8. Technical Appendix 8.1: Methodologies and Results

8.1 Introduction

8.1.1 This technical appendix presents full details of the methodology and results for the assessment from field surveys undertaken for the Proposed Development, including references to best practice.

8.2 Methods of Baseline Data Collection

Desk Study

8.2.1 A desk study to collect existing baseline data about the site and the surrounding area within 10km, such as the location of designated nature conservation sites or other natural features of potential ecological importance, was undertaken, drawing upon the following data sources:

- SNH Sitelink (SNH, 2019a);
- Highland Biological Recording Group (HBRG, 2019); and
- MAGIC website (MAGIC, 2019).

8.2.2 Data sources were searched for protected or notable species records. Examples of notable species include, but are not limited to, national or local Biodiversity Action Plan (BAP) species, restricted range species, species or species groups listed for local designated sites in the area (Local Nature Reserves, Sites of Importance for Nature Conservation, Sites of Nature Conservation Interest) or key species groups such as invertebrates or non-vascular plants. These species are not considered to have the same importance as those protected by legislation; however, their inclusion allows a more holistic approach and therefore a more robust assessment in line with the Applicant's responsibilities under Schedule 9 of the Electricity Act (1989). This information was used to understand what the key species for the site might be prior to field surveys. Supplementary information on the site and its surroundings was obtained from aerial images available from Google™ Earth Pro. The Environmental Statement (ES) for the existing Stronelairg Wind Farm (2012) was also consulted.

Field Surveys

Extended Phase 1 Habitat Survey

8.2.3 The Extended Phase 1 habitat survey was undertaken by Ramboll ecologists between 13 and 17 May 2019. The survey involved a site walkover and preliminary assessment of key habitats, land use and ecological features, particularly focusing on areas of natural interest that would be affected by the Proposed Development. The main habitats present were recorded using standard Phase 1 Habitat survey methodology (Joint Nature Conservation Committee (JNCC), 2010b). The Phase 1 habitat survey findings were reviewed and a supplemental methodology (Nature Conservancy Council, 1990) for identifying blanket bog and modified bog was applied following discussions with Doctor Mary Elliot, an independent ecological consultant who has worked on the Glendoe Hydroelectric Scheme in similar habitats adjacent to the site. This additional consideration of peat condition was included given the particular degradation characteristics of bog and other peatland within the Monadhliath mountains where high levels of natural erosion occur. The occurrence, abundance and severity of peat hags

found were used as an additional classifier of bog condition, i.e. whether it was considered to be unmodified blanket bog or modified bog, be that dry modified or wet modified. This approach lessens the focus on the abundance of peat bog mosses (Sphagnum sp.) as the key indicators of bog condition compared to Phase 1 habitat survey methodology. However, it is considered to be more appropriate for this particular site. The approach is in line with that followed for the aforementioned Glendoe Hydroelectric Scheme, which was accepted by The Highland Council (THC) and Scottish Natural Heritage (SNH).

8.2.4 Target notes were used to record habitats and features of particular interest. In addition to general habitat classification, a list was compiled of all observed plant species (using the nomenclature of Stace (2010), with common and Latin names referred to in the first instance then common names used subsequently). The abundance of each species was estimated for each habitat using standard 'DAFOR' codes:

- dominant;
- abundant;
- frequent;
- occasional; and
- rare.

8.2.5 The ecological study area was also inspected for signs of any invasive plant species subject to legal controls and assessed for its potential to support protected species, in order to identify potential ecological constraints and to guide recommendations for further survey requirements for these species.

8.2.6 A further survey to groundtruth the previous results applying the supplemental approach to bog characterisation was undertaken by Ramboll ecologists on 3 July 2019.

National Vegetation Classification Survey

8.2.7 National Vegetation Classification (NVC) Surveys (Rodwell, 2009) of wetland and peatland habitats were completed to identify potential Ground Water Dependant Terrestrial Ecosystems (GWDTE) (SEPA, 2014) alongside the Phase 1 habitat survey. The surveys followed the methodology described in best practice guidance (Rodwell, 2009), with five 2 m² quadrats surveyed within each habitat, and the species composition analysed. Where habitats were too small to be surveyed using five quadrats, an extensive species list was compiled, including information on abundance.

8.2.8 As part of further survey by Ramboll ecologists on 3 July 2019, the previous results were updated.

Protected Species Survey

8.2.9 Protected species surveys were undertaken alongside the Phase 1 habitat survey.

8.2.10 Water vole (*Arvicola amphibius*) survey comprised a search of riparian and pond edge habitat for characteristic signs of water vole activity. The survey assessed all watercourses and waterbodies within the site boundary and for a distance of 200m up and downstream of the site boundary, in accordance with good practice guidelines (Strachan *et al.*, 2016). The signs sought were:

- burrows;
- latrines;

- feeding stations;
- runs; and
- sightings.

8.2.11 Otter (*Lutra lutra*) survey involved a detailed search of all watercourses within the site, in accordance with good practice guidelines (Chanin, 2003). The field signs sought were:

- holts;
- couches;
- spraints;
- feeding remains;
- footprints;
- slides; and
- sightings.

8.2.12 Pine marten (*Martes martes*) survey (SNH, 2019b) involved a detailed search of trails and structures for field signs of:

- scats;
- footprints;
- sightings; and
- burrows.

8.2.13 Wildcat (*Felis silvestris grampia*) survey (SNH, 2019c) involved a detailed search for field signs of:

- droppings;
- footprints;
- scratch markings; and
- used dens.

Fish Surveys

8.2.14 Previous survey data collected for the Glendoe Hydroelectric Scheme by West Galloway Fisheries Trust and Ness and Beauly Fisheries Trust from 2002-2009 and in 2004 was used alongside electric fishing surveys undertaken by Waterside Ecology in 2011 for Stronelairg Wind Farm to determine the current baseline of fish populations in the study area. Hydrochemical data was collected for the Stronelairg Wind Farm throughout the construction period and one year post construction, covering the period of 2014-2019. Full details are provided in Technical Appendix 8.4: Existing Data on Fish Populations and Stream Hydrochemistry.

8.3 Impact Assessment Methodology

Criteria for Evaluating the Importance of Ecological Features

8.3.1 Habitats and species (i.e. ecological features) identified within the study area have been assigned ecological values using the standard Chartered Institute of Ecology and Environmental Management (CIEEM) scale that classifies ecological features within a defined geographic context (CIEEM, 2016). The classification uses recognised and published criteria (Ratcliffe, 1977 and Wray *et al.*, 2010), where the ecological features are assessed in relation to their size, diversity, naturalness, rarity, fragility, typicalness,

connectivity with surroundings, intrinsic value, recorded history and potential value. Table 8.1.1 describes the geographic frame of reference that has been used.

Table 8.1.1: Geographic Conservation Importance

Importance	Examples
International	Internationally designated sites including Special Areas of Conservation (SAC), Ramsar sites, Biogenetic Reserves, World Heritage sites, Biosphere Reserves, candidate SACs and potential Ramsar sites; discrete areas which meet the published selection criteria for international designation but which are not themselves designated as such; or a viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas which are essential to maintain the viability of a larger whole. Resident or regularly occurring populations of species which may be considered at an international level, such as European Protected Species (EPS), the loss of which would adversely affect the conservation status or distribution of the species at an international level; or where the population forms a critical part of a wider population; or the species is at a critical phase of its life cycle.
National	Nationally designated sites including Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserves; discrete areas which meet the published selection criteria for national designation but which are not designated as such; or areas of a habitat type identified in the UK Post-2010 Biodiversity Framework (2012). Resident or regularly occurring populations of species which may be considered at the national level, such as species listed in Schedules 5 and 8 of the Wildlife and Countryside Act (1981), the loss of which would adversely affect the conservation status or distribution of the species across Britain or Scotland; or where the population forms a critical part of a wider population; or the species is at a critical phase of its life cycle.
Regional	Areas of a habitat type identified in the Regional BAP; viable areas of habitat identified as being of Regional value in the appropriate Natural Area Profile (or equivalent); or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Resident or regularly occurring populations of species which may be considered at an international level, or at the national level, the loss of which would adversely affect the conservation status or distribution of the species across the region; or where the population forms a critical part of a wider population; or the species is at a critical phase of its life cycle.
County	Designated nature conservation sites at the local authority level in Scotland including statutory Local Nature Reserves (LNR) and non-statutory Local Nature Conservation Sites; or discrete areas which meet the published selection criteria for designation but which are not designated as such. Resident or regularly occurring populations of species which may be considered at the local authority level, the loss of which would adversely affect the conservation status or distribution of the species across the local authority area.
Local	Features of local value include areas of habitat or populations/communities of species considered to appreciably

Importance	Examples
	enrich the habitat resource within the immediate surrounding area, for example, species-rich hedgerows. Resident or regularly occurring populations of species which may be considered at an international level, or at the national level, the loss of which would adversely affect the conservation status or distribution of the species across the immediate surrounding area; or where the population forms a critical part of a wider population; or the species is at a critical phase of its life cycle.

8.3.2 A wide range of sources can be used to assign importance to ecological features, including legislation and policy. In the case of designated nature conservation sites, their importance reflects the geographic context of the designation. For example, sites designated as SACs are recognised as being of importance at an international level. Ecological features not included in legislation and policy may also be assigned importance due to, for example, local rarity or decline, or provision of a functional role for other ecological features. Professional judgement is used to assign such importance.

Criteria for Characterising Impacts

8.3.3 The potential impacts upon ecological features have been considered in relation to the Proposed Development. The impacts have been assessed without consideration of any specific mitigation measures that might be employed. The assessment of likely ecological impacts has been made in relation to the baseline conditions of the study area. The likely impacts of development activities upon ecological features have been characterised according to several variables detailed in Table 8.1.2.

Table 8.1.2: Impact Characterisation

Parameter	Description
Direction	Impacts are either adverse (negative) or beneficial (positive).
Magnitude	This is defined as high, moderate, low or negligible, with these being classified using the following criteria: High: Total/near total loss of a population due to mortality or displacement or major reduction in the status or productivity[1] of a population due to mortality or displacement or disturbance. Total/near total loss of a habitat. Moderate: Partial reduction in the status or productivity of a population due to mortality or displacement or disturbance. Partial loss of a habitat. Low: Small but discernible reduction in the status or productivity of a population due to mortality or displacement or disturbance. Small proportion of habitat lost. Negligible: Very slight reduction in the status or productivity of a population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the 'no change' situation. Slight loss of habitat that is barely discernible from the habitat resource as a whole.

[1] Status is defined as the conservation status of the species and indicates whether the species is likely to become extinct in the near future. Productivity is defined as the rate of population growth.

Parameter	Description
Extent	The area over which the impact occurs.
Duration	The time for which the impact is expected to last prior to recovery of the ecological feature or replacement of the feature by similar resource (in terms of quality and/or quantity). This is expressed as a short-term, medium-term, or long-term effect relative to the ecological feature that is impacted.
Reversibility	Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it. Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance/cancellation/reduction of effect) or compensation (offset/recompense/offer benefit) is possible.
Frequency and Timing	The number of times an activity occurs will influence the resulting effect (if appropriate, described as low to high and quantified, where possible). The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. the badger breeding season.

8.3.4 The assessment only describes those characteristics relevant to understanding the ecological impact and determining the significance of the effect.

Criteria for Assessing Cumulative Effects

8.3.5 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects are particularly important in Ecological Impact Assessment (EcIA) as many ecological features are already exposed to background levels of threat or pressure and may be close to critical thresholds where further impacts could cause irreversible decline and significant cumulative effects. Further impacts can also make habitats and species more vulnerable or sensitive to change.

8.3.6 Developments included in the cumulative effects assessment are the following types of future development within the same Zone of Influence (ZOI):

- proposals for which consent has been applied;
- projects that have been granted consent but have not yet been started or have been started but are not yet completed (i.e. under construction);
- proposals that have been refused permission but are subject to appeal; and
- proposed projects that will be implemented by a public body but for which no consent is needed from a competent authority.

8.3.7 It may also be necessary to consider developments that are operational but whose full environmental effects are not yet known and cannot be accounted for in the baseline.

Significance Criteria

8.3.8 Significant effects are assessed with reference to the geographical importance of the ecological feature. However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important. For example, a

significant effect on a species protected by national legislation does not necessarily equate to a significant effect on its national population.

8.3.9 For the purposes of EcIA, apart from in exceptional circumstances, a significant effect, as defined by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations (2017) is only considered to be possible where the feature in question is considered to be of regional, national or international importance. That is not to say that impacts from the Proposed Development could not result in significant effects on features of county or local importance, simply that those effects are not likely to be significant under Environmental Impact Assessment (EIA) Regulations, unless the effect is likely to undermine biodiversity conservation objectives (such as local policies for no net loss) or biodiversity in general. Whether an effect at local or county importance is considered to be significant or not significant under the EIA Regulations is made clear in the impact assessment of each ecological feature.

8.3.10 Mitigation and/or compensation is proposed for all effects considered significant under the EIA Regulations. Where appropriate, as part of additional good practice, mitigation and/or compensation may be proposed for significant effects on features of county or local importance, or where required in relation to protected species where legislation may require actions to protect populations or individuals.

8.4 Limitations and Assumptions

8.4.1 It should be noted that the availability and quality of the data obtained during desk studies is reliant on third party responses and recorders. This varies from region to region and for different species groups. Furthermore, the comprehensiveness of data often depends on the level of coverage, the expertise and experience of the recorder and the submission of records to the local recorder.

8.4.2 The habitat and faunal surveys provide a snapshot of ecological conditions and do not record plants or animals that may be present in the study area at different times of the year. The absence of a particular species cannot definitely be confirmed by a lack of field signs and only concludes that an indication of its presence was not located during the survey effort. However, surveys for faunal species were undertaken during optimal periods for locating field signs. Habitat and faunal data has also been collected on the site and the surrounding area over the past 15 years for Glendoe Hydroelectric Scheme and Stronelairg Wind Farm, therefore the presence of habitats and species in the area is well understood.

8.5 Detailed Results

8.5.1 The following section contains the detailed results of the desk study and field surveys undertaken for the baseline data collection.

Desk Study

<u>Designated Nature Conservation Sites</u>

8.5.2 Table 8.1.3 details the designated nature conservation sites that occur within 10km of the Proposed Development but are not considered to have connectivity with the Proposed Development. As a result, they are not considered further in this assessment.

Table 8.1.3: Designated Sites

Site Name	Qualifying Feature(s)	Distance from Proposed Development at Closest Point (km)	Connectivity with Proposed Development
Creag Meagaidh SAC, SSSI and NNR	SAC: Alpine and subalpine heaths, blanket bog, plants in crevices on base-rich and acid rocks, dry heaths, tall herb communities, wet heath with cross-leaved heath (*Erica tetralix*), clear-water lakes/lochs with aquatic vegetation and poor to moderate nutrient levels, montane acid grasslands, acidic scree and mountain willow (*Salix sp.*) scrub. SSSI: Upland habitats, rocky slopes, upland birch woodland and vascular plant assemblage, including alpine foxtail (*Alopecurus alpinus*), downy willow (*Salix lapponum*) and sibbaldia (*Sibbaldia procumbens*). NNR: Upland habitats including slopes and ice-carved corries and gullies.	6.49km to the south (NNR is 9.67km to the south)	Separated from the Proposed Development by the River Spey, woodland and hills. No pathways of impact have been identified and, therefore, there would be no likely significant effects on these sites.
River Moriston SAC	Freshwater pearl mussel (*Margaritifera margaritifera*) and Atlantic salmon (*Salmo salar*).	12.53km to the north-west	Separated from the Proposed Development by Loch Ness, woodland and mountains. Although Loch Ness occurs close to the site boundary and could contain Atlantic salmon that use the SAC, no works would occur in this area since the Proposed Development would use the existing access track already constructed for the Stronelairg Wind Farm. No pathways of impact have been identified and, therefore, there would be no likely significant effects on this site.
Easter Ness Forest SSSI	Upland oak woodland and upland mixed ash woodland.	8.58km to the north-west	Separated from the Proposed Development by woodland and hills. Although the designated nature conservation site occurs close to the site boundary where it exists around the access track, no works would occur in this area since the Proposed Development would use the existing

Site Name	Qualifying Feature(s)	Distance from Proposed Development at Closest Point (km)	Connectivity with Proposed Development
			access track already constructed for the Stronelairg Wind Farm. No pathways of impact have been identified and, therefore, there would be no likely significant effects on this site.
Glen Tarff SSSI	Upland mixed ash woodland and the rare tenebrionid beetle (*Bolitophagus reticulatus*).	3.73km to the west	Separated from the Proposed Development by woodland and hills. Although the designated nature conservation site occurs close to the site boundary where it exists around the access track, no works would occur in this area since the Proposed Development would use the existing access track already constructed for the Stronelairg Wind Farm. The Glen Tarff River has connectivity with Glendoe reservoir present in the site boundary but no impact is considered to exist that would be extensive enough to affect the woodland habitats or the rare beetle that lives on tree trunks surrounding the Glen Tarff river. No pathways of impact have been identified and, therefore, there would be no likely significant effects on this site.
Levishie Wood SSSI	Upland birch woodland.	14.76km to the north-west	Separated from the Proposed Development by Loch Ness, woodland and mountains. No pathways of impact have been identified and, therefore, there would be no likely significant effects on this site.

Protected and Notable Species

8.5.3 Table 8.1.4 details the protected and notable species identified by the HBRG in the desk study area.

Table 8.1.4: HBRG Desk Study Results

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
Amphibian	*Bufo bufo*	Common Toad	UK BAP priority species, Bern Convention Appendix 3, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Amphibian	*Lissotriton helveticus*	Palmate Newt	Bern Convention Appendix 3, Wildlife and Countryside Act 1981 (Schedule 5)
Amphibian	*Rana temporaria*	Common Frog	Bern Convention Appendix 3, Habitats Directive Annex 5, Wildlife and Countryside Act 1981 (Schedule 5)
Fish	*Salvelinus alpinus*	Arctic Charr	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Clubmoss	*Lycopodium annotinum*	Interrupted Clubmoss	Habitats Directive Annex 5, Nationally Scarce (excludes red-listed taxa)
Conifer	*Juniperus communis*	Juniper	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Carex vaginata*	Sheathed Sedge	Nationally Scarce (excludes red-listed taxa)
Flowering plant	*Cerastium cerastoides*	Starwort Mouse-ear	Nationally Scarce (excludes red-listed taxa)
Flowering plant	*Cornus suecica*	Dwarf Cornel	Near Threatened on the International Union for the Conservation of Nature (IUCN) red list
Flowering plant	*Genista anglica*	Petty Whin	Near Threatened on the IUCN red list
Flowering plant	*Gentianella campestris*	Field Gentian	UK BAP priority species, Vulnerable on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Gnaphalium supinum*	Dwarf Cudweed	Near Threatened on the IUCN red list

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
Flowering plant	*Gnaphalium sylvaticum*	Heath Cudweed	Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Hyacinthoides non-scripta*	Bluebell	Wildlife and Countryside Act 1981-(Schedule 8)
Flowering plant	*Phleum alpinum*	Alpine Cat's-tail	Nationally Scarce (excludes red-listed taxa)
Flowering plant	*Platanthera chlorantha*	Greater Butterfly-orchid	Near Threatened on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Salix lapponum*	Downy Willow	UK BAP priority species, Nationally Scarce (excludes red-listed taxa), Vulnerable on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Salix myrsinites*	Whortle-leaved Willow	UK BAP priority species, Nationally Scarce (excludes red-listed taxa), Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Flowering plant	*Sibbaldia procumbens*	Least Cinquefoil	Nationally Scarce (excludes red-listed taxa), Vulnerable on the IUCN red list
Flowering plant	*Viola canina*	Heath Dog-violet	Near Threatened on the IUCN red list
Fungus	*Sarcodon squamosus*	Scaly Tooth	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Butterfly	*Aricia artaxerxes*	Northern Brown Argus	UK BAP priority species, Vulnerable on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Butterfly	*Boloria euphrosyne*	Pearl-bordered Fritillary	UK BAP priority species, Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
Butterfly	*Boloria selene*	Small Pearl-bordered Fritillary	UK BAP priority species, Near Threatened on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Butterfly	*Coenonympha pamphilus*	Small Heath	UK BAP priority species, Near Threatened on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Butterfly	*Coenonympha tullia scotica*	Large Heath	UK BAP priority species, Vulnerable on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Bee	*Bombus monticola*	Bilberry (Blaeberry) Bumblebee	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Moth	*Entephria caesiata*	Grey Mountain Carpet	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Moth	*Xanthorhoe decoloraria decoloraria*	Red Carpet	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Fly	*Thereva handlirschi*	Golden Scottish Stiletto	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Fly	*Tipula melanoceros*	Insect - True Fly (Diptera)	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Lichen	*Lobaria pulmonaria*	Lungwort	Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981-(Schedule 8)
Lichen	*Nephroma laevigatum*	Lichen	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Lichen	*Pannaria rubiginosa*	Lichen	Scottish Biodiversity List of species of principal importance for biodiversity conservation

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
Lichen	*Peltigera britannica*	Lichen	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Lichen	*Peltigera collina*	Lichen	Scottish Biodiversity List of species of principal importance for biodiversity conservation
Moss	*Buxbaumia viridis*	Green Shield-moss	UK BAP priority species, Bern Convention Appendix 1, Habitats Directive Annex 2 - non-priority species, Nationally Rare (excludes red-listed taxa), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981-(Schedule 8)
Reptile	*Zootoca vivipara*	Common Lizard	UK BAP priority species, Bern Convention Appendix 3, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5) (killing/injuring)
Mammal	*Arvicola amphibius*	Water Vole	UK BAP priority species, Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Capreolus capreolus*	Roe Deer	Bern Convention Appendix 3
Mammal	*Cervus elaphus*	Red Deer	Bern Convention Appendix 3
Mammal	*Cervus nippon*	Sika Deer	Bern Convention Appendix 3
Mammal	*Erinaceus europaeus*	European Hedgehog	UK BAP priority species, Bern Convention Appendix 3, Vulnerable on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Mammal	*Felis silvestris*	Wildcat	UK BAP priority species, Bern Convention Appendix 2, Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Critically Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
Mammal	*Lepus europaeus*	Brown Hare	UK BAP priority species, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Mammal	*Lepus timidus*	Mountain Hare	UK BAP priority species, Bern Convention Appendix 3, Habitats Directive Annex 5, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 4), Near Threatened on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation
Mammal	*Lutra lutra*	Otter	UK BAP priority species, Bern Convention Appendix 2, Habitats Directive Annex 2 - non-priority species, Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Martes martes*	Pine Marten	UK BAP priority species, Bern Convention Appendix 3, Habitats Directive Annex 5, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 4), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5) (killing/injuring/taking)
Mammal	*Mustela erminea*	Stoat	Bern Convention Appendix 3
Mammal	*Mustela nivalis*	Weasel	Bern Convention Appendix 3
Mammal	*Myotis daubentonii*	Daubenton's Bat	Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, Convention on Migratory Species, EUROBATS - Annex I, Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Myotis nattereri*	Natterer's Bat	Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, Convention on Migratory Species, EUROBATS - Annex I, Habitats Directive Annex 4, The

Taxon Group	Latin Name	Common Name	Relevant Legislation/Designations
			Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Pipistrellus pipistrellus*	Common Pipistrelle	Convention on Migratory Species, Appendix 2, Convention on Migratory Species, EUROBATS - Annex I, Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Pipistrellus pygmaeus*	Soprano Pipistrelle	UK BAP priority species, Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, Convention on Migratory Species, EUROBATS - Annex I, Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Plecotus auritus*	Brown Long-eared Bat	UK BAP priority species, Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, Convention on Migratory Species, EUROBATS - Annex I Habitats Directive Annex 4, The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2), Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5)
Mammal	*Sciurus vulgaris*	Red Squirrel	UK BAP priority species, Bern Convention Appendix 3, Endangered on the IUCN red list, Scottish Biodiversity List of species of principal importance for biodiversity conservation, Wildlife and Countryside Act 1981 (Schedule 5) (killing/injuring/taking)

Field Surveys

Phase 1 Habitats

8.5.4 The Phase 1 habitat locations recorded in the study area are described below and shown on Figure 8.2.

B1.1 Unimproved Acid Grassland

8.5.5 This habitat type occurs around watercourses and on steep slopes throughout the study area. The dominant species are mat grass (*Nardus stricta*) and heath rush (*Juncus squarrosus*), with abundant hare's-tail cottongrass (*Eriophorum vaginatum*) and frequent soft rush (*Juncus effusus*). Heather (*Calluna vulgaris*), wood anemone (*Anemone nemorosa*), marsh violet (*Viola palustris*) and sweet vernal-grass (*Anthoxanthum odoratum*) are occasional, with rare red bog-moss (*Sphagnum capillifolium*), papillose bog-moss (*S. papillosum*) and feathery bog-moss (*S. cuspidatum*).

D1.1 Dry Heath

8.5.6 This habitat type occurs on small hummocks and hills throughout the study area. The dominant species are heather and lichen (*Cladonia sp.*). Blaeberry (*Vaccinium myrtillus*) and cottongrass (*Eriophorum sp.*) occur occasionally. The vegetation is typically short due to wind erosion.

D2 Wet Heath

8.5.7 This habitat type occurs in patches throughout the western area of the Proposed Development. The dominant species are heather, cross-leaved heath, purple moor-grass (*Molinia caerulea*) and hare's-tail cottongrass. Deergrass (*Trichophorum cespitosum*) is abundant, with rare crowberry (*Empetrum nigrum*).

D6 Wet Heath/Acid Grassland Mosaic

8.5.8 This habitat type occurs around watercourses and on shallow slopes throughout the study area. The dominant species are mat grass and heather, with abundant heath rush and frequent hare's-tail cottongrass. Red bog-moss occurs rarely. The proportion of acid grassland to wet heath is typically 60:40, respectively.

E1.6.1 Sphagnum Blanket Bog

8.5.9 This habitat type is the second most common throughout the study area. The dominant species are heather and hare's-tail cottongrass, with abundant deergrass. Red bog-moss, papillose bog-moss, feathery bog-moss, blunt-leaved bog-moss (*Sphagnum palustre*) and flat-topped bog-moss (*S. fallax*) occur frequently. Crowberry occurs rarely. The bog was very dry at the time of survey, with some small areas of what appeared to be bare peat likely to be bog pools when wetter. The bog pools that are present contain feathery bog-moss and flat-topped bog-moss. Some ridges and furrows are present in this habitat, particularly on the boundaries with wet modified bog areas.

E1.7 Wet Modified Bog

8.5.10 This habitat type is the most common throughout the study area and contains the same species as the blanket bog. Following the methodology described in paragraph 8.2.3.,

this habitat was classified as wet modified bog due to the extensive hagging and areas of bare peat. The habitat is generally of poor quality.

E1.8 Dry Modified Bog

8.5.11 Two small areas of this habitat type occur in the south of the study area, as shown on Figure 8.2 and Figure 8.3. Dominant species are heather and hare's-tail cottongrass, with frequent lichen (*Cladonia sp.*).

E4 Bare Peat

8.5.12 Large areas of bare peat occur throughout the site, with smaller areas shown as Target Notes 81-91 on Figure 8.3.

F2.2 Marginal and Inundation – Inundation Vegetation

8.5.13 A single area of this habitat type occurs in Lochan Iain, as shown on Figure 8.2. The dominant species is water lobelia (*Lobelia dortmanna*).

G1 Standing Water

8.5.14 Areas of oligotrophic and dystrophic standing water occur throughout the study area, including Glendoe reservoir, Lochan Iain, Dubh Lochan and Loch na Lairige.

G2 Running Water

8.5.15 Several watercourses occur throughout the study area, including the Allt na Feithe Gobhlaich, River Tarff, Coachan Uilleim and Allt Mor.

Target Notes

8.5.16 Target notes recorded during the Phase 1 habitat survey are detailed in Table 8.1.5.

Table 8.1.5: Target Notes

Target Note Number	Grid Reference	Comment
1	NH 55965 02807	Otter tracks
2	NH 56266 01753	Otter spraint
3	NH 56456 01482	Otter spraint
4	NH 56378 02682	Water vole burrow
5	NH 56550 02801	Water vole burrow
6	NH 56583 02769	Water vole burrow
7	NH 57077 04066	Otter spraint
8	NH 57083 04104	Water vole burrow
9	NH 56933 03864	Water vole burrow
10	NH 56565 03425	Water vole burrow
11	NH 48407 05259	Water vole burrow
12	NH 48271 05223	Water vole burrow
13	NH 48367 05256	Water vole burrow

Target Note Number	Grid Reference	Comment
14	NH 48144 05137	Water vole burrow
15	NH 48086 05103	Water vole burrow
16	NH 47599 04979	Water vole burrow
17	NH 47480 04852	Common lizard
18	NH 47531 03753	Common lizard
19	NH 47595 03789	Otter tracks
20	NH 47722 03884	Otter tracks
21	NH 46844 02922	Common lizard
22	NH 47990 01816	Water vole prints
23	NH 47990 01816	Otter prints
24	NH 48956 01015	Common lizard
25	NH 49212 01231	Otter spraint and water vole burrows
26	NH 49234 01402	Common lizard
27	NH 49978 01566	Otter spraint
28	NH 48767 01867	Common lizard
29	NH 49351 02515	Water vole burrow
30	NH 55002 01787	Otter holt/ shelter- two entrances under bank of burn, spraint recorded outside one entrance, possibly extends further under bank.
31	NH 55016 01777	Water vole burrow with feeding signs, second burrow on opposite bank
32	NH 55035 01778	Water vole burrow
33	NH 55070 01759	Common frog
34	NH 55093 01759	Otter prints in peat
35	NH 55229 01747	Otter holt in peat
36	NH 56269 04347	Water vole burrow
37	NH 56288 04353	Otter holt, running into burn
38	NH 56326 04340	Water vole prints in peat and mountain hare sighting
39	NH 56439 04374	Water vole burrow
40	NH 56458 04394	Common frog and mountain hare
41	NH 56494 04367	Otter holt in peat bank
42	NH 56588 04369	Water vole burrow
43	NH 56785 04342	Water vole burrow
44	NH 48400 05237	Otter prints in peat
45	NH 48431 05291	Water vole burrow
46	NH 48429 05313	Water vole burrow

Target Note Number	Grid Reference	Comment
47	NH 48193 05167	Cluster of water vole burrows
48	NH 48010 05116	Common frog (one juvenile, three adults)
49	NH 47968 05197	Water vole burrow
50	NH 47882 05042	Water vole burrow
51	NH 47774 04982	Water vole burrow
52	NH 47397 04794	Water vole burrow
53	NH 47158 04622	Water vole prints in peat
54	NH 47731 03750	Common lizard and mountain hare
55	NH 47771 03783	Water vole burrow
56	NH 46814 03137	Otter shelter under rock with spraints
57	NH 46838 02897	Otter holt
58	NH 46853 02832	Common lizard
59	NH 46785 02347	Common lizard
60	NH 46443 01755	Common lizard
61	NH 46899 03103	Newt (*Lissotriton sp*.)
62	NT 47808 03248	Common frog
63	NT 47672 02807	Water vole burrows x3 (one on opposite bank, third is further north on same bank)
64	NT 47667 02421	Water vole burrow
65	NT 47962 02013	Otter spraint on rock
66	NT 47980 01896	Common frog (juvenile)
67	NT 47997 01777	Water vole prints
68	NT 48033 01645	Water Vole burrow
69	NT 48035 01614	Water vole burrows (three)
70	NT 48880 00962	Otter spraint on grass hummock
71	NT 48920 00962	Water vole burrow
72	NT 49144 01458	Mountain hare
73	NT 49352 01361	Common frog
74	NT 49720 01583	Otter spraint on rock
75	NT 50028 01636	Otter spraint on rock in tributary
76	NT 49998 01587	Water vole burrows (two)
77	NT 49944 01553	Water vole burrow
78	NT 49303 02353	Common frog
79	NT 49194 02424	Mountain hare
80	NH 56612 02511	NVC1 location
81	NH 56334 03459	Exposed peat

Target Note Number	Grid Reference	Comment
82	NH 48202 04857	Bare peat
83	NH 47785 03180	Bare peat
84	NH 49531 02154	Bare peat
85	NH 48169 01022	Furrowed/eroded peat
86	NH 47561 04402	Bare peat
87	NH 47058 04468	Bare peat
88	NH 47300 04925	Bare peat
89	NH 48646 04865	Bare peat
90	NH 48597 04345	Bare peat
91	NH 48338 03919	Bare peat
92	NH 48004 02101	M25 *Molinia caerulea-Potentilla* erecta mire (small flush)
93	NH 48123 01719	M32 *Philonotis fontana-Saxifraga stellaris* spring
94	NH 48198 01094	M10 *Pinguiculo-Caricetum dioicae* mire (stony flush)
95	NH 47129 04635	Transitional area from bog to acid grassland on edge of watercourse
96	NH 47970 02018	Water vole burrows with droppings in water
97	NH 48020 02010	Sedge-dominated flush. Hare's-tail cottongrass, bog-moss (*Sphagnum sp*.), glittering wood-moss (*Hylocomium splendens*), common haircap (*Polytrichum commune*). Sedge (*Carex sp*.) and bryophytes such as fountain apple-moss (*Philonotis fontana*).
98	NH 48459 02094	Flush (M6) in a wet channel with grasses and hare's-tail cottongrass.
99	NH 49115 01154	Dwarf birch (*Betula pubescens*) near burn
100	NH 48583 02117	Flush with wet heath/acid grassland mosaic at top and marshy grassland, which may be classed as M6/M25 lower down slope where peat is >0.5m
101	NH 49200 01240	Small water vole colony <15 burrows, not active yet this year. Marshy grassland: Star sedge (*Carex echinata*) in flower. Mat grass and heather on drier mounds nearby.

GWDTE

8.5.17 The first group of NVC quadrats was completed in blanket bog close to a track in the eastern part of the study area at grid reference NH 56612 02511. The species recorded were homogenous across much of the blanket bog and wet modified bog present in the study area. The following species were recorded:

- heather;
- hare's-tail cottongrass;

- glittering wood-moss;
- crowberry;
- bog bilberry (*Vaccinium uliginosum*);
- blaeberry (*V. myrtillus*);
- lichen (*Cladonia sp.*);
- springy turf-moss;
- broom fork-moss (*Dicranum scoparium*);
- blunt-leaved bog-moss;
- red bog-moss; and
- papillose bog-moss.

8.5.18 This species list indicates that the area is an M19 *Calluna vulgaris-Eriophorum vaginatum* blanket mire, showing similarities with sub-community b (*Empterum nigrum*) and sub-community c (*Vaccinium vitis-idaea-Hylocomium splendens*). The species list also has similarities with M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire and M20 *Eriophorum vaginatum* blanket mire. M17, M19 and M20 are not GWDTE.

8.5.19 The second group of NVC quadrats was completed in wet heath in the western part of the study area at grid reference NH 48130 01044. The following species were recorded:

- heather;
- cross-leaved heath;
- deergrass;
- hare's-tail cottongrass;
- common cottongrass *Eriophorum angustifolium*;
- glittering wood-moss;
- crowberry;
- bog bilberry;
- blaeberry;
- lichen (*Cladonia sp.*);
- red bog-moss; and
- broom fork-moss.

8.5.20 This species list indicates that the area is an M15 *Scirpus cespitosus-Erica tetralix* wet heath. This is a moderately GWDTE.

8.5.21 The third NVC survey was completed in a small flush close to the Caochan Uilleim in the western part of the study area at grid reference NH 48004 02101. The following species were recorded:

- purple moor-grass;
- hare's-tail cottongrass;
- heath bedstraw (*Galium saxatile*);
- tormentil (*Potentilla erecta*);
- sheep's fescue (*Festuca ovina*);
- star sedge;
- glittering wood-moss;

- fountain apple-moss;
- common haircap (*Polytrichum commune*); and
- flat-topped bog-moss.

8.5.22 This species list indicates that the area is an M25 *Molinia caerulea-Potentilla erecta* mire. This is a moderately GWDTE.

8.5.23 The fourth group of NVC quadrats was completed in a flat area of land next to the Allt na Feithe Gobhlaich in the western part of the study area at grid reference NH 47054 04675. The following species were recorded:

- purple moor-grass;
- star sedge;
- heath rush;
- heath bedstraw;
- sweet vernal grass;
- mat grass;
- sheep's fescue;
- marsh violet;
- common haircap; and
- flat-topped bog-moss.

8.5.24 This species list indicates that the area is an M6 *Carex echinata-Sphagnum recurvum/auriculatum* mire. This is a highly GWDTE.

8.5.25 The fifth NVC survey was completed in a stony flush in the western part of the study area at grid reference NH 48198 01094. The following species were recorded:

- dioecious sedge (*Carex dioica*);
- star sedge;
- hooked scorpion-moss (*Scorpidium scorpioides*);
- common cottongrass;
- deergrass;
- purple moor-grass; and
- sheep's fescue.

8.5.26 This species list indicates that the area is an M10 *Carex dioica-Pinguicula vulgaris* mire. This is a highly GWDTE.

8.5.27 The sixth NVC survey was completed in a spring in the western part of the study area at grid reference NH 48123 01719. The following species were recorded:

- bog stitchwort (*Stellaria alsine*);
- sweet vernal grass;
- mat grass;
- marsh violet;
- red fescue (*Festuca rubra*);
- common haircap; and
- fountain apple-moss.

8.5.28 This species list indicates that the area is an M32 *Philonotis fontana-Saxifraga stellaris* mire. This is a highly GWDTE.