TECHNICAL APPENDIX 7.1: ECOLOGY SURVEY METHODOLOGY AND RESULTS

7.1 Introduction

7.1.1 This Technical Appendix presents full details of the methodology and results for the field surveys undertaken for the Proposed Development, including references to best practice. It should be read in conjunction with **Chapter 7: Ecology** and **Chapter 2: Description of Proposed Development (Environmental Impact Assessment Report (EIAR) Volume 2)**.

7.2 Methods of Baseline Data Collection

7.1.2 The Ecology Study Area comprises a desk Study Area and a field Survey Area as shown on **Figure 7.1: Ecology Designated Site** and **Figure 7.2: UKHab (EIAR Volume 3)**. The desk Study Area comprised a 2 km buffer around the Proposed Development. This area is considered to represent the Zone of Influence (ZoI)[1] in which impacts on ecological features could occur. The field Survey Area extended to 250 m around the Proposed Development.

Desk Study

7.1.3 A desk study was undertaken to collect existing baseline data about the Ecology Study Area, as defined above. The desk study searched for:

- the locations of statutory and non-statutory designated nature conservation sites;
- other natural features of potential ecological importance, such as waterbodies; and
- protected or notable species records.

7.1.4 Examples of notable species include, but are not limited to, national or local Biodiversity Action Plan (BAP) species[2], restricted range species, species or species groups listed for Local Nature Conservation Sites (Local Nature Reserves, former Sites of Importance for Nature Conservation (SINC) and other local wildlife sites) 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[3]. Specific legislation for protected species is provided in **Chapter 7: Ecology (EIAR Volume 2)**. This information was used to identify the likely key species for the site prior to field surveys.

7.1.5 The following data sources were used:

- NatureScot (NS) Sitelink[4];
- Scotland's Environment carbon and peatland map[5];
- Multi-Agency Geographic Information for the Countryside (MAGIC) website[6]; and
- Google™ Earth Pro.

Field Surveys

Extended UK Habitat Classification Survey

7.1.6 The extended UK Habitat Classification (UKHab) survey was undertaken by Ramboll ecologists, Danny Oliver, Teodora Bokonyi and Lola Visschers in January and August 2023, and supplemented in September 2024 to provide National Vegetation Classification (NVC) coverage of the Site. The surveys involved a walkover of the field Survey Area and a preliminary assessment of key habitats, land use and ecological features, particularly focusing on areas of natural

[1] The area over which ecological features may be subject to significant effects as a result of the Proposed Development and its associated activities.
[2] Western Isles Local Biodiversity Action Plan (2002). URL: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0beaeee5e1c0c13a3403ffe0fc92abc4062dd5ba. [28/10/2024]
[3] Electricity Act (1989), URL: https://www.legislation.gov.uk/ukpga/1989/29/contents. [28/10/2024].
[4] NS SiteLink (2022), URL: https://sitelink.nature.scot/home. [28/10/2024].
[5] Scotland's Environment Carbon and Peatland Map (2022), URL: https://map.environment.gov.scot/sewebmap/. [28/10/2024].
[6] MAGIC Map (2022), URL: http://magic.defra.gov.uk/. [28/10/2024].

interest that could be affected by the Proposed Development. The main habitats present were recorded using UKHab survey methodology[7].

7.1.7 Target notes were used to record areas of habitat or 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)[8] in each habitat type, 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[9]:

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

7.1.8 The field Survey Area was also inspected for signs of any invasive plant species subject to legal controls, such as rhododendron *Rhododendron ponticum*, 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.

National Vegetation Classification (NVC)

7.1.9 NVC surveys[10] were completed to identify potential Ground Water Dependant Terrestrial Ecosystems (GWDTEs)[11] and to provide a greater level of detail than the UK Habitat survey for sensitive habitats, such as peatland and wetlands. The NVC surveys followed the methodology described in best practice guidance[12], with five 2 m^2 quadrats surveyed within each habitat area, and the species composition analysed. Surveys were undertaken by Ramboll ecologists in September 2024.

Protected Species

7.1.10 The field study area was surveyed for its potential to support species protected by international and national legislation such as Otter *Lutra lutra* (the only terrerstrial protected faunal species present on the Isle of Lewis). The survey occurred alongside the UKHab survey and searched for features that could support those species, as well as the following field signs:

<u>Otter</u>

7.1.11 The otter survey involved a detailed search of all watercourses within the field Survey Area according to best practice guidelines[13]. The field signs sought were:

- Holts;
- Couches;
- Spraints;
- Feeding remains; and
- Footprints and slides.

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7 UKHab Ltd (2023). *UK Habitat Classification* Version 2.0. URL: https://ukhab.org/. [28/10/2024]

8 Stace, C. (2010), *New Flora of the British Isles*. 3rd Edition. Cambridge: Cambridge University Press.

9 BSBI (2011). *Recording the British and Irish flora 2010 – 2020. Annex 1: Guidance on sampling approaches*. URL: https://bsbi.org/wp-content/uploads/dlm_uploads/Sampling_Guidance_-_Annex_1_v4_April_2011.pdf. [28/10/2024]

10 Rodwell, J.S., (2006), *National Vegetation Classification: User's Handbook*. Peterborough: JNCC.

11 SEPA (2017). *Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems* Version 3.0. URL: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf. [28/10/2024]

12 Rodwell, J.S., (2006), *National Vegetation Classification: User's Handbook*. Peterborough: JNCC.

13 Chanin P (2003). *Monitoring the otter* Lutra lutra, Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

Bats

7.1.1 Each tree was assessed for its potential to support roosting bats and categorised dependent on the presence of features suitable to support bat roosts. The categories assigned were: High, Medium, Low and Negligible Potential for use by bats. Table 7.1.1 provides criteria for each of these categories14. The identified trees with Bat Roost Potential (BRP) were inspected from the ground using binoculars.

Table 7.1.1: Bat Roost Potential Categories

Roost Potential	Description
High	A tree with one or more potential roost site(s) that is obviously suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Medium	A structure or tree with one or more potential roost site(s) that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A structure with one or more potential roost site(s) that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection and / or suitable surrounding habitat to be used on a regular basis or by a large number of bats (i.e. unlikely to be suitable for hibernation or maternity). Trees of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with very limited roosting potential.
Negligible	Negligible potential for roosting and bats very unlikely to be present.

Reptiles and Amphibians

7.1.2 No specific surveys were completed for reptiles or amphibians. Incidental records were made during other surveys within the field Survey Area. Any incidental findings were recorded using a handheld Global Positioning System (GPS) device.

Limitations and Assumptions

7.1.3 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.

7.1.4 The habitat and faunal surveys provide a snapshot of ecological conditions and do not record plants or animals that may be present in the field Survey 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. The majority of surveys were undertaken during the optimal time of between April and October for surveying habitats and species.

7.3 Detailed Results

Desk Study

Designated Nature Conservation Sites

7.1.5 No statutory designated sites of international or national importance for ecological features occur within the desk Study Area with potential connectivity to the Proposed Development.

14 Collins J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, 3rd Edition. The Bat Conservation Trust, London. URL: https://cdn.bats.org.uk/uploads/pdf/Resources/Bat_Survey_Guidelines_2016_NON_PRINTABLE.pdf?v=1542281971. [28/10/2024]

Field Surveys

UKHab Survey

7.1.6 The habitats recorded in the field Survey Area are described below and shown on **Figure 6.2: UKHab (EIAR Volume 3)**.

F1a – Blanket bog

7.1.7 This habitat type occurs extensively throughout the field Survey Area. The habitats are dominated by Common heather *Calluna vulgaris*. Deergras *Trichophorum cespitosum*, Purple moor-grass *Molinia caerulea*, White beak sedge *Rhynchospora alba*, Cross-leaved heath *Erica tetralix,* Sweet vernal grass *Anthoxanthum odoratum* and Hare's-tail cottongrass *Eriophorum vaginatum* are abundant. Bog asphodel *Narthecium ossifragum*, Red bogmoss *Sphagnum capillifolium* and Soft rush *Juncus effusus* occurs frequently. Occasional species include Heath rush *Juncus squarrosus*, *Cladonia* sp., Common cotton grass *Eriophorum angustifolium*, Feathery bog-moss *Sphagnum cuspidatum*, Yorkshire fog *Holcus lanatus*, Red fescue *Festuca rubra*, Blunt-leaved bog-moss *Sphagnum palustre*, Papillose peatmoss *Sphagnum papillosum*, Bell heather *Erica cinerea*, Red-stemmed feather-moss *Pleurozium schreberi*, and Bog myrtle *Myrica gale*. Rare species include Round-leaved sundew *Drosera rotundifolia*, Long-leaved sundew *Drosera intermedia*, Wooly fringe-moss *Racomitrium lanuginosum*, Tormentil *Potentilla erecta*, Butterwort *Pinguicula vulgaris*, Spotted heath orchid *Dactylorhiza maculata* and Glittering woodmoss *Hylocomium splendens*.

F1a6 – Degraded blanket bog

7.1.8 This habitat type occurs in three areas of the field Survey Area. A long continuity degraded blanket bog habitat is present in the northeast of the field Survey Area. A habitat is further present south of this. A smaller area is present near the field Survey Area boundary in the southeast corner. Abundant species include Purple moor-grass, Blunt-leaved bog-moss, Soft rush, Glittering woodmoss and *Polytrichum commune*. Frequently occurring species include Sheep's fescue *Festuca vivipara*, Common heather, Common sorrel *Rumex acetosa*, Sweet vernal grass and Tormentil. Yorkshire fog, Red bog-moss, Cross-leaved heath, Bell heather and Dog violet *Viola riviniana* are rare.

G1b6 – Other upland acid grassland

7.1.9 A small area of this habitat type is present in the northern part of the field Survey Area between areas of blanket bog habitat. Abundant species include Common bent *Agrostis capillaris*, Common heather and Sweet vernal grass. Tormentil, Common sorrel and Wavy hair-grass *Deschampsia flexuosa* are frequent. Occasional species include Heath rush, Selfheal *Prunella vulgaris*, White clover *Trifolium repens*, Heath bedstraw *Galium saxatile*, Yorkshire fog, Puple moor-grass and Common chickweed *Stellaria media*. *Cladonia* sp. and Bell heather are rare.

G4 – Modified grassland

7.1.10 This habitat type is present throughout the field Survey Area, primarily concentrated around the banks of a watercourse. The habitats are dominated by Sweet vernal grass while Soft rush is abundant. Frequently occurring species include Common bent, Yorkshire fog, Tormentil, Purple moor-grass, Clover *Trifolium* sp., Hare's-tail cotton grass, Woodrush *Luzula multiflora* and Common sedge *Carex nigra*. Occasional species include Meadow buttercup *Ranunculus acris*, Spear thistle *Cirsium vulgare*, Marsh thistle *Cirsium palustre*, Creeping buttercup *Ranunculus repens*, Oxeye daisy *Leucanthemum vulgare*, Selfheal, Star sedge *Carex cespitosa*, *Sphagnum* sp., Red bog-moss, Dog violet, Bird's-foot trefoil *Lotus corniculatus*, Common sorrel and Broadleaed willowherb *Epilobium montanum*. Rare species include Eyebright *Euphrasia* sp., Silverweed *Potentilla anserina*, Nettle *Urtica dioica*, Broadleaved dock *Rumex obtusifolius*, Yellow flag iris *Iris pseudacorus*, Mat-grass *Nardus stricta* and Cat's ear *Hypochaeris radicata*.

H1b5 – Dry heath; upland

7.1.11 Two areas of dry heath are present within the southeast part of the field Survey Area. The habitats are dominated by Common heather. Bell heather and Deergrass are abundant while Cross-leaved heath is frequent. Red bog-moss is occasional. Rare species include Tormentil, Hare's-tail cotton grass, Bog asphodel and Bird's-foot trefoil.

H1b6 – Wet heathland with cross-leaved heath; upland

7.1.12 This habitat is common throughout the field Survey Area, concentrated in the eastern part of the Site. Several of these habitats have scattered trees throughout. Deergrass, Purple moor-grass, Cross-leaved heath and Common heather are abundant. Tormentil and Common cotton grass are frequent. Occasional species include Bog asphodel, *Cladonia* sp., Red bog-moss, *Polytrichum* sp., Hare's-tail cotton grass and Soft rush. Rare species include Heath spotted orchid, Eyebright sp., Papillose peatmoss, Bell heather, Downy birch *Betula pubescens*, Scot's pine *Pinus sylvestris*, Alder *Alnus glutinosa* and *Rhododendron* sp.

H1b – Upland heathland

7.1.13 Small areas of upland heathland habitat are present throughout the field Survey Area, primarily concentrated in the southern part. Common heather is dominant with abundant Red-stemmed feather-moss and occasional Purple moor-grass and Green-ribbed sedge *Carex binervis*.

R1c – Oligotrophic and dystrophic lakes

7.1.14 Two oligotrophic and dystrophic lakes are present within the field Survey Area, Loch Cnoc Choilich and Loch a' Leadharain.

U1b – Developed land, sealed surface

7.1.15 This habitat type is present within the field Survey Area in the form of roads and a recycling centre.

W1g – Other broadleaved woodland

7.1.16 This habitat type is present north of Macauley farm, in smaller areas by the road. Alder is dominant while White willow *Salix alba* is frequent. Downy birch, Sycamore *Acer pseudoplatanus* and Spruce *Picea* sp. are occasional. The ground flora is composed of the species included in the degraded blanket bog description.

W1h – Other woodland; mixed

7.1.17 An area of mixed plantation woodland is present in the eastern part of the field Survey Area.

W2c – Other coniferous woodland

7.1.18 This habitat type is present across the whole of the field Survey Area and is dominated by Spruce and Pine *Pinus* species.

Target Notes

7.1.19 Target notes recorded during the UKHab survey are detailed in **Table 7.1.3**.

Table 7.1.3: Target Notes

Grid Reference	Target Note Number	Note
NB3957033464	1	Gate
NB4020132283	2	Broadleaved tree planting
NB4017632325	3	Broadleaved tree planting
NB4108931889	4	Mountain hare

Protected Species

7.1.20 No records of any protected species were identified during the field surveys, although suitable habitat for otter was considered to be present.

NVC

7.1.21 Thirteen (13) habitats were surveyed to NVC level to assess their potential to be GWDTEs. These are detailed below.

7.1.22 The first group of quadrats was undertaken in blanket bog in the northwestern part of the Site. The following species were recorded:

- Bell heather *Erica cinerea*;
- Blunt-leaved bogmoss *Sphagnum palustre*;
- Butterwort *Pinguicula vulgaris;*
- Common cottongrass *Eriophorum angustifolium*;
- Common feather-moss *Kindbergia praelonga;*
- Common heather *Calluna vulgaris*;
- Cross-leaved heath *Erica tetralix*;
- Deergrass *Trichophorum cespitosum*;
- Feathery bogmoss *Sphagnum cuspidatum;*
- Hare's-tail cottongrass *Eriophorum vaginatum*;
- Lichen *Cladonia* sp.;
- Longleaved sundew *Drosera intermedia*;
- Papillose peatmoss *Sphagnum papillosum*;
- Purple moor-grass *Molinia caerulea*;
- Red bog-moss *Sphagnum capillifolium*;
- Red fescue *Festuca rurbra*;
- Red-stemmed feathermoss *Pleurozium schreberi*;
- Roundleaved sundew *Drosera rotundifolia;* and
- Wooly fringe-moss *Racomitrium lanuginosum.*

7.1.23 The dominant NVC community in this areas is M17 – *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

7.1.24 The second group of quadrats was undertaken in blanket bog in the northeast part of the Site. The following species were recorded:

- Blunt-leaved bogmoss;
- Bog asphodel *Narthecium ossifragum;*
- Common heather;
- Deergrass;
- Feathery bogmoss;
- Hare's-tail cottongrass;
- Papillose peatmoss; and
- Red bog-moss.

7.1.25 The dominant NVC community in this areas is M17 – *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

7.1.26 The third group of quadrats was undertaken in degraded blanket bog in the northeast part of the Site. The following species were recorded:

- Bell heather;
- Blunt-leaved bogmoss;
- Common heather;
- Common sorrel *Rumex acetosa;*
- Cross-leaved heath;
- Dog violet *Viola riviniana;*
- Glittering woodmoss *Hylocomium splendens;*
- *Polytrichum commune;*
- Purple moor-grass;
- Red bog-moss;
- Sheep's fescue *Festuca vivipara;*
- Soft rush *Juncus effusus*;
- Sweet vernal grass *Anthoxanthum odoratum*;
- Tormentil *Potentilla erecta*; and
- Yorkshire fog *Holcus lanatus.*

7.1.27 The dominant NVC community in this areas is M15 – *Scirpus cespitosus – Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential.**

7.1.28 The fourth group of quadrats was undertaken in upland wet heath with cross-leaved heath bordering the east part of Site boundary. The following species were recorded:

- Alder *Alnus glutinosa*;
- Bell heather;
- *Cladonia* sp.;
- Common cottongrass;
- Common heather;
- Cross-leaved heath;
- Deergrass;
- Downy birch *Betula pubescens*;
- Hare's-tail cottongrass;
- *Polytrichum* sp.;
- Purple moor-grass;
- Red bog-moss;
- *Rhododendron* sp.;
- Scot's pine *Pinus sylvestris*;
- Soft rush; and
- Wooly fringe-moss.

7.1.29 The dominant NVC community in this areas is M15 – *Scirpus cespitosus – Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential.**

7.1.30 The fifth group of quadrats was undertaken in an area of upland wet heath with cross-leaved heath north / northeast of the Western Isles recycling center. The species recorded were the same as those listed above. The dominant NVC community in this areas is M15 – *Scirpus cespitosus – Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential**.

7.1.31 The sixth group of quadrats was undertaken in an area of upland wet heath with cross-leaved heath north of Loch Mor na Cairteach, enveloped in the area described above. The species recorded were the same as those listed for the two wet heath habitats above. The dominant NVC community in this areas is M15 – *Scirpus cespitosus – Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential**.

7.1.32 The seventh group of quadrats was undertaken in an area of upland wet heath with cross-leaved heath, enveloped by an area of blanket bog (described below), in the east / southeast part of the Site. The species recorded were the same as those described for the upland wet heathland habitats above. The dominant NVC community in this areas is M15 – *Scirpus cespitosus – Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential**.

7.1.33 The eight group of quadrats was undertaken in an area of blanket bog in the east / southeast part of the Site, east of the modified grassland habitat described below. The following species were recorded:

- *Cladonia* sp.;
- Common cottongrass;
- Common heather;
- Cross-leaved heath;
- Deergrass;
- Glittering woodmoss;
- Hares' tail cotton grass
- Heath spotted orchid;
- Purple moor-grass;
- Red bog-moss;
- Soft rush;
- Sweet vernal grass; and
- Tormentil.

7.1.34 The dominant NVC community in this areas is M17 – *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

7.1.35 The ninth group of quadrats was undertaken in an area of modified grassland in the south part of the Site, south of Macaulay farm. The following species were recorded:

- Bird's-foot trefoil *Lotus corniculatus*;
- Bog asphodel;
- Broadleaved willowherb *Epilobium montanum;*
- Common bent *Agrostis capillaris*;
- Common cat's-ear *Hypochaeris radicata*;
- Common cottongrass;
- Common feather-moss;
- Common heather;
- Common sedge *Carex nigra*;
- Common sorrel *Rumex acetosa*;
- Creeping buttercup *Ranunculus repens*;
- Cross-leaved heath;
- Dog violet;
- Flat-topped bogmoss *Sphagnum fallax*;
- Heath woodrush *Luzula multiflora*;
- Mat grass *Nardus stricta*;
- Meadow buttercup *Ranunculus acris*;
- *Polytrichum* sp.;
- Purple moor-grass;
- Soft rush;
- Spear thistle *Cirsium vulgare*;
- Sweet vernal grass;
- Tormentil; and
- Yorkshire fog.

7.1.36 The dominant NVC community in this areas is M23 – *Juncus effusus/acutiflorus – Galium palustre* rush-pasture and is a high GWDTE. This area is shown on **Figure 7.3: GWDTE Potential.**

7.1.37 The tenth group of quadrats was undertaken in an area of blanket bog, enveloped in the modified grassland described above, south of Macaulay farm. The following species were recorded:

- Bog asphodel;
- *Cladonia* sp.;
- Common cottongrass;
- Common feather-moss;
- Common heather;
- Cross-leaved heath;
- Glittering woodmoss;
- Papillose peatmoss;
- Purple moor-grass;
- Red bog-moss;
- Soft rush; and
- Springy turf-moss *Rhytidiadelphus squarrosus*.

7.1.38 The dominant NVC community in this areas is M17 – *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

7.1.39 The eleventh group of quadrats was undertaken in the extensive area of blanket bog in the west / southwest part of the Site, west of the A859. The following species were recorded:

- Bog asphodel;
- *Cladonia* sp.;
- Common cottongrass;
- Common feather-moss;
- Common heather;
- Cross-leaved heath;
- Glittering woodmoss;
- Papillose peatmoss;
- Purple moor-grass;
- Red bog-moss;
- Soft rush; and
- Springy turf-moss *Rhytidiadelphus squarrosus*.

7.1.40 The dominant NVC community in this areas is M17 – *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

7.1.41 The twelfth group of quadrats was undertaken in an area of degraded blanket bog, west of the A859, enveloping an area of modified grassland. The following species were recorded:

- Bell heather;
- Blunt-leaved bogmoss;
- Common heather;
- Common sorrel;
- Cross-leaved heath;
- Dog violet;
- Glittering woodmoss;
- Polytrichum commune;
- Purple moor-grass;
- Red bog-moss;
- Sheep's fescue;
- Soft rush;
- Sweet vernal grass;
- Tormentil; and
- Yorkshire fog.

7.1.42 This species list indicates that the area is a M15 – *Scirpus cespitosus* – *Erica tetralix* wet heath and is a moderately GWDTE. This area is shown on **Figure 7.3: GWDTE Potential.**

7.1.43 The thirteenth group of quadrats was undertaken in an area of blanket bog in the south of the Site. The following species were recorded:

- Blunt-leaved bogmoss;
- Bog asphodel;
- *Cladonia* sp.;
- Common heather;
- Cross-leaved heath;
- Deergrass;
- Hare's-tail cottongrass;
- Papillose peatmoss; and
- Red bog-moss.

7.1.44 This species list indicates that the area is a M17 – *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire. This is of low potential and is therefore not considered further in the groundwater dependency assessment.

TECHNICAL APPENDIX 7.2: ECOLOGY ASSESSMENT METHODOLOGY

7.1 Introduction

7.1.1 This Technical Appendix presents full details of the assessment methodology by which ecological features identified within the field Survey Area of the Proposed Development have been assessed for importance and sensitivity. It should be read in conjunction with Chapter 7: Ecology and Chapter 2: Description of Proposed Development (Environmental Impact Assessment Report (EIAR) Volume 2).

7.2 Method of Assessment

Criteria for Evaluating the Importance of Ecological Features

7.2.1 Habitats and species (i.e. ecological features) identified within the field Survey Area have been assigned ecological values using the standard CIEEM scale that classifies ecological features within a defined geographic context[1]. The classification uses recognised and published criteria, 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 7.1 describes the geographic frame of of reference that has been used.

Table 7.1: Geographic Conservation Importance

Importance	Example
International	Internationally designated sites including SACs, Ramsar sites, Biogenic Reserves, World Heritiage 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[2], 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 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 Species 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 Biodiveristy Framework 2024[3]. 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[4], 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 lifecycle.
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 Heritage Zone(s) (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 lifecycle.

[1] CIEEM, (2018), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf [28/10/2024].
[2] The Habitats Directive - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive. [28/10/2024].
[3] JNCC on behalf of the Four Countries' Biodiversity Group (4CBG) (2024). UK Biodiversity Framework. URL: https://data.jncc.gov.uk/data/19a729f6-440e-4ac6-8894-cc72e84cc3bb/uk-biodiversity-framework.pdf . [28/10/2024]
[4] Wildlife and Countryside Act 1981 (as amended). URL: https://www.legislation.gov.uk/ukpga/1981/69. [28/10/2024]

Table 7.1: Geographic Conservation Importance	
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 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 specoes 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 lifecycle.

7.2.2 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.

Characterising Impacts

7.2.3 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 will be employed. The assessment of likely ecological impacts has been made in relation to the baseline conditions of the ecology study area. The likely impacts of development activities upon ecological features have been characterised according to several variables detailed in Table 7.2.

Table 7.2 Impact Characterisation	
Parameter	Description
Direction	Impacts are either adverse (negative) or beneficial (positive).
Magnitude	This is defined as high, medium, 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 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; and negligible: very slight reduction in the status or productivity of a population due to mortality,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
Extent	The geographical area over which an impact occurs.

Table 7.2 Impact Characterisation	
Duration	The time for which the impact is expected to last prior to recovery of the 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.
Frequency	The number of times an activity occurs will influence the resulting effect (if appropriate, described as low to high and quantified, where possible).
Timing	The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. the breeding season.
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.

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

Cumulative Effects

7.2.5 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 EcIAs 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.

7.2.6 Developments included in the cumulative effects assessment are the following types of future development within the same ZoI[5]:

- 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,
- To the extent that their details are in the public domain, proposed projects that will be implemented by a public body but for which no consent is needed from a competent authority.

7.2.7 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.

7.2.8 The ZoI for cumulative effects is considered to be 10 km for ecological features, primarily for otter species, due to the distances they are able to travel.

Magnitude of Impact

7.2.9 Detailed consideration of impact magnitude is a standard component of EcIA. It is incorporated to succinctly describe the scale of individual impacts. The magnitude of effects is predicted quantitatively where possible, taking into account the duration and reversibility of effects, and is considered spatially and temporally as described within Table 7.3. Effects can be adverse, neutral or beneficial.

[5] CIEEM, (2018), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf . [28/10/2024].

Table 7.3 Description of spatial impact magnitudes

Spatial impact magnitude	Description
High	Major effect on the nature conservation status of the Site, habitats or species, likely to threaten the long-term integrity of the system.
Medium	Moderate effect on the nature conservation status of the Site, habitats or species, but would not threaten the long-term integrity of the system.
Low	Noticeable effects, but either of sufficiently small scale or short duration to cause no harm to the conservation status of the Site, habitats or species.
Negligible	Not expected to affect the conservation status of the Site, habitats or species under consideration in any way, therefore no noticeable effects on the ecological resource.

Significance Criteria

7.2.10 Significant effects are assessed with reference to the geographic 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 not 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.

7.2.11 For the purposes of the EcIA, apart from in exceptional circumstances, a significant effect 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 EIA Regulations, unless the effect is likely to undermine biodiversity conservation objectives (such as local polices 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.

7.2.12 Table 7.4 illustrates how residual effects are determined by comparison of the sensitivity of receptors with the magnitude of predicted change. For the purposes of this assessment significant effects are [e.g. major or major/moderate].

Table 7.4: Significance Criteria

Spatial impact magnitude	Description
Major	This is a significant effect (either beneficial or adverse), as the effect is likely to result in a long term significant adverse effect on the integrity of the receptor at a particular geographical scale.
Moderate	This is a significant effect (either beneficial or adverse), as the effect is likely to result in a medium term or partially significant adverse effect on the integrity of the receptor at a particular geographical scale.
Minor	The effect is likely to adversely affect the receptor at an insignificant level by virtue of its limited duration and/or extent, but there will probably be no effect on its integrity. This is not a significant effect.
Negligible	No discernible effect is expected as a result of the Proposed Development.

TECHNICAL APPENDIX 7.4: OUTLINE HABITAT MANGEMENT PLAN

7.1 Introduction

7.1.1 This Technical Appendix sets out the proposed measures for habitat restoration and enhancement within the field Survey Area and the ecology Study Area. This Outline Habitat Management Plan (OHMP) should be read in conjunction with Chapter 2: Description of Proposed Development, Chapter 7: Ecology (Environmental Impact Assessment Report (EIAR) Volume 2), and Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4).

7.1.2 The field Survey Area is dominated by blanket bog and wet heath habitats, as shown on Figure 7.2: UKHab (EIAR Volume 3). Adverse but not significant effects are predicted on all habitats. Good practice measures are proposed to restore poor quality and inactive areas of peatland habitat, as discussed in Chapter 7: Ecology (EIAR Volume 2). Reinstatement and active restoration of peatland habitats would be required to mitigate the loss of blanket bog and wet heath habitats, as detailed in Chapter 7: Ecology (EIAR Volume 2).

7.1.3 This OHMP will be considered and adapted in relation to Biodiversity Net Gain (BNG) calculations and requirements for the Proposed Development. A final Habitat Management Plan (HMP), which would include specific prescriptions and confirmation of peatland restoration locations, would be agreed with CnES, other relevant stakeholders and with landowners. Peatland restoration would be confirmed prior to the commencement of construction of the Proposed Development and would follow the measures set out in the Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4). At present the OPMP has identified areas at Creed North for restoration, using peat extracted as part of the Proposed Development. This will follow strict guidelines and protocol as set out in Technical Appendix 10.2 Outline Peat Management Plan (EIAR Volume 4). Extracted peat will also be used to reinstate areas of temporary excavations for infrastructure (inducing laydown areas and borrow pits).

7.2 Objectives of OHMP

7.2.1 This OHMP has been completed following best practice guidance from NatureScot (NS)[1]. The outline proposals of the plan, which are subject to the necessary permissions and licenses being in place, are:

- To restore and enhance a minimum of 24.4 ha of peatland habitat within the field Survey Area and / or suitable areas off-site through peat re-use. This includes the amount of blanket bog being permanently lost or degraded as a result of the Proposed Development;
- The restoration and enhancement of a comparable area is intended to offset the permanent loss and, where possible, a larger area of peatland would be restored than the area lost or degraded. This would increase the quality and extent of an Annex I habitat[2] and compensate for the loss and modification incurred as a result of the Proposed Development; and
- Habitat reinstatement would be carried out as a good practice measure and in order to account for the area of blanket bog and wet heath being temporarily lost and degraded as a result of the Proposed Development.

7.2.2 The implementation of the final HMP would also take into account the existing land management practices undertaken and would work in tandem with these practices.

7.2.3 The design and implementation of the final HMP would be managed by the Applicant in consultation and agreement with landowners and statutory consultees. Detailed method statements would be developed for the specific measures of the final HMP.

7.3 Peatland Restoration

7.3.1 Suitable areas for peatland restoration comprise modified habitat containing previously excavated channels suitable for damming, infilling and reprofiling. In order to account for the area of peatland habitat which will be permanently lost within the field Survey Area (as a result of the Proposed Development) the excavated peat on-site would be re-used within the Site boundary, see Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4). The extent of

[1] NatureScot (2016). Planning for development: What to consider and include in Habitat Management Plans. Version 2. URL: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/habitats/planning-and-development-peatland. [29/10/2024]

[2] The Habitats Directive – Council Directive 92/43/EEC of May 1992 on the conservation of natural habitats and of wild fauna and flora. URL: https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en . [29/10/2024]

the peatland restoration areas would be subject to refinement prior to completion of the final HMP but the area identified for restoration would be no less than 24.4 ha (the area of peatland to be permanently lost as a result of the Proposed Development, as discussed in Chapter 7: Ecology (EIAR Volume 2)). Ideally, there would be an overall increase in both quality and extent in the ecology Study Area to achieve a net gain of improved peatland habitat.

7.3.2 Peat management and reinstatement during and following construction are detailed in the outline Peat Management Plan (PMP) (Technical Appendix 10.2: Outline Peat Management Plan, EIAR Volume 4).

Management Prescriptions

7.3.3 As far as possible, the Applicant would follow the approach and principles implemented in NS' Peatland Action Project[3] to deliver peatland restoration, albeit with site-specific measures to work with landowners in developing and delivering successful restoration actions. The following measures are likely to form part of a peatland restoration project to encourage the active regeneration of degraded peatland, with reference to Technical Appendix 10.2: Outline Peat Management Plan (EIAR Volume 4) for peat and mineral soil handling methods:

- Restoration of more natural drainage conditions to re-wet the landscape, raising the water table within the peat to allow wetland vegetation communities to become re-established. The water table would be raised by removal of temporary drainage features and installation of artificial / leaky dams in channels and gullies. This would prevent the drainage of water from bog areas and further benefit surrounding wet heath habitat by improving hydrological connectivity. Any excess excavated peat from the Proposed Development could potentially also be used to create dams where it is not required for reinstatement. Peat for restoration would need to be removed in such a way as to ensure that catotelmic (lower level, non-living layers of peat) and acrotelmic (surface living layer of peat) are removed and stored separately. A survey would be carried out prior to blocking to confirm the number, location and spacing of dams required. Peatland restoration measures would be subject to refinement in consideration with current best practice guidance[4] and expert knowledge gathered from other projects. Restoration work would be undertaken in line with Species Protection Plans (SPPs) and General Environmental Management Plans (GEMPs), according to agreed methodologies and with guidance and supervision from a suitably experienced Ecological Clerk of Works (ECoW). GEMPs are provided in Technical Appendix 2.2: SSEN GEMP and SPPs are provided in Technical Appendix 2.3: SSEN SPPs (EIAR Volume 4).
- Recreation of suitable habitat conditions to increase the abundance and distribution of bog-moss *Sphagnum* species and other bog species such as Cotton-grass *Eriophorum* species, Sundew *Drosera* species and Heather *Calluna and Erica* species through natural regeneration. However, in the unlikely event that natural generation is unsuccessful, active measures would be considered.
- Management of grazing pressure in restored areas through fencing and / or reduction in sheep / cattle numbers, as agreed with the landowners.

7.4 Work Programme

7.4.1 A detailed HMP delivery programme would be developed in consultation with CnES and the landowners as part of the development of the final HMP, where appropriate.

7.5 Funding and Duration

7.5.1 The final HMP and implementation would be funded by the Applicant and the duration of the HMP would be confirmed in consultation with CnES and NS, where appropriate. Management agreements for habitat enhancement would be established with landowners and other stakeholders in line with best practice.

[3] NatureScot (2024). Peatland ACTION – Project Resources. URL: https://www.nature.scot/climate-change/nature-based-solutions/peatland-action/peatland-action-resources/peatland-action-project-resources. [29/10/2024]

[4] NatureScot (2019). Peatland Action: Guidance for Land Managers – Installing Peat and Plastic Dams. URL: https://www.nature.scot/doc/peatland-action-guidance-land-managers-installing-peat-and-plastic-dams. [29/10/2024]

7.6 Monitoring

Peatland Restoration

7.6.1 Monitoring activities would be undertaken using a similar approach to that used for NS' Peatland Action programme[5]. Vegetation surveys would be undertaken by suitably qualified ecologists to monitor the success of peatland restoration and highlight the need for any further management measures. Surveys would collect data on the structure and composition of the vegetation, and plant species abundance and diversity from permanent quadrats in the restored areas. A Site-specific monitoring schedule would be established as part of the peatland restoration project.

7.7 Summary

7.7.1 The methodology and reporting timeframes for all monitoring surveys would be detailed in the final HMP. Reports would highlight the management measures completed to date, the results of the surveys and any measures proposed for the next reporting period. The results would be regularly reviewed by the HMP management team, in consultation with the landowners, to ensure the HMP objectives are being met and to determine any appropriate amendments, where practicable.

7.8 Amendments

7.8.1 The final HMP would be a live document for the duration of the monitoring period and would be updated following monitoring results, unexpected events or changes in guidance.

[5] NatureScot (2024). Peatland ACTION – Project Resources. URL: https://www.nature.scot/climate-change/nature-based-solutions/peatland-action/peatland-action-resources/peatland-action-project-resources. [29/10/2024]