological Features

8.5.5 **Table 8.2** lists the criterial used to determine the value of ecological features in a geographical context. Within this chapter any ecological feature of local or higher value is considered an Important Ecological Feature (IEF).

Table 8.2 - Geographical Evaluation Criteria

Value	Criteria	Examples
International	<p>Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance.</p> <p>N.B. For designations, such as a Special Area of Conservation (SAC), this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.</p>	<p>International nature conservation areas:</p> <ul style="list-style-type: none"> • any Special Area of Conservation (SAC); • any candidate SAC (cSAC); and • any Ramsar wetland. <p>Significant numbers of a designated population outside the designated area. A site supporting more than 1% of the EU population of a species.</p>
National (i.e. Scotland)	<p>Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance.</p>	<p>National nature conservation areas: any Site of Specific Scientific Interest (SSSI) or National Nature Reserve (NNR) designated for biological feature(s).</p>

8.5 Methodology

Baseline Characterisation

Ecological Desk Study

8.5.1 An ecological desk study was undertaken that included obtaining data from third parties and is presented as part of **Technical Appendix 8.6**, with further consideration of external bat data in **Technical Appendix 8.1** and external fish data in **Technical Appendix 8.4**. This data was used to confirm the presence of any statutory and non-statutory nature conservation sites, areas of ancient woodland and legally protected or otherwise notable species (i.e. those species of

Value	Criteria	Examples
	N.B. For designations, such as a Site of Special Scientific Interest (SSSI) or a National Nature Reserve (NNR), this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	A site supporting more than 1% of the UK population of a species. Nationally important population/assemblage of a European Protected Species (EPS) or species listed on Schedule 5 of the WCA.
Regional (Aberdeenshire)	Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a regional scale.	Statutory and non-statutory nature conservation designations: <ul style="list-style-type: none"> any Local Nature Reserve (LNR); any Scottish Wildlife Trust (SWT) reserve; any Local Biodiversity Site (LBS); and Ancient Woodland listed on the SNH Ancient Woodland Inventory (SNH, 2010). A Council-scale important population / area of a species or habitat listed on the Scottish Biodiversity List (SBL) (Scottish Government, 2013) as requiring conservation action. A regional-scale important population/area of a species or habitat listed on the local Biodiversity Action Plan (local BAP). A regional-scale important population / assemblage of an EPS or species listed on Schedule 5 of the WCA.
Local (i.e. within 2 km of the site)	Nature conservation resource, e.g. a habitat or species of importance in the context of the local district.	A breeding population of a species on the SBL.
Less than local	Unremarkable, common and widespread habitats and species of little/no intrinsic nature conservation value.	Common, widespread, agricultural and/or exotic species (such as escapees).

8.5.6 Where a feature qualifies under two or more criteria, the higher value is applied to the feature.

8.5.7 Within this chapter any ecological feature of local or higher value is considered an IEF.
Impact Assessment Method

8.5.8 The approach to the Ecological Impact Assessment (EcIA) follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2018), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given proposed development. Starting with establishing the baseline through a mix of desk study and field survey, key ecological features (the IEFs) are identified and those requiring assessment established through a reasoned

process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IEF (habitat or species), habitat connectivity and spatial separation from the Proposed Development. From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard mitigations to ameliorate impacts as far as practicably possible. Additional mitigation strategies can then be determined to minimise any residual impacts that would otherwise be experienced by the IEF and any opportunities for enhancement identified.

8.5.9 In summary, the impact assessment process (CIEEM, 2018) involves:

- identifying and characterising impacts and their effects;
- incorporating measures to avoid and mitigate negative impacts and effects;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects; and
- identifying opportunities for ecological enhancement.

Ecological Zone of Influence

8.5.10 The Ecological Zone of Influence (EZoI) is defined as the area within which there may be ecological features subject to effects from the Proposed Development. Such effects could be direct, e.g. habitat loss resulting from land-take or removal of a building occupied by bats, or indirect, e.g. noise or visual disturbance causing a species to move out of the EZoI. The EZoI was determined through:

- review of the existing baseline conditions based on desk study results, field surveys and information supplied by consultees;
- identification of sensitivities of ecological features, where known;
- the outline design of the Proposed Development and approach to construction; and
- through liaison with other technical specialists involved in the assessment, e.g. hydrologists and noise specialists.

Characterising Ecological Impacts and Effects

8.5.11 In accordance with the CIEEM guidelines, the following definitions are used for the terms 'impact' and 'effect':

- Impact - Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow; and
- Effect - Outcome to an ecological feature from an impact. For example, the effects on a species population from loss of a hedgerow.

8.5.12 In accordance with the CIEEM guidelines, when determining impacts on IEFs, reference is made to the following:

- Beneficial or adverse - i.e. whether the impact has a beneficial or adverse effect in terms of nature conservation objectives and policy;
- Magnitude - i.e. the size of an impact, in quantitative terms where possible;
- Extent - i.e. the area over which an impact occurs;
- Duration - i.e. the time for which an impact is expected to last;
- Timing and frequency - i.e. whether impacts occur during critical life stages or seasons; and
- Reversibility - i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.

8.5.13 Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action but affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. fencing of a development site may cause scrub to invade marshy grassland.

8.5.14 The CIEEM guidelines state that impacts should be quantified, if possible, and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population). That approach has been followed here, where possible. However, following the language of other chapters in the EIAR, impact magnitude has also been categorised with reference to the definitions in **Table 8.3**.

Table 8.3 - Level of Impact

Level of impact	Definition
No impact	No detectable impacts on the ecological resource, even in the immediate term.
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
Low	Detectable impacts, and may be irreversible, but either of sufficiently small-scale or of short-term duration to have no material impact on the

Level of impact	Definition
	conservation status of the nature conservation designation, habitat or species population.
Medium	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible / replaceable given time, and not a threat to the long-term integrity of the feature.
High	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term.

The following definitions have been applied in respect to timescales:

- Immediate: Within approximately 12 months;
- Short term: Within approximately 1-5 years;
- Medium term: Within approximately 6-15 years; and
- Long term: More than 15 years.

Determining Ecologically Significant Effects

8.5.15 An EclA is undertaken in relation to the baseline conditions that would be expected to occur in the absence of a proposed development and, therefore, may include possible predictions of future changes to baseline conditions, such as environmental trends and other completed or planned development. Both adverse and beneficial impacts/effects are possible.

8.5.16 A significant effect, in ecological terms, is defined as an effect (whether adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative and in-combination impacts.

8.5.17 In accordance with the CIEEM guidelines, the approach adopted in this chapter aims to determine if the effect of an impact is significant or not based on a discussion of the factors that characterise it, i.e. the ecological significance of an effect is not dependent on the value of the feature in question. Rather, the value of a feature that will be significantly affected is used to determine the geographical scale at which the effect is significant.

- 8.5.18 In accordance with the current CIEEM guidelines, effects of impacts are assessed in the presence of standard mitigation measures. Additional mitigation may be identified where it is required to reduce a significant effect.
- 8.5.19 Any significant effect remaining post-mitigation (the residual effect), together with an assessment of the likelihood of success of the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.
- 8.5.20 In addition to determining the significance of effects on valued ecological features, this chapter also identifies any legal requirements in relation to wildlife.

Survey Limitations

- 8.5.21 All baseline surveys were conducted under optimal survey conditions and at the appropriate times of year. The following outlines some of the more survey-specific limitations that were encountered.

NVC Survey Limitations

- 8.5.22 The survey was carried out at the optimal time of year for botanical survey and as such there were few limitations. Some very early flowering plants may have been missed due to the timing of the survey, but this is not considered to have affected the classification of vegetation communities.

Bat Survey Limitations

- 8.5.23 A number of minor limitations were experienced during the bat surveys:
- 8.5.24 Small periods of temperature data were not recorded by the weather station logger during the spring survey period. This does not represent a significant limitation as the deployment period was extended to account for poor weather.
- 8.5.25 As a transition to the 2019 guidance (SNH, 2019) a combination of zero crossing (Anabat Express) and full spectrum (Anabat Swift) detectors were used. This slight deviation from the latest guidance was agreed with NatureScot in advance of surveys commencing, given the short lead in time from the new guidance being published and the logistical and supply difficulties relating to access of full spectrum detectors at short notice. Full spectrum detectors were used at higher risk locations and a period of 'calibration' was undertaken using both detectors deployed side by side. A correction factor was then calculated and applied to site wide zero crossing results to obtain an adjusted activity rate. Although this represents a limitation and results in an increased degree of error, the significance of this limitation is assessed to be low, especially taking into account the general activity levels in the Turbine Envelope.

- 8.5.26 It is difficult to ensure that acceptable weather conditions are experienced during bat survey work in Aberdeen on exposed sites at altitude. However, to compensate for this risk detector deployment sessions were extended, especially during the spring and autumn periods to ensure that adequate weather conditions were obtained. As a result, no significant limitation was experienced.
- 8.5.27 Minor issues with functioning of static detectors resulted in two detectors failing part way through the spring deployment period. During all other survey periods detectors functioned for the duration of the deployment period and as a result the loss of small amounts of sampling is not considered a significant limitation.
- 8.5.28 Although a number of limitations exist the data obtained provides a clear picture of bat activity across the site and wider environs and as a result it is not anticipated that the limitations affect the robustness of the results to a significant degree.
- 8.5.29 Please refer directly to **Technical Appendix 8.4** for full details on the limitations to the bat survey data and results.

8.6 Ecological Baseline Conditions

Ecological Desk Study

- 8.6.1 A summary of the ecological desk study findings are presented in this Section of the EIAR, detailing those findings most pertinent to the Proposed Development and the impact assessment. However, the desk study results can be found in full in **Technical Appendix 8.6**.

Protected Species Surveys

- 8.6.2 Specific details relating to field survey methodologies and results are included within each of the relevant **Technical Appendices 8.1 to 8.4**. The following sections summarise the baseline conditions following these ecological surveys.

Bat Survey Results

- 8.6.3 The following summarises the overall results of the bat activity survey. For full details please refer directly to **Technical Appendix 8.1**.

Bat habitat assessment

- 8.6.4 Habitat connectivity over much of the Survey Area was assessed as poor with only small burns and ditches offering suitable commuting routes or linear features across an otherwise very open landscape.
- 8.6.5 Roosting opportunities across the Site are assessed as being poor. Some features of note include a ruined shooting lodge, a more modern corrugated tin bothy and a ruined bothy structure in the east of the Survey Area. Each of these structures are

located beyond 200 m of any proposed turbine location. Full details of each of the assessed features can be found in **Technical Appendix 8.1**.

Bat activity surveys

- 8.6.6 A total of 13 static bat detectors were used across three survey deployments in order to assess bat activity across the Site. Bat pass rates were found to be often highly variable between nights, with some nights having few or no passes and other nights having relatively high activity. This is particularly pronounced on sites within north-east Scotland. In these circumstances, the median is likely to be a more useful summary of the typical activity than is the mean (Lintott & Mathews, 2018). As a result, median pass rates per hour are primarily the presented data in the baseline report, along with an indication of mean pass rates where relevant. Within the Survey Area, bat activity was variable across the survey sessions, but overall activity levels were relatively low with the majority of the locations supporting median and mean activity rates below 1 bat pass per hour and the vast majority of locations for all species.
- 8.6.7 Activity surveys identified relatively high levels of activity at a number of locations within the site. The results of the static detector surveys identified the presence of at least four species; common pipistrelle, soprano pipistrelle, brown long-eared bat and *Myotis* sp. However, when considering the whole site, a total of 1,851 bat passes were recorded across the site. These consisted of over 49% of all the passes recorded from common pipistrelle, 49% from soprano pipistrelle, 1.2% *Myotis* sp. and 0.8% from brown long-eared bat. Results of the common and soprano pipistrelle activity levels are presented in **Figures 8.2a** and **8.2b** respectively.
- 8.6.8 The second deployment of static detectors recorded the majority of registered activity with 1,653 calls (88%), Survey 1 supported 186 (10%) and Survey 3 the least at 30 calls (2%). It is important to note that the number of bat passes does not equate to the number of bats as a single bat can pass a detector multiple times throughout one night of recording.

Badger

- 8.6.9 No evidence of badger was found within the Study Area, although badgers are known to be present in the area surrounding the Hill of Fare (NBN, 2022). Potentially suitable foraging habitat is widespread in the area surrounding the hill; notably cereal crops, livestock grazing areas plus habitats dominated by woodlands biased towards broad-leaved trees. The Hill of Fare heather moorlands are on generally thin soils, over bedrock and degraded granitic material, and are therefore not

suitable for sett construction. Areas of deep peat are also present, but are too wet for sett construction.

Pine marten

- 8.6.10 There is widespread evidence of this species in the form of territory-marking scats (of a variety of ages) on the forestry tracks surrounding the open moorland (Target Notes (TN)1-12, **Technical Appendix 8.2** and **Figure 8.3**), including in the fireplace of a bothy (TN6, **Technical Appendix 8.2**) located on the southern slopes of the Hill of Fare along the south-west access track. The plantation habitats are suitably mature to support this species. Though the evidence found was limited to the edges of the Site (i.e. no further than the woodland edges), it is possible that pine martens may venture out onto the fringes of the moorland when foraging, particularly during the bird breeding season. However, no suitable denning habitat was identified as present in the open habitat. A small mammal hole, with a trail leading to the entrance was identified in the vicinity of some scats (TN13, **Technical Appendix 8.2**); however, it could not be determined what species it belonged to.

Otter

- 8.6.11 Territory-marking spraints were identified in the lower reaches of the Landerberry Burn and the Burn of Corrichie, but no resting sites were recorded (TN14-17, **Technical Appendix 8.2** and **Figure 8.3**). The apparent age of the spraints suggests infrequent presence within the watercourses, but otters may forage for amphibians in the upper catchments of these burns during the amphibian breeding season (February-May). Two sets of partial prints were identified in the lower reaches of the Landerberry Burn (TN18-19, **Technical Appendix 8.2**); based on size and presence of claw marks, the prints could be attributed to otter. No signs of otter were identified around the waterbodies within the moorland (TN27-29, **Technical Appendix 8.2**). Nor were any signs found in the vicinity of the quarry, the steep cliff faces likely making it inaccessible (TN31, **Technical Appendix 8.2**).

Water vole

- 8.6.12 No evidence of water vole was recorded during the survey. Water voles in this region prefer riparian habitat associated with rivers, streams and ditches and other waterbodies with vegetated sides and steep banks for burrowing. Generally, the banks of the watercourses that run through the woodlands are shallow and rocky, making them less suitable for use by water voles.

Red squirrel

8.6.13 No evidence of red squirrel presence was recorded within the plantations of the Site and immediately adjacent areas of the survey buffer. There is a mixed age structure to the plantation coupes, including some too young to have sufficient cone crop to support red squirrel; however, the plantation of the wider area surrounding the Site appears to be of suitable age structure to support a red squirrel population. Several spruce cones, with potential to have been foraged by squirrel, were noted on a track to the north of the Site (TN20, **Technical Appendix 8.2**). Anecdotal evidence from discussion with an Estate worker suggests that red squirrels are present in the northern plantation policies and a review of publicly available wildlife records indicates observation of red squirrel in the wider Hill of Fare area (including the northern plantation policies) within the previous one to four years. Of note, no records for grey squirrel appear to have been made in the local area within the last 10 years (NBN, 2022).

Herptiles

8.6.14 Several common frogs were noted within the Site (TN30, **Technical Appendix 8.2**), with breeding habitat available (TN27-29, **Technical Appendix 8.2**). While no reptiles were observed, reptile habitat is widespread, including woodland edge habitat, exposed boulders and tracks for basking. Old drystone walling was noted marking the boundary of the plantation and additionally, the remains of ruined buildings, which can provide hibernation features (TN22-23, TN26, **Technical Appendix 8.2**).

Other species

Deer presence was indicated by prints across the Site and lower plantation areas, including near Brown Hill, with deer slots of red deer size and one sighting of a roe deer.

8.6.15 A range of birds, including red grouse, were also observed and a derelict corvid trap was noted (TN24, **Technical Appendix 8.2**). Additionally, a variety of invertebrate species were observed across the area.

Invasive Non-native Species

8.6.16 Japanese knotweed was noted by the wall of the Hill of Fare Site entrance car park (TN32, **Technical Appendix 8.2** and **Figure 8.3**). Further Japanese knotweed was recorded at the back of Hillbrae Cottage: a large stand (>10 m x 5 m) at c.10 m beyond the left bank of the Landerberry Burn, with individual small groupings of canes between the main stand and into the watercourse (TN33-34, **Technical Appendix 8.2**).

National Vegetation Classification Surveys

8.6.17 The communities and their associated sub-communities are shown on **Figure 8.4**, which also shows the locations of quadrats. Phase 1 habitats and target notes are shown in **Technical Appendices 8.3 - Figure 3**. **Table 8.4** summarises the results:

Table 8.4 - Summary of NCV Results

NVC Community	Phase 1 Habitat	Area within the Site (ha)	Area within Study Area (ha)
Mires and flushes			
M4 Carex rostrata - Sphagnum recurvum mire	E2.1 Acid/neutral flush	0.19	0.19
M19 Calluna vulgaris - Eriophorum vaginatum blanket mire	E.1.6.1 Blanket bog	114.57	116.19
M21 Narthecium ossifragum - Sphagnum papillosum valley mire	E2.1 Acid/neutral flush	1.91	1.91
M23a Juncus effusus/acutiflorus-Galium palustre rush-pasture, Juncus acutiflorus sub-community	B5 Marsh/marshy grassland	5.74	5.74
M23b Juncus effusus/acutiflorus-Galium palustre rush-pasture, Juncus effusus sub-community	B5 Marsh/marshy grassland	13.83	14.06
Dry Heaths			
H9 Calluna vulgaris - Deschampsia flexuosa heath	D1.1 Dry dwarf shrub heath - acid	1.66	1.66
H9d Calluna vulgaris - Deschampsia flexuosa heath, Galium saxatile sub-community	D1.1 Dry dwarf shrub heath - acid	20.65	21.81
H10a Calluna vulgaris - Erica cinerea heath, Typical sub-community	D1.1 Dry dwarf shrub heath - acid	869.59	1008.53
H12a Calluna vulgaris-Vaccinium myrtillus heath, Calluna vulgaris sub-community	D1.1 Dry dwarf shrub heath - acid	8.66	8.66
Grasslands and Bracken			
U20c Pteridium aquilinum-Galium saxatile community, Species poor sub-community	C1 Bracken	130.20	168.72
Non-NVC Communities			
N/A	A1.2.2 Conifer plantation	192.13	493.53
N/A	A4.2 Recently felled woodland	24.02	62.62
N/A	B4 Improved grassland	1.05	49.39
N/A	G1 Pond	0.07	0.07
Totals		1384.27	1953.10

Habitat Descriptions

8.6.18 A brief description of the NVC types and their associated Phase 1 habitats recorded within the NVC Study Area is presented below in order of prevalence: for full

descriptions please refer to **Technical Appendix 8.3** and **Figure 8.4**. In the following paragraphs where reference is made to NVC community or non-NVC habitat codes, the full community's name can be found in **Table 8.4**.

Mires and Flushes

M4 Carex rostrata - Sphagnum recurvum mire

8.6.19 One small (0.19 ha) area of M4 was recorded at the western side of the Site adjacent to the footpath. The vegetation at Q5 (Table 1 of **Technical Appendix 8.3**) was dominated by bottle sedge (*Carex rostrata*) with occasional common cottongrass (*Eriophorum angustifolium*). Below the vascular plant layer was a thick layer of Sphagnum mosses including *Sphagnum fallax* and *Sphagnum cuspidatum* as well as *Polytrichum commune*.

8.6.20 M4 is characteristic of pools and seepage areas on the raw peat soils of topogenous and soligenous mires where the waters are fairly acid and only slightly enriched (Rodwell, 1991 et seq.). Bare peat was visible in areas indicating the mire was dried out and degraded in parts.

M19 Calluna vulgaris - Eriophorum vaginatum blanket mire

8.6.21 Two areas of M19 were recorded within the western part of the Site. The largest (at Q13) was in the north and located west of the watercourse; it was dominated by heather (*Calluna vulgaris*), locally with very wet areas dominated by bog asphodel (*Narthecium ossifragum*), hare's-tail cottongrass (*Eriophorum vaginatum*) or bog-mosses (*Sphagnum* spp.) (Table 2 of **Technical Appendix 8.3**). The smaller area to the southwest (Q7) was similar, though with a slightly drier appearance with lower frequencies of bog asphodel and bog-mosses.

8.6.22 M19 is mainly a blanket mire community typical of watersheds and gentle slopes where a deep layer of peat has been able to accumulate and occurs on drier peats than some related mire communities. The peat is generally firm, moist and fibrous rather than wet and slimy (Averis, et al., 2004).

M21 Narthecium ossifragum - Sphagnum papillosum valley mire

8.6.23 Two small areas of M21 were recorded within the Site at the south-western corner, in close proximity to the public footpath at Quadrats 2 and 4. The vegetation is dominated by carpets of bog-mosses, with abundant bog asphodel and frequent common cottongrass. The larger area at Q2 was found in amongst heath and was considered to be in good condition due to the variety of species present. In comparison the area at Q4 appeared dried out and slightly degraded with fewer species.

8.6.24 M21 is a community of permanently waterlogged acid and oligotrophic peats. It is commonly characteristic of valley mires maintained by a locally high ground water-table. The wetness of the substrate gives the vegetation some protection against the burning and grazing that are (or have been) important features in the heathland that usually surrounds the community, though draining is very deleterious and has severely affected some stands (Rodwell, 1991 et seq.).

M23 Juncus effusus/ acutiflorus - Galium palustre rush-pasture

8.6.25 M23 was found throughout the Site with small pockets in the east surrounding the watercourse as well as areas in the west within a mosaic of mire and heath. Two sub-communities, the M23a *Juncus effusus/ acutiflorus - Galium palustre* rush-pasture *Juncus acutiflorus* sub-community and the M23b *Juncus effusus/ acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community were both recorded. Quadrat 11 was taken in the east of the Site where the M23a was recorded; the vegetation was dominated by sharp-flowered rush (*Juncus acutiflorus*) with abundant Yorkshire fog (*Holcus lanatus*) and frequent marsh bedstraw (*Galium palustre*). Quadrat 6 was taken in the northwest of the Site where the M23b was recorded; here the vegetation was dominated by soft-rush (*Juncus effusus*).

8.6.26 *Juncus-Galium* rush-pasture occurs over a variety of moist, moderately acid to neutral, peaty and mineral soils in cool and rainy climates (Rodwell, 1991 et seq.). It is a community of gently sloping ground, found around the margins of soligenous flushes and water-tracks.

Dry Heaths

H9 Calluna vulgaris-Deschampsia flexuosa heath

8.6.27 Pockets of H9 heath were recorded in the western part of the Site. The vegetation was mostly dominated by wavy hair-grass (*Deschampsia flexuosa*) which formed fairly extensive patches of tussocky turf among the heather. The understory was dominated by heather (*Calluna vulgaris*) and heath bedstraw (*Galium saxatile*) and as such the vegetation aligned with the H9d *Calluna vulgaris - Deschampsia flexuosa Galium saxatile* sub-community.

8.6.28 The H9 heath community is the characteristic sub-shrub vegetation of acid and impoverished soils at low to moderate altitudes (Rodwell, 1991 et seq.). The relatively cool and wet climate of this part of Britain has some influence on the floristics of the community but much of its character derives from a combination of frequent burning and grazing (or flailing).

H10 Calluna vulgaris - Erica cinerea heath

8.6.29 H10 heath covered most of the Site (70.8 %). Large areas were dominated by heather with frequent bell heather (*Erica cinerea*) and occasional bilberry (*Vaccinium myrtillus*). Wavy hair grass was locally frequent in areas with occasional deer-grass (*Trichophorum cespitosum*) and heath rush (*Juncus squarrosus*). As such the vegetation aligned with the H10a *Calluna vulgaris* - *Erica cinerea* heath, Typical sub-community (Table 7 of **Technical Appendix 8.3**). There are clear signs that this habitat is heavily managed through cutting and burning.

8.6.30 H10 heath is characteristic of acid to circumneutral and generally free-draining soils in the cool oceanic lowlands and upland fringes. Grazing and burning play a considerable part in controlling its composition and structure (Rodwell, 1991 et seq.).

H12 Calluna vulgaris - Vaccinium myrtillus heath

8.6.31 An area of H12 heath was recorded in the southern part of the Site surrounding the western access track (Q1). The vegetation was found on a slope with exposed rock surfaces dominated by heather and bilberry. Amongst the dense, tall, growth other sub-shrubs, such as bell heather, were fairly common. The vegetation therefore aligned with H12a *Calluna vulgaris* - *Vaccinium myrtillus* heath, the *Calluna vulgaris* sub-community (Table 8 of **Technical Appendix 8.3**).

8.6.32 H12 heath is the typical sub-shrub community of acidic to circumneutral, free-draining mineral soils through the cold and wet sub-montane zone (Rodwell, 1991 et seq.).

Grasslands and bracken

U20 Pteridium aquilinum - Galium saxatile community

8.6.33 Large swathes of the U20 community were recorded around the edges of the heathland, bordering the conifer plantations. In addition, some small pockets were present in the east, in amongst the heath. The vegetation was dominated by bracken (*Pteridium aquilinum*) which formed a dense canopy in most cases. Due to the dense nature of the vegetation no quadrats were taken within this community and instead it was assessed by eye as aligning to U20c *Pteridium aquilinum* - *Galium saxatile* community, the Species poor sub-community.

8.6.34 This community is very widespread, occurring usually on deeper, well-aerated though often quite moist soils, base-poor to circumneutral, up to moderate altitudes in mountains (Rodwell, 1991 et seq.).

Non-NVC communities

Coniferous woodland plantation

8.6.35 Large areas of mature coniferous woodland plantation surround the heathland to the north and south of the Site. While most of it was dominated by Sitka spruce (*Picea sitchensis*), some areas also consisted of Scots pine (*Pinus sylvestris*), European larch (*Larix decidua*) and the occasional rowan (*Sorbus aucuparia*). The understory consisted of bramble (*Rubus fruticosus*), wood fern (*Dryopteris* sp), wood sorrel (*Oxalis acetosella*), *pleurocarpos* mosses and Hair-cap moss (*polytrichum commune*). An area of felled coniferous woodland was noted at the centre of the Study Area adjacent to the eastern access track within the buffer area.

Improved grassland

8.6.36 A field of improved grassland was noted at the eastern boundary of the Study Area.

Watercourses and waterbodies

8.6.37 Five small watercourses run through the Site, including the Burn of Lythebauds and the Landerberry burn. A small pond was also recorded at TN6 and as such is described in **Technical Appendix 8.3**.

Buildings, tracks, paths and bare ground

8.6.38 One small building, possibly a gamekeeper's hut TN16, and a hunting lodge were found within the Site. The access track ran through the Site running from the main road in the west up through the Site to the eastern corner with a leg in the middle running back down to the main road.

Groundwater Dependency

8.6.39 Areas of potential groundwater dependency are shown on **Figure 8.5**.

Given the geology and groundwater potential within the Site (please refer to **Chapter 10: Geology, Hydrology and Hydrogeology Assessment** and **Technical Appendix 10.2**, for specific details) and the location of habitats within the headwaters of watercourses and at the top of catchments, it is considered that many of these habitats are likely to be ombrotrophic (fed by rainfall) or very near subsurface groundwater within the peat deposits and soils. It is therefore considered that the groundwater component supporting these habitats is minor, with a surface water (or near subsurface) regime from local and shallow rain-fed catchments more likely for the majority of GWDTes at the Site.

8.6.40 Habitats of potential high groundwater dependence (e.g. M6, M10, M23, M32 and W4) are typically located along watercourse corridors at site (refer to **Figure 8.5**). This distribution is not consistent with habitat sustained by groundwater but rather is likely to be sustained by surface water runoff and rainfall and local water logging

of the (alluvial) soils adjacent to the watercourses. Buffers to these habitats therefore need not apply.

8.6.41 Industry standard safeguards are included in the embedded design of the Proposed Development to ensure (a) existing surface water flow paths are maintained to these habitats (e.g. where the surface water catchments to the habitats are crossed by proposed infrastructure), and (b) aggregate used to establish tracks and hardstanding's, etc., is derived on site or has similar geochemical characteristics to the geology present at the site (please refer to **Chapter 10: Geology, Hydrology and Hydrogeology Assessment** for further details).

Fish Habitat Surveys

8.6.42 The watercourses within the Site drain to the north into minor watercourses and the headwaters of the Gormack Burn and drain to the south eventually entering the River Dee catchment. The River Dee SAC lies 2.5 km, at its closest point from the Site boundary. The upper reaches of three SEPA classified watercourses that lie within the survey area; include. The Cluny Burn Upper Catchment ('Poor' overall quality), The Gormack Burn ('Bad' overall quality) and Burn of Corrichie ('Good' overall quality).

8.6.43 At the wider level, all three SEPA classified watercourses are considered to have 'High' access for fish migration. However, at Site level the Burn of Corrichie and the unclassified Landerberry Burn are both adversely affected by barriers from woody debris. Another limiting factor for fish migration suitability is the steep terrain on some of the watercourses, along with the minor peaty headwaters that comprise much of the reaches of the sections of the watercourses within the survey area. However, there is connectivity to the River Dee SAC from the watercourses in the southern aspect of the Site and control of surface water run-off is therefore especially important at this Site.

8.6.44 Habitat for freshwater pearl mussel (fast flowing sections over gravel beds) is very limited within the survey area. No specific freshwater pearl mussel surveys have been undertaken and freshwater pearl mussels were not recorded during the survey.

8.6.45 Among impacts to fish fauna identified in Dee District Salmon Fishery Board & River Dee Trust Fisheries Management Plan, those considered to be particularly relevant at the Site level is the presence of woody debris from commercial felling and riparian habitat management - where much of the bankside habitat is devoid of trees, with much of the survey area resulting a lack of cover for fish fauna. Refer to **Technical Appendix 8.4 - Figure 1** for further information.

Evaluation of Baseline Features

Protected Species

8.6.46 **Table 8.5** presents a summary of each species or species group, their conservation priority, a brief summary of condition and an evaluation in terms of ecological value.

Table 8.5 - Species Evaluation Summary

Species / Species Group	Conservation / Priority Status	Comments	Ecological Value
Badger	Protection of Badgers Act 1992 (amended by the WANE Act in Scotland)	No evidence of badger was identified and the habitats of the Site and buffer area are considered sub-optimal for use. Foraging habitat is widespread in the agricultural areas surrounding the hill; it is therefore possible that badgers could use the Site and surrounding habitats for foraging and commuting.	Less than local
Otter	European Protected Species Schedule 5 WCA SBL listed BAP listed	Otter presence was confirmed along watercourses within the west of the Study Area, with the majority along the access track. Signs recorded included spraints and hovers, with no other signs found. Pre-construction surveys will be conducted and an otter SPP will be produced as part of the CMEP documentation.	Less than local
Water vole	Schedule 5 WCA SBL listed BAP listed	No evidence to suggest the presence of water vole was identified during the survey.	Less than local
Red squirrel	Schedule 5 WCA SBL listed BAP listed	Whilst no evidence of red squirrel was recorded during the survey, this species could use the coniferous and mixed woodland within the Study Area to forage, commute and construct dreys. A red squirrel SPP detailing pre-felling checks for red squirrel ahead of any forestry works required for the Proposed Development will be produced as part of the Construction Environmental Management Plan (CEMP) documentation.	Less than Local
Pine marten	Schedule 5 WCA SBL listed BAP listed	Pine marten presence has been confirmed within the plantation habitats and should be taken into account during the construction phase of the Proposed Development. A pine marten SPP detailing pre-felling checks for pine marten ahead of any forestry works required for the Proposed Development will be produced as part of the CEMP documentation.	Less than local
Bats	European Protected Species SBL listed BAP listed	Activity surveys found very limited activity for bats in the open ground on the upper plateaus in proximity of the Proposed Development array. Activity levels at turbine locations was dominated by common pipistrelle, although the number of passes was considered to be low. Low levels of activity, of brown long eared and Myotis spp., were recorded by detectors located across the Site, although activity was still considered to be limited.	Local

		Activity was higher and species composition more varied along the northern reaches of the Site and in the south-western aspect, particularly near turbine 7.	
Fish	European Protected Species SBL listed BAP listed	All water courses assessed in the fish habitat survey were found to either have potential to support low numbers of migratory and non-migratory fish fauna only, or were of negligible suitability, due to presence of barriers to movement or steep terrain.	Less than local

National Vegetation Classification

8.6.47 Table 8.6 presents a summary of each NVC community and their respective corresponding (best fit) Phase 1 habitat category, their conservation priority, a brief summary of condition and an evaluation in terms of ecological value.

Table 8.6 - Habitat Evaluation Summary

NVC Community	Phase 1 Habitat	SBL	Potential GWDTE?	Comments	Ecological Value
M4 - <i>Carex rostrata</i> - <i>Sphagnum recurvum</i> mire	E2.1 Acid/neutral flush	Annex 1: - SBL: Upland flushes, fens and swamps: Watching brief only LBAP: -	No	One small area was recorded at the western side of the Site adjacent to the footpath.	Less than local
M19 <i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> blanket mire	E.1.6.1 Blanket bog	Annex 1: - SBL: Blanket bog LBAP: Upland heathland	No	Two areas were recorded within the western part of the Site. The largest was in the north and located west of the watercourse. The smaller area to the southwest was similar, though with a slightly drier appearance with lower frequencies of bog asphodel and bog-mosses.	Local
M21 <i>Narthecium ossifragum</i> - <i>Sphagnum papillosum</i> valley mire	E2.1 Acid/neutral flush	Annex 1:- SBL: Upland flushes, fens and swamps: Watching brief only LBAP: N/A	High	Two small areas were recorded within the Site at the south-western corner, in close proximity to the public footpath.	Local
M23a <i>Juncus effusus/acutiflorus</i> - <i>Galium palustre</i> rush-pasture, <i>Juncus acutiflorus</i> sub-community	B5 Marsh/marshy grassland	Annex 1:- SBL: Purple moor grass and rush pastures. LBAP: N/A	High	M23 was found throughout the Site with small pockets in the east surrounding the watercourses.	Local

NVC Community	Phase 1 Habitat	SBL	Potential GWDTE?	Comments	Ecological Value
M23b <i>Juncus effusus/acutiflorus</i> - <i>Galium palustre</i> rush-pasture <i>Juncus effusus</i> sub-community	B5 Marsh/marshy grassland	Annex 1: - SBL: Purple moor grass and rush pastures LBAP: N/A	High	M23b was recorded in the west within a mosaic of mire and heath.	Local
H9 <i>Calluna vulgaris</i> - <i>Deschampsia flexuosa</i> heath	D1.1 Dry dwarf shrub heath - acid	Annex 1: - SBL: Upland heathland LBAP: Upland heathland	No	Pockets of H9 heath were recorded in the western part of the Site.	Less than local
H9d <i>Calluna vulgaris</i> - <i>Deschampsia flexuosa</i> heath <i>Galium saxatile</i> sub-community	D1.1 Dry dwarf shrub heath - acid	Annex 1: - SBL: Upland heathland LBAP: Upland heathland	No	Pockets of H9d heath were recorded in the western part of the Site.	Local
H10a <i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath Typical sub-community	D1.1 Dry dwarf shrub heath - acid	Annex 1: - SBL: Upland heathland LBAP: Upland heathland	No	H10a heath covered most of the Site (70.8%). There are clear signs that this habitat is heavily managed through cutting and burning.	Regional
H12a <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath, <i>Calluna vulgaris</i> sub-community	D1.1 Dry dwarf shrub heath - acid	Annex 1: - SBL: Upland heathland LBAP: Upland heathland	No	An area of H12a heath was recorded in the southern part of the Site surrounding the western access track.	Local
U20c <i>Pteridium aquilinum</i> - <i>Galium saxatile</i> community, Species poor sub-community	C1 Bracken	Annex 1: - SBL: - LBAP: -	No	Large swathes of the U20c community were recorded around the edges of the heathland, bordering the conifer plantations. In addition, some small pockets were present in the east, in amongst the heath.	Less than local
Non-NVC	A1.2.2 Conifer plantation	Annex 1: - SBL: - LBAP: Woodland	No	Large areas of mature coniferous woodland plantation surround the heathland to the north and south of the Site. Coniferous woodland has limited species diversity and ecological value and is not a conservation priority.	Less than local

NVC Community	Phase 1 Habitat	SBL	Potential GWDTE?	Comments	Ecological Value
Non-NVC	A4.2 Recently felled woodland	Annex 1: - SBL: - LBAP: -	No	An area of felled coniferous woodland was noted at the centre of the Study Area adjacent to the eastern access track within the buffer area. Recently felled woodland has limited species diversity and ecological value and is not a conservation priority.	Less than local
Non-NVC	B4 Improved grassland	Annex 1: - SBL: - LBAP: -	No	A field of improved grassland was noted at the eastern boundary of the Study Area.	Less than local
Non-NVC	G1.1 Pond	Annex 1: - SBL: Ponds LBAP: Wetland habitats	No	A small pond was also recorded in the west of the Site.	Less than local
Non-NVC	Running water	Annex 1: - SBL: Rivers LBAP: Wetland habitats	No	Five small watercourses run through the Site, including the Burn of Lythebauds and the Landerberry burn.	Less than local

Future Baseline

8.6.48 Changes over time may occur as a result of climatic change, although these are difficult to predict but likely to involve increased precipitation and gradual increases in average temperatures. Some change in the vegetation assemblage is likely to occur as a result of these changes.

8.7 Assessment of Potential Effects

8.7.1 This section provides an assessment of the likely effects of the Proposed Development on the IEFs identified through the baseline studies. The assessment of effects is based on the development description outlined in **Chapter 2: Project Description** and is structured as follows:

- Construction effects;
- Operational effects; and
- Cumulative effects.

8.7.2 The consent period being sought for the Proposed Development is 50 years. Effects arising from decommissioning are considered to be the same or less significant than those arising from the construction phase.

Design and Layout Considerations

8.7.3 The ecological baseline has been considered throughout the design process for the Proposed Development (refer to **Chapter 3: Design Evolution and Alternatives**), including design meetings where representatives of each specialist subject provided input to subsequent design iterations. This was with an aim to either eliminate or reduce the potential for any significant effects on receptors and following the “mitigation hierarchy” as described in CIEEM guidance (CIEEM, 2018). The mitigation hierarchy follows a sequence of avoidance, mitigation, compensation, and enhancement measures to be identified as part of any EclA project. Ecological and hydrogeological factors taken into account throughout the design process for the Proposed Development included the following:

- avoidance of areas of deeper peat - this has reduced habitat loss of more sensitive, higher quality habitats such as blanket bog;
- avoidance of watercourses - these have been buffered by 50 m, apart from locations where access tracks unavoidably need to cross watercourses;
- avoidance of bat habitat features - buffers of 108 m (for 200 m tall turbines) and 87 m (for 180 m tall turbines) have been maintained between turbine blade tips and the nearest woodland edge, as set out in current NatureScot guidance (NatureScot et al. 2021).

Project Assumptions

8.7.4 In line with current CIEEM guidelines, the assessment of likely effects is carried out in the presence of standard mitigation measures. The following good practice and mitigation measures will be applied during construction of the Proposed Development to ensure that any effects on IEFs are reduced:

- The Developer will appoint a suitably qualified Ecological Clerk of Works (ECoW) prior to the commencement of any construction activities taking place. The ECoW will be present and oversee all construction activities as well as providing toolbox talks to all site personnel with regards to priority species and habitats, as well as undertaking monitoring works, oversee the relocation of any significant stands of nationally important species of plants and briefings to relevant staff and contractors as appropriate.
- A Species Protection Plan (SPP) will be produced and agreed prior to construction commences and then implemented during the construction period.

The SPP will detail measures to safeguard protected species known to be in the area and will include for pre-construction surveys for protected species, complimenting the seasonality of the construction start date, as well as ensuring the use of Best Practice measures during all construction activities (such as sensitive lighting, ramps exiting open excavations, etc.). The SPP will describe the process to be followed in the case that new protected species are recorded on Site that will therefore also need to be protected during construction works, as well ensuring the implementation of effective toolbox talks to raise awareness of site personnel to sensitive ecological receptors on Site.

- In order to prevent pollution of watercourses within the Site (with particulate matter or other pollutants such as fuel), best practice techniques will be employed. These are outlined in **Chapter 10: Hydrology, Geology, & Hydrogeological Assessment** and will include:
 - For water crossings: buffer strips around sections of track adjacent to watercourse crossings; and bund and embankment features to be implemented.
 - For tracks: camber in track design; trackside drains, e.g. infiltration trenches with check dams; routine maintenance of tracks; cross drains at regular intervals along access tracks; and check dams will be installed immediately above cross drain inlets.
 - General drainage: no direct discharges of water from works areas to existing drainage channels or surface watercourses; drainage will be directed to infiltration trenches, settlement swales or lagoons.
- Full details of construction mitigation measures will be provided in a Construction Environment Management Plan (CEMP) to be agreed with Aberdeenshire Council, in consultation with NatureScot and SEPA, post-consent but prior to the development commencing.
- An Outline Biodiversity Enhancement Management Plan (OBEMP) has been drafted for the Proposed Development including target areas for new riparian habitat management. Consultation with the Dee District Salmon Fishery Board & River Dee Trust and landowner will also consider suitable locations for new riparian planting, to provide areas of bankside cover, but not overshadowing. This would enhance areas previously surrounded by commercial conifer plantation once the current coups are scheduled for felling. Targeted removal of woody debris from watercourses will also be undertaken to increase suitability for migratory fish.
- Prior to any instream works a fish rescue exercise will be undertaken, whereby the section of the watercourse is netted off and fish removed from the works area via an electrofishing exercise. Nets will then be left in situ and the

watercourse over pumped with works then undertaken in a dry section of channel. Once instream works have been completed the nets will be removed immediately to allow the continuation of fish passage.

- Cognisance is to be made during forestry operations as outlined in the individual protected species paragraphs 8.7.7 to 8.7.17 and paragraph 8.7.25, as well as Section 14.5 Forestry of Chapter 14: Aviation and Other Issues.

Scoped out Ecological Features

- 8.7.5 Following the collation of the baseline data, including desk study and field survey data, and following the design mitigation and those measures described in the design layout considerations (see **Section 8.7.3**) and project assumptions sections (see **Section 8.7.4**), several potential effects on ecological features can be scoped out of further assessment, as described in the sections below. This is based on professional judgement and experience from other relevant projects in this region.

Designated Sites

- 8.7.6 Loch of Park SSSI has been scoped out due to the designation for habitats and its location being 2.8 km from the Site. The qualifying features of the designation are basic fen and wet woodland habitats. These habitats are not present on Site and there is no direct habitat connectivity between the Site and this designation. The designated site is considered to be too distant to be connected and unlikely to be affected by the Proposed Development.
- 8.7.7 River Dee SAC has been scoped out of this assessment due to its designation for freshwater pearl mussels, salmon and otters and its distance of 4.9 km from the Site. The SAC is separated from the Site by woodland and agricultural habitats. The Site drains northwards and is not located within the Dee watershed. Significant effects on the qualifying features, i.e. Atlantic salmon, freshwater pearl mussel and otter, are therefore very unlikely, and so this designation is scoped out for the assessment.

Protected Species

- 8.7.8 **Section 8.7.4** Project Assumptions describes the best practice and reasonable precautions that are proposed to be established prior to any construction works taking place in order to best safeguard protected species from any potential significant effects as a result of the Proposed Development. An SPP forms the primary mechanism by which this will be done and will be agreed with key consultees in advance of any construction works commencing.

Bat

- 8.7.9 Bats are scoped out of the assessment. Overall, the habitats present within the proposed turbine array were of low suitability for bats. Initial habitat assessments identified no significant roost features within the study area. Although a number of structures are present including a ruined shooting lodge which was identified as supporting high suitability for roosting bats, no impacts to these structures are anticipated and therefore, no further activity surveys were undertaken.
- 8.7.10 The study area supported low activity rates overall with moderately higher activity level recorded at turbine locations 7 and 16. The species assemblage was dominated by common and soprano pipistrelle, although *Myotis* sp. and brown long-eared bat were also recorded. Pipistrelle species are assessed to be at high risk from wind turbines primarily due to their use of open habitats and their fast flight speed. However, the very low levels of activity within the study area and in particular at the majority of turbine locations, suggests that the proposed turbines are unlikely to have anything more than a **negligible** effect on local bat populations.
- 8.7.11 The Proposed Development avoids the lowland habitats and linear features that may be of interest to bats, with the proposed route being located in open ground and away from any features that may be attractive to bats. As such, following the measures outlined within the SPP outlined in in **Section 8.7.4**, in particular the use of sensitive lighting, will ensure the avoidance of any impacts on bats that may make use of the lower reaches of the site during the construction period.
- 8.7.12 Although not analysed through the comparative analysis software of Ecobat, overall, it is assessed that the Survey Area supports Low to Moderate activity for the region, with the majority of detector locations supporting Low activity. Taking into account the Site Risk level being identified as 'Low' and the worst case scenario of overall bat activity across the Survey Area being identified as 'Low-Moderate', the overall risk assessment for the Survey Area is calculated as 4, assessed as **Low** within current guidance.

Badger

- 8.7.13 Badger are scoped out of this assessment. No evidence of badger activity was found during the protected species survey. Despite the lack of evidence of badger activity within the Site boundary, they are likely to be present within areas of suitable habitat in the wider area. As such, the additional measures ensured by the SPP, complimented by pre-construction survey checks, will ensure the avoidance of any significant impacts on badger that may move into the area in the interim period.

Otter

- 8.7.14 Otter are scoped out of this assessment as the field signs are located outside the Site boundary, within the larger Study Area, and were limited to spraint and claw markings with no sign of holts being established. All infrastructure is buffered from watercourses by a minimum of 50 m, with the exception of the water-crossing and upgrading works to existing tracks. The additional measures ensured by the SPP, complimented by pre-construction surveys, will ensure the avoidance of any significant impacts on otter within the wider environment.

Water vole

- 8.7.15 No evidence to suggest the presence of water vole was identified during the protected mammals survey. Water vole is therefore scoped out of the assessment. However, all infrastructure is buffered from watercourses by a minimum of 50 m, with the exception of the water-crossing and upgrading works to existing tracks. The additional measures ensured by the SPP, complimented by pre-construction surveys, will ensure the avoidance of any significant impacts on water vole that may move into the area in the interim period.

Red squirrel

- 8.7.16 No evidence of red squirrel was recorded during the survey, this species could use the coniferous and mixed woodland within the Study Area to forage, commute and construct dreys. A red squirrel SPP detailing pre-felling checks for red squirrel ahead of any forestry works required for the Proposed Development will be produced as part of the CEMP documentation.

Pine marten

- 8.7.17 The Field signs that were recorded within the Study Area were limited to spraint and territory markings, limited drey building opportunities were present within the Site. A pine marten SPP detailing pre-felling checks for red squirrel ahead of any forestry works required for the Proposed Development will be produced as part of the CEMP documentation.

Potential GWDTEs

- 8.7.18 Areas of potential GWDTEs were initially defined in terms of their NVC community and cross-referenced with SEPA criteria (SEPA, 2017), but it is important to recognise that GWDTE potential does not necessarily relate to ecological value and has not been used to determine conservation importance in this assessment. In summary, the GWDTE assessment concludes that areas of potential GWDTE at the Site are not sustained by groundwater but by surface water. Safeguards, however, remain incorporated into the Site design to maintain existing surface water flow

paths so that existing habitats are sustained. However, SEPA guidance requires an assessment of GWDTEs to be completed as part of an EIAR; this is described in **Chapter 10: Geology, Hydrology and Hydrogeology Assessment** and the supporting **Technical Appendix 10.2** and summarised in **Paragraphs Error! Reference source not found. and 8.6.42.**

Habitats

- 8.7.19 The habitats present and their respective areas are presented in **Table 8.4**. Estimates of direct and indirect habitat losses from the Proposed Development are presented in **Table 8.8**. An estimated total of 21.77 ha of habitat would be directly lost due to the Proposed Development.
- 8.7.20 The M4 *Carex rostrata - Sphagnum recurvum* mire habitat is characteristic of pools and seepage areas on the raw peat soils of *topogenous* and *soligenous* mires where the waters are fairly acid and only slightly enriched (Rodwell, 1991). Bare peat was visible in areas indicating the mire was dried out and degraded in parts. The degraded nature of this habitat along with the small area of 0.19 ha, 0.01 % of which is likely to be lost, leads to this habit being considered of less than Site value and scoped out of further assessment.
- 8.7.21 The H9 *Calluna vulgaris-Deschampsia flexuosa* heath habitat extends over 1.66 ha of the Site, a relatively small area. There is a predicted loss of 0.09 %, which is a relatively small loss considering the large area of retention of the habitat and that the H9d *Calluna vulgaris - Deschampsia flexuosa* heath *Galium saxatile* sub-community is larger and has more distinctive features is being taken forward for further assessment. It is considered that H9 is of less than Site value and scoped out of further assessment.
- 8.7.22 The U20c *Pteridium aquilinum-Galium saxatile* community, species poor sub-community vegetation was dominated by bracken (*Pteridium aquilinum*) which formed a dense canopy in most cases. This is a widespread community and due to the species poor nature of the habitat, it was therefore classified as less than Site value and scoped out of further assessment.
- 8.7.23 Coniferous plantation woodland is the second most prevalent vegetation community within the Site. It constitutes 493.53 ha or 25.26 % of the Study Area, 12.69 % of which consists of felled plantation woodland. These habitats are considered to be of a low conservation value and would, therefore, not be subject to significant ecological effects by the Proposed Development. As such, coniferous plantation and felled coniferous plantation are scoped out of the assessment.
- 8.7.24 A number of habitats are identified as being of local importance, or lower, at the Site due to their intrinsic value by aligning with Annex I or SBL priority habitat

descriptions or by not being listed. However, as they consist of such small areas within the Study Area, any direct or indirect effects on the habitat are considered to be so minor or outwith the EZoI of the Proposed Development footprint (please refer to habitat loss calculations in **Table 8.8**) that they are scoped out of this assessment. These habitats include; coniferous plantation (A1.2.2), recently felled woodland (A4.2), continuous bracken (U20c), improved grassland (B4), and pond (G1.1).

Fish

- 8.7.25 Fish are scoped out of the assessment. Watercourses within the Site and Study Area, the Burn of Corrichie and the unclassified Landerberry Burn, are both of limited suitability for fish fauna of fresh water pearl mussel. There is connectivity to the River Dee SAC from the watercourses in the southern aspect of the Site and control of surface water run-off is therefore especially important at this Site. The sensitivity of the watercourses as an aquatic habitat is fully acknowledged, but the mitigation listed in **Section 8.7.4** (i.e. the pollution protection guidelines and measures to be outlined in the CEMP) will ensure the avoidance of any degradation of water quality and/or impacts on fish populations. This is of particular relevance when considering watercourse crossings, of which there is one proposed (detailed in **Technical Appendix 10.2**).
- Scoped in IEFs**
- 8.7.26 As listed in **Table 8.7** the assessment of effects will be applied to IEFs that are known to be present within the Site or surrounding area (as confirmed through survey results and consultations outlined above). These comprise blanket bog (M19, M21, M23a, M23b) and dry dwarf shrub heath (H9d, H10a and H12a) communities.

Table 8.7 - IEFs Brought Forward to Assessment

IEF	Nature Conservation Value	Comments
Dry dwarf shrub heath	Regional	Dry dwarf shrub heath makes up 1039.33ha (53.65%) of the total study area and is formed of the H9d, H10a and H12a NVC communities and sub-communities. The H10a community constitute >97% of the overall dry dwarf shrub heaths within the study area. Species diversity is noticeably low across much of this habitat as a result of historical land management pressures (i.e. muirburn). Due to the extent of the habitat, the areas of dry dwarf shrub heath are located across the development area. Although it is degraded in nature in parts, due to historical management, the dry dwarf heath shrub habitat present aligns with SBL and local BAP priorities and is considered to be of regional value in the context of the site.

IEF	Nature Conservation Value	Comments
Blanket Bog (mire)	Local	<p>Blanket bog (mire) within the study area is formed of areas of M19 and occupies a large area (116.19 ha) in the north-west of the study area.</p> <p>The largest area of M19 (at Q13) was in the north and located west of the watercourse; it was dominated by heather (<i>Calluna vulgaris</i>), locally with very wet areas dominated by bog asphodel (<i>Narthecium ossifragum</i>), hare's-tail cottongrass (<i>Eriophorum vaginatum</i>) or bog-mosses (<i>Sphagnum</i> spp.). The smaller area to the south-west (Q7) was similar, though with a slightly drier appearance with lower frequencies of bog asphodel and bog-mosses.</p> <p>Although it is generally degraded in nature due to historical management, the blanket bog habitat present aligns with Annex I (Habitat's Directive), SBL and NESBP priorities and is considered to be of regional value in the context of the site.</p>

Construction Effects

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

Habitats

8.7.28 Negative impacts on habitats may include direct losses, e.g. permanent land-take for turbine foundations and other infrastructure, temporary land-take for construction Site compounds, as well as temporary disturbance of habitats within and adjacent to work areas. Negative impacts on habitats can also be indirect, e.g. through changed hydrological conditions and habitat fragmentation.

8.7.29 The main adverse effect during the construction stage of the Proposed Development will be direct habitat loss due to the construction of associated infrastructure. Much of this infrastructure will be permanent, although the temporary construction compound, batching plant and borrow pits (and associated temporary access track) will be restored at the end of the construction period. Despite the restoration, and taking a precautionary approach, it is assumed for the purposes of this assessment that the areas of land-take for infrastructure (including the borrow pit) also represent permanent losses of habitat due to the complexities and timescales in re-creating habitat types such as blanket bog which rely on a constant water table being achieved. Also, for completeness, the entire borrow pit search area has been buffered and taken as permanent habitat loss, despite the final area likely being significantly smaller, following the precautionary approach for the purposes of this assessment.

8.7.30 For the purposes of this assessment, it is assumed that wetland habitat losses due to indirect drainage effects may extend out to 10 m from infrastructure (i.e. in keeping with indirect drainage assumptions within the carbon balance assessment, **Chapter 14: Aviation and Other Issues**). It is expected that any indirect drainage effects would only impact wetland habitats at the Site, including the IEFs carried forwards to this assessment, blanket bog. Although there may be some construction disturbance experienced by the surrounding drier habitats, such habitats are expected to recover relatively quickly in the short terms and, as such, no indirect drainage effects are expected to impact or alter the quality or composition of habitats associated with dry substrates.

8.7.31 All habitat loss calculations are presented in Table 8.8, with the habitat IEFs brought forward for assessment shown in bold. Please refer to Table 8.10 which details the areas lost by NVC community for each habitat IEF brought forward to the assessment.

Table 8.8 - Estimated loss of habitat from Proposed Development

NVC Community of Habitat Types Lost	Phase 1 Habitat	Total Extent in Study Area (ha)	Percentage of total Study Area	Direct Habitat Loss (ha)	% Direct Loss
M4 Carex rostrata - Sphagnum recurvum mire	E2.1 Acid/neutral flush	0.19	0.01%	-	-
M19 Calluna vulgaris - Eriophorum vaginatum blanket mire	E.1.6.1 Blanket bog	116.19	5.95%	0.59	0.51%
M21 Narthecium ossifragum - Sphagnum papillosum valley mire	E2.1 Acid/neutral flush	1.91	0.10%	-	-
M23a Juncus effusus/ acutiflorus-Galium palustre rush-pasture, Juncus acutiflorus sub-community	B5 Marsh/marshy grassland	5.74	0.29%	-	-
M23b Juncus effusus/ acutiflorus-Galium palustre rush-pasture, Juncus effusus sub-community	B5 Marsh/marshy grassland	4.06	0.72%	-	-
H9 Calluna vulgaris - Deschampsia flexuosa heath	D1.1 Dry dwarf shrub heath - acid	1.66	0.09%	-	-
H9d Calluna vulgaris - Deschampsia flexuosa heath, Galium saxatile sub-community	D1.1 Dry dwarf shrub heath - acid	21.81	1.12%	0.21	0.98%

NVC Community of Habitat Types Lost	Phase 1 Habitat	Total Extent in Study Area (ha)	Percentage of total Study Area	Direct Habitat Loss (ha)	% Direct Loss
H10a <i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath, Typical sub-community	D1.1 Dry dwarf shrub heath - acid	1008.53	51.64%	13.98	1.38%
H12a <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath, <i>Calluna vulgaris</i> sub-community	D1.1 Dry dwarf shrub heath - acid	8.66	0.44%	-	-
U20c <i>Pteridium aquilinum</i> - <i>Galium saxatile</i> community, Species poor sub-community	C1 Bracken	168.72	8.64%	0.22	0.13%
	A1.2.2 Conifer plantation	493.53	25.26%	4.12	0.83%
	A4.2 Recently felled woodland	62.62	3.21%	2.49	3.98%
	B4 Improved grassland	43.39	2.53%	0.16	0.32%
	G1 Pond	0.07	0.004%	-	-
Total		1937.08	100.00%	1938.08	5.26%

8.7.32 Table 8.9 presents the IEFs brought forwards for further assessment by area of direct and indirect loss by specific NVC community type to the Proposed Development.

Table 8.9 - Estimated loss of NVC community from Proposed Development infrastructure

NVC Community	Total Extent in Study Area (ha)	Direct Habitat Loss (ha)	Direct Habitat Loss as % NVC type	Area of Direct & Indirect Loss (ha)	% Direct & Indirect Loss
M19 <i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> blanket mire	116.19	0.59	0.51%	2.30	1.98%
M21 <i>Narthecium ossifragum</i> - <i>Sphagnum papillosum</i> valley mire	1.91	-	-	-	-
M23a <i>Juncus effusus/acutiflorus</i> - <i>Galium palustre</i> rush-pasture, <i>Juncus acutiflorus</i> sub-community	5.74	-	-	-	-
M23b <i>Juncus effusus/acutiflorus</i> - <i>Galium palustre</i> rush-pasture, <i>Juncus effusus</i> sub-community	14.06	-	-	-	-

NVC Community	Total Extent in Study Area (ha)	Direct Habitat Loss (ha)	Direct Habitat Loss as % NVC type	Area of Direct & Indirect Loss (ha)	% Direct & Indirect Loss
H9d <i>Calluna vulgaris</i> - <i>Deschampsia flexuosa</i> heath, <i>Galium saxatile</i> sub-community	21.81	0.21	0.98%	As per direct loss	
H10a <i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath Typical sub-community	1008.53	13.96	1.38%	As per direct loss	
H12a <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath, <i>Calluna vulgaris</i> sub-community	8.66	-	-	As per direct loss	
Total	1176.9	14.76	2.87%	2.30	1.98%

Dry dwarf heath

Nature Conservation Value and Conservation Status

8.7.33 As per Table 8.8 and Table 8.9, dry dwarf shrub heath is the most prevalent vegetation community within the Study Area and is generally of a good quality, although some areas show signs of degraded condition (primarily due to being heavily managed through cutting and burning) and is considered to be of regional value. In the 4th UK Habitats Directive Report (JNCC, 2019a) the conservation status of dry heath is listed as ‘Unfavourable - Bad’ and ‘Improving’ at the UK level. The corresponding Scottish report (JNCC, 2019b) does not include an overall assessment specifically for Scotland, although the status trend is noted as being of “No change”.

Impact

8.7.34 Only direct negative effects on dry dwarf shrub heath are likely as a result of construction phase impacts due to no additional effects from dewatering, although some negative effects may be experienced slightly beyond the main footprint of proposed infrastructure through ground disturbance. There will be a direct loss of habitat during the initial construction of the Proposed Development but any ground disturbance that does occur beyond that of the development footprint are considered likely to recover in the short to mid-term.

Magnitude

8.7.35 Scotland has a best single value estimate of 41,000 ha of dry heath, with estimated minimum and maximum values of 37,000 ha and 45,000 ha, respectively (JNCC, 2019b). This estimate is, however, acknowledged to be derived through the extrapolation of a limited amount of data (JNCC, 2019b).

8.7.36 Dry dwarf shrub heath accounts for 1039.33 ha of the Study Area and comprises of H9d, H10a and H12a. Of these three NVC communities, a total of 14.17 ha will be directly lost to Proposed Development infrastructure (Table 8.9). Direct habitat loss due to infrastructure is therefore predicted to be at most 2.36% of the dry heath vegetation found within the Study Area. The direct loss of this habitat is of a small extent in the local context.

8.7.37 As such, when considering the relatively small areas of direct habitat loss (i.e. 14.17 ha), the magnitude of impact within a regional context is considered to be low extent and permanent.

Significance of Effect

8.7.38 Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **low adverse** and **not significant** under the terms of the EIA Regulations.

Blanket bog

Nature Conservation Value and Conservation Status

8.7.39 As per Table 8.8 and Table 8.9, blanket mire is the third most prevalent vegetation community within the Study Area. Blanket bog is, by its nature, relatively uniform and has a modest range of species. In the 4th UK Habitats Directive Report (JNCC, 2019c) the conservation status of blanket bogs is listed as ‘Unfavourable - Bad’ but ‘Stable’ at the UK level. The corresponding Scottish report (JNCC, 2019d) does not include an overall assessment specifically for Scotland, although the status trend is noted as being of “No change”. The areas of blanket bog within the Study Area are considered to be of a good quality, although there are signs indicative of heavy erosion and degradation (such as peat haggings, gullies and bare peat) considered to have at least in part developed as a result of historical muirburn and deer grazing pressures creating dewatering conditions. These are the same factors that have facilitated a transition from blanket mire to wet heath vegetative communities across the wider upper plateau of the Site. Despite evidence of severe peat erosion and degradation, given the extent and quality of other areas of contiguous blanket bog within the wider Study Area this habitat is considered to be of local value.

Impact

8.7.40 Both direct and indirect negative effects are likely on blanket bog during the construction phase. There will be a direct loss of habitat during construction of the Proposed Development and indirect losses (through potential drying effect upon

neighbouring bog habitats occurring from the construction period into the operational period).

Magnitude

8.7.41 Scotland has an estimated 1,759,000 ha of blanket bog (JNCC, 2019d). Blanket bog accounts for 116.19 ha of the habitat within the Study Area, comprising of M19 mire, M21 mire, M23a and M23b.

8.7.42 A total of 0.59 ha will be directly lost to the Proposed Development infrastructure (Table 8.8 and Table 8.9). Direct habitat loss due to permanent infrastructure is therefore predicted to be at most 0.51 % of the blanket bog within the Study Area. This direct loss is of a small extent in both the local and regional context. In addition to direct loss, there may be indirect losses associated with the zone of drainage around infrastructure. If, as a worst-case scenario, indirect drainage impacts were fully realised out to 10 m in all areas of blanket mire, this would result in an additional loss of 1.71 ha of blanket mire, increasing the predicted loss to 2.30 ha or 1.98% of this habitat within the Study Area. However, because of the design mitigation employed (i.e. floating tracks, with geogrid layer, and piled turbine foundations) indirect impacts are unlikely to truly extend out to 10 m. This is likely to reduce the potential indirect impacts considerably by way of maintaining hydrological flow throughout the peat macrotope. The adoption of standard good practice and environmental management techniques, as well as an appropriate and considered drainage design, will further reduce the risk of impacts on blanket bog.

8.7.43 Moreover, the adoption of standard good practice construction and environmental management techniques, as well as an appropriate and considered drainage design, will further minimise the risk of significant drainage impacts. Specific details on the design and approach to construction can be found in **Chapter 2: Project Description**. In addition, enhancement measures are proposed that seek to re-profile and fill in areas of peat haggings, exposed bare peat and gullies within areas exhibiting more severe erosion and degradation (see the following **Section 8.8, Mitigation**).

8.7.44 When considering the likely direct loss (0.59 ha) and indirect habitat losses (2.30 ha) the magnitude of impact within a regional context is considered to be low extent and permanent.

Significance of Effect

8.7.45 Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible** and **not significant** under the terms of the EIA Regulations.

Operational Effects

8.7.46 This section provides an assessment of the likely effects during operation of the Proposed Development upon the scoped-in IEFs.

8.7.47 All likely direct and indirect effects on dry dwarf shrub heath and blanket bog have also been considered in the construction effects section above. Indirect habitat losses from drying of peat will commence when drains are first installed during the construction phase and then continue during the operational phase. The point when vegetation change and drying impacts may become measurable is difficult to predict but may be delayed and therefore not occur until the operational phase. However, for completeness and ease of assessing impacts, they are considered together in the construction effects section. No further negative impacts on dry dwarf shrub heath and blanket bog are predicted during the operational phase. However, an improvement in the condition of blanket bog within the Site is anticipated in areas of severely eroded and degraded blanket bog during the operational phase associated with the enhancement of blanket bog within the proposed OBEMP.

Decommissioning Effects

8.7.48 The consent being sought for the Proposed Development is for a construction phase of 18-24 months and a life span of the project, 50 years. At the point that the Proposed Development would be decommissioned in the future, the effects arising from decommissioning are considered to be the same or less significant than those arising from the construction phase.

8.8 Mitigation & Biodiversity Enhancements

Standard Mitigation

Design Mitigation

8.8.1 A range of measures have already been applied as part of the iterative design process (see below and refer to **Chapter 3: Design Evolution and Alternatives**), to avoid the higher value areas of blanket bog, waterbodies and watercourses, as follows;

- Higher value areas of blanket bog or heath habitat (i.e. SBL/Annex 1 habitat) and waterbodies have been avoided as far as practicable;
- Turbines have been sited at least 50 m from any areas of standing water and watercourses;

- Existing tracks have been used, where possible, in order to reduce the footprint of the Proposed Development and to limit the number of watercourse crossings to one (refer to **Figure 1.2**). Some localised upgrading may be required to ensure a suitable running width, with local widening on corners and the addition of turning heads;
- Floated tracks will be used on deeper peat, to further reduce potential drying impacts; and,
- Electrical infrastructure cabling will be installed alongside tracks, wherever possible, to further minimise habitat loss.

Good Practice Mitigation

8.8.2 In line with the current CIEEM guidelines, the assessment of likely effects is carried out in the presence of standard mitigation measures. In the event of consent this mitigation will be implemented as part of the Proposed Development. The following good practice and mitigation measures will be applied to the Proposed Development during construction to ensure that likely effects on the IEFs and legally protected species are reduced:

8.8.3 A suitably qualified EcoW will be appointed prior to the commencement of any construction activities taking place. The EcoW will be present and oversee construction activities as well as providing toolbox talks to all site personnel with regards to priority species and habitats, as well as undertaking monitoring works and briefings to relevant staff and contractors as appropriate.

8.8.4 An SPP will be produced and agreed prior to construction commencing and then implemented during the construction period. The SPP will detail measures to safeguard protected species known to be in the area including bats, otter, with water vole, and reptiles included as a precaution, and will include for pre-construction surveys for protected species, complementing the seasonality of the construction start date, as well as ensuring the use of Best Practice measures during all construction activities (such as sensitive lighting, ramps exiting open excavations, etc.). The SPP will describe the process to be followed in the case that new protected species are recorded on Site that will therefore also need to be protected during construction works, as well ensuring the implementation of effective toolbox talks to raise awareness of site personnel to sensitive ecological receptors on site.

8.8.5 In order to prevent pollution of watercourses and impacts on fish within the Site (with particulate matter or other pollutants such as fuel), best practice techniques will be employed. These are addressed fully in the Outline Pollution Prevention Plan within the Outline Construction Environmental Management Plan, provided in **Technical Appendix 2.1** and will include:

- For water crossings: buffer strips around sections of track adjacent to watercourse crossings; and bund and embankment features to be implemented.
- For tracks: camber in track design; trackside drains, e.g. infiltration trenches with check dams; routine maintenance of tracks; cross drains at regular intervals along access tracks; and check dams will be installed immediately above cross drain inlets.
- General drainage: no direct discharges of water from works areas to existing drainage channels or surface watercourses; drainage will be directed to infiltration trenches, settlement swales or lagoons.
- Full details of construction mitigation measures will be provided in a CEMP to be agreed with the planning authority, in consultation with NatureScot and SEPA, post-consent but prior to development commencing.

Peatland Restoration and Enhancement

- This section details the best practice measures and restoration methods proposed in order to achieve an overall enhancement of the biodiversity and condition of the habitats within the Site. Further, more specific, details on the proposed approach and targeted areas are presented and discussed in the OBEMP, **Technical Appendix 8.5**.

Construction

Habitat Restoration & Biodiversity Enhancements

- 8.8.6 Given that no significant effects are predicted, no specific mitigation is proposed during construction beyond the standard design mitigation and adoption of best practice construction methods. Furthermore, the appointment of an ECoW would advise on micro-siting requirements to ensure impacts on blanket bog and heath habitats are reduced further where possible.
- 8.8.7 To deliver significant biodiversity enhancement, an OBEMP will be implemented during the construction and operation phases that will focus on the enhancement and restoration of blanket bog within areas showing more severe signs of erosion and within reasonable distance of Proposed Development infrastructure. An OBEMP is presented in **Technical Appendix 8.5** and outlines measures to be implemented to restore an area of up to approximately 72.9 ha of blanket bog, expanding the habitat by an estimated 29.16 ha at least to achieve a significant gain in habitat condition and biodiversity across what is currently heavily degraded and modified bog. Specific areas were identified through a combination of field survey and aerial imagery as consisting of heavily eroded and modified blanket bog habitat partly as a result of historical management practices.

- 8.8.8 The approach to restoring areas of severe erosion and degraded conditions found within the Site will follow those as appropriately described in the publication “Conserving Bogs: The Management Handbook” (Thom, et al., 2019). This is likely to consist of blocking gullies and channels (using peat and/or heather dams), peat bunds and the facilitation of revegetation.
- 8.8.9 The proposed approaches have been proven to improve the quality of bog habitats and have been used by the NatureScot Peatland Action project on peat restoration programmes throughout Scotland, as well as being endorsed by the International Union for the Conservation of Nature (IUCN) as the publishers of the Conserving Bogs handbook. The areas to be restored will be located adjacent to Proposed Development infrastructure to lessen the need for transportation of excavated peat across the Site. The aims of the OBEMP are summarised as:
- Aim 1: Restore the integrity of blanket bog; and
 - Aim 2: Limit further degradation of existing and recovering blanket bog habitat.
- 8.8.10 Monitoring will also be implemented, to establish whether the objectives of the OBEMP are being achieved. Monitoring will include for the establishment of a minimum of permanent quadrats within areas of blanket bog enhancement within the OBEMP areas, with a combination of static photography and vegetative and substrate data being recorded across defined years following the construction phase. The peatland restoration works undertaken as part of the Proposed Development are expected to have a positive impact on the overall condition of the blanket bog found at the Site through the restoration of degraded blanket bog to a more cohesive and integral peat macrotopo with functioning peat-forming and protective acrotelm. Please refer to **Technical Appendix 8.5** for further details on the OBEMP, including the monitoring methodology.

8.9 Assessment of Residual Effects

- 8.9.1 Effects on IEFs including blanket bog and dry shrub heath, during construction, are considered to all be of low extent and permanent. Although limited effects are predicted for these habitat types, the inclusion of standard in-built mitigation and adoption of good practice (Paragraphs 8.8.2 - 8.8.5), will further reduce the risk of any adverse effects. Furthermore, the adoption of the restoration measures as outlined in the OBEMP (**Technical Appendix 8.5**) are anticipated to result in net beneficial effects (through halting blanket bog erosion and the restoration of degraded conditions). The restoration measures aimed at improving blanket bog condition within the Site are likely to improve heath condition also, by nature of association with similar reliance on substrate conditions and the anticipated

succession of recovering habitats, therefore resulting as **moderate beneficial effects (significant)** under the terms of the EIA Regulations).

8.10 Assessment of Cumulative Effects

8.10.1 The loss of 14.17 ha of dry heath as a result of the Proposed Development is assessed as **low adverse** and **not significant**. The contribution of the Proposed Development to cumulative impacts on dry heath, is therefore considered to be very low and an extensive cumulative impact assessment is not necessary. Cumulative impacts on dry heath are therefore considered to be **negligible** and **not significant** in the context of the EIA Regulations.

8.10.2 The direct loss of 0.59 ha and indirect habitat losses of 2.30 ha of blanket bog as a result of the Proposed Development is assessed as **moderate beneficial effects** and **significant due to** the small extent, degraded and fragmented condition of this habitat within the Study Area and the likely enhancement of the habitat following the mitigation and OBEMP enhancements. The contribution of the Proposed Development to cumulative impacts on blanket bog is therefore considered to be low, particularly when considering the enhancement measures proposed to halt and reverse the degradation of blanket bog within the Site and enhancement of the blanket bog within the Site results in an expected moderate beneficial and significant impact, and an extensive cumulative impact assessment is therefore not necessary. Cumulative impacts on blanket bog are therefore considered to be **low beneficial** and **not significant** in the context of the EIA Regulations.

8.11 Summary

8.11.1 The Proposed Development area was surveyed to establish an ecological baseline in 2022. The baseline surveys included: extended NVC survey, protected mammal survey, bat survey and fish survey. The baseline data were further complimented by a thorough desk study for historical and noteworthy records of priority species within a defined search area beyond the Site boundary.

8.11.2 Habitats indicative of potential groundwater dependence were determined following the NVC survey, although the water catchment is considered likely to be predominantly surface water or rain fed partly due to the wider network of blanket mire habitats (which, by definition, source water via the atmosphere rather than groundwater). A full GWDTE assessment forms part of **Chapter 10: Hydrology, Geology, & Hydrogeological Assessment**.

8.11.3 Two habitats were carried forwards to be assessed in terms of impacts and includes dry heath and blanket bog. Dry heath was assessed in terms of direct habitat loss

and, due to the small areas lost to the Proposed Development footprint, the design mitigation, good practice mitigation and enhancement measures are proposed as part of an OBEMP, the residual impact was deemed to be **moderate beneficial effects (significant)**. Blanket bog habitat required both likely direct and indirect habitat loss effects to be considered due to its reliance on water connectivity within the substrate. Indirect habitat losses as a result of drying peat are anticipated when drains are first installed during the construction phase although the use of floating roads and piled turbine foundations is considered likely to maintain much of the hydrological flow throughout much of the upper acrotelmic peat layer and maintain much of the existing condition of the habitats underlying the Proposed Development footprint. As **moderate beneficial effects (significant)** impacts are anticipated on the areas of blanket bog, due to the design mitigation, good practice mitigation and enhancement measures proposed as part of an OBEMP which aims to halt and restore areas of blanket bog showing signs of considerable erosion and degradation as a result of historical management. An overall improvement is predicted in the quality, continuity and integrity of this habitat during the operational phase and ultimately assist with making the blanket bog found within the Study Area more resilient.

8.11.4 A protected mammals survey found signs of pine marten and otter activity, although these were all within the Study Area and located considerable distance from proposed infrastructure. Although no impacts are anticipated on protected mammals, appropriate mitigation and best practice construction methods are proposed in order to ensure no impacts are experienced by these species.

8.11.5 Bat surveys included site reconnaissance and habitat assessment, to determine site suitability for bats and potential for roosting. The habitat assessments identified no significant roost features within the Site.

8.11.6 Static detector surveys were completed across three survey deployments. The activity measured within the Site was all very low with no significant differences identified across the Site over the three survey seasons. The results of the static detector surveys identified the presence of at least four species; common pipistrelle, soprano pipistrelle, brown long-eared bat and Myotis sp.

8.11.7 Pipistrelle species are assessed to be at high risk from wind turbines, primarily due to their use of open habitats and their fast flight speed. However, due to the very low levels of activity within the Site, it is assessed that the Survey Area supports Low to Moderate activity for the region, with the majority of detector locations supporting Low activity.

8.11.8 Fish surveys were completed along all watercourses flowing from within the Site. At the wider level, all three SEPA classified watercourses are considered to have 'High'

access for fish migration. However, at Site level the Burn of Corrichie and the unclassified Landerberry Burn are both adversely affected by barriers from woody debris. Despite the potential to support salmon, particularly within the wider environment, the watercourses within the Site were found to be of limited suitability for fish fauna. Measures to be outlined within the CEMP, species protection plans, best practice, as well as pollution protection guidelines, will ensure water quality is maintained and that no impacts will occur on any potential fish populations present. There was very limited freshwater pearl mussel habitat within the Study Area, therefore no further freshwater pearl mussel surveys were conducted. The OBEMP specifies ways to increase riparian tree cover for the benefit of water quality, nutrient levels, protection against erosion/contamination of the wider catchment as well as to help keep water temperatures low during times of climate change. This will improve the water quality and habitat for fish within the Site.

8.11.9 Cumulative impacts are considered against all IEFs carried forwards through the impact assessment and no significant cumulative impacts are predicted.

Residual effects on all IEFs are considered to be at worst, low adverse and not significant, and following the measures proposed in the OBEMP blanket bog habitats are anticipated to experience an overall moderate beneficial and significant impact, and are summarised in Table 8.10 and Table 8.11.

Table 8.10 - Summary of Residual Construction Effects

Description of Effect	Likely Significant Effect	Mitigation	Residual Effect
Loss of habitat: dry heath	Low adverse	ECoW advising on micro-siting requirements to ensure impacts on dry heath are reduced further where possible. The OBEMP is predicted to improve the quality and integrity of the dry heath habitat during the operational phase. Through implementation of the proposed habitat enhancement measures.	Low adverse
Loss / Drying effect on habitat: blanket bog	Low adverse	Standard in-built mitigation (i.e 50 m watercourse buffer) and adoption of good practice ECoW advising on micro-siting requirements to ensure impacts on blanket bog are reduced further where possible. OBEMP will be implemented during the construction and operation phases that will focus on restoration of blanket bog and will likely include positive net benefit in terms of supporting the peat macrotope overall integrity. The OBEMP is predicted to improve the quality and integrity of the blanket bog habitat during the operational phase. Through implementation of the proposed habitat enhancement measures.	Negligible adverse

Table 8.11 - Summary of Residual Operational Effects

Description of Effect	Likely Significant Effect	Mitigation & Enhancements	Residual Effect
Loss of habitat: dry heath	No impact	The OBEMP is predicted to improve the quality and integrity of the dry heath habitat during the operational phase. Through implementation of the proposed habitat enhancement measures.	Low beneficial
Loss / Drying effect on habitat: blanket bog	Low beneficial	The Outline BEMP is predicted to improve the quality and integrity of the blanket bog habitat during the operational phase, associated with the proposed habitat enhancement measures.	Moderate beneficial
Bracken control	No Impact	The OBEMP prescribes management controls to limit the further expansion and dominance of bracken across the Site. This is to be completed primarily through manual controls undertaken throughout specific growth seasons of the year.	Low beneficial
Riparian habitat enhancement / Deer control	No Impact	The OBEMP describes the measures to be adopted to promote the regeneration, enhancement and expansion of riparian habitat within the Site. This is to be achieved through a marked increase in deer control/cull rates across the Site and complimented with riparian tree planting where appropriate.	Moderate beneficial
Commercial plantation woodland regen control	No Impact	The OBEMP prescribes management controls to limit the further expansion and reduce the presence of commercial plantation tree species across the Site. This is to be completed through regular manual controls undertaken throughout the year.	Low beneficial

8.12 References

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