# Appendix 5.2: Habitats and Vegetation Survey Report

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Muir Mhòr Offshore Wind Farm Limited

# Muir Mhòr Offshore Wind Farm: Onshore Transmission Works

## Technical Appendix 5.2: Habitats and Vegetation Survey Report

**Final report**
Prepared by LUC
October 2024

**Muir Mhòr Offshore Wind Farm Limited**

# Muir Mhòr Offshore Wind Farm: Onshore Transmission Works

## Technical Appendix 5.2: Habitats and Vegetation Survey Report

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# Chapter 1
# Introduction

**1.1** This appendix details the full methods and results of the habitat and vegetation surveys undertaken to inform the Ecological Impact Assessment ('EcIA') of the proposed Muir Mhòr Offshore Wind Farm Onshore Transmission Works (hereafter referred to as the 'Proposed Development').

**1.2** This appendix has been written to support **Chapter 5: Terrestrial Ecology** of the Environmental Impact Assessment Report ('EIA Report') and should be read in conjunction with this chapter and **Chapter 7: Hydrology, Hydrogeology and Coastal Geomorphology** of the EIA Report.

## Supporting Documents

**1.3** This appendix supports the EcIA in addition to the following appendices:

- **Appendix 5.1: Desk Study and Legal Context**
- **Appendix 5.3: Protected Species Survey Report**
- **Appendix 5.4: Badger Survey Report (CONFIDENTIAL)**
- **Appendix 5.5: Outline Biodiversity Enhancement Plan (OBEP)**

**1.4** This appendix is supported by the following figures which accompany the EIA report:

- **Figure 5.1: Ecology Survey Area**
- **Figures 5.3a-e: Phase 1 Habitat Survey Results**
- **Figure 5.4: National Vegetation Classification (NVC) Survey Results**
- **Figure 5.5: Areas of Guidance-Stated Potential Groundwater Dependency**

**1.5** Representative Site photography is provided in **Annex A** and Target Notes are provided in **Annex B**.

## Terminology and Survey Areas

**1.6** The following terminology will be used throughout this appendix:

- **Site**
  - The area defined by the red line application boundary within which all infrastructure associated

with the onshore works will be located, as shown in **Figure 5.1**.

- **Proposed Development**
  - Comprises the onshore components of the Muir Mhòr Offshore Wind Farm that are landward of the Mean Low Water Springs (MLWS) mark.
- **Development Zones**
  - **'Landfall Zone':** The area above MLWS where the offshore export cables will be brought onshore.
  - **'Cable Corridor Zone A':** The area within which electrical cables (up to 275 kV) are proposed to be located, from the Landfall Zone to the Substation Zone.
  - **'Cable Corridor Zone B':** The area within which electrical cables (up to 400 kV) are proposed to be located, from the Substation Zone to their anticipated grid connection point at the SSEN Netherton Hub substation.
  - **'Substation Zone':** The area within which the Proposed Development substation is proposed to be located.
- **Ecology Survey Area (ESA)**
  - The area within the red line boundary in which habitat surveys were undertaken in line with good practice guidelines for all ecological features surveyed. For habitats and vegetation, this comprised all land within the red line boundary (as shown in **Figure 5.1**).

# Chapter 2
# Methods

## Desk Study

**2.1** A desk study was undertaken to inform the habitat and vegetation surveys. An account of the method adopted, and findings, is provided in **Appendix 5.1**, which also sets out the legislative provisions afforded to protected habitats.

## Field Survey

### Overview

**2.2** Habitat and vegetation surveys of the ESA were undertaken in October 2023, January 2024 and April 2024.

**2.3** There were two components to the field surveys; the Phase 1 Habitat Survey and the more detailed National Vegetation Classification ('NVC') which also included identification of potential Ground Water Dependant Terrestrial Ecosystems ('GWDTEs')[1]. The methods are outlined in detail below and follow best practice guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM)[2] and the British Standards Institute[3].

**2.4** All survey data was collected on GIS-enabled field tablets to increase accuracy and facilitate robust interpretation. Where field evidence was recorded, photographs (referred to as 'Images' within this appendix) were taken for post-survey analysis. Images are presented in **Annex A** of this appendix and Target Notes are provided in **Annex B**.

**2.5** An area to the south of the SSEN Netherton Hub no longer falls within any of the Development Zones. While this area is not assessed as part of the EcIA, it has been discussed within this appendix and included in **Figures 5.3a-e** as it is within the red line boundary of the Site.

[1] SEPA (2017). Land Use Planning System SEPA Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems.
[2] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal and Marine. Winchester: Chartered Institute for Ecology and Environmental Management and CIEEM (2017). Guidelines for Preliminary Ecological Appraisal. 2nd Edition. Winchester: Chartered Institute for Ecology and Environmental Management.
[3] BSI (2013). BS 42020:2013: Biodiversity – Code of Practice for Planning and Development. Bristol: British Standards Institution.

## Baseline Data Collection

### Phase 1 Habitat Survey

**2.6** A Phase 1 Habitat Survey was undertaken, following standard methods[4], in 2023 and 2024 by experienced ecologists. The Phase 1 Habitat Survey method provides a means of rapidly classifying broad habitat types in any given terrestrial survey area.

**2.7** During the survey, field surveyors walked all accessible parts of the ESA to map broad habitat types and their boundaries. Sufficient species identification was undertaken to accurately classify habitat types, using the DAFOR[5] scale where necessary. Field notes were taken to identify key areas of interest.

### National Vegetation Classification (NVC)

**2.8** Detailed vegetation surveys were undertaken in 2023 and 2024.

**2.9** Some habitats of conservation interest were subject to a more precise NVC survey, where NVC community identification allowed a direct comparison with relevant guidance (such as Annex 1 habitats, Priority Peatland[8] habitats or potential GWDTEs[1]). Other habitats, such as woodlands, of potential conservation interest[6] were not subject to a NVC survey as policy tends to discuss habitats within the context of Phase 1 Habitat communities.

**2.10** Structure, condition and species composition were recorded including detailed notes on the species present and abundance within stands of vegetation. The Domin scale of cover/abundance[5] was used following best practice guidelines[7]. Data collected in the field was assessed and NVC communities (and, where possible, sub-communities) were assigned to each habitat where applicable.

### Priority Peatland Habitats

**2.11** In 2023, NatureScot produced new guidance on priority peatland habitat[8]. The approach set out in this guidance aligns with National Planning Framework 4 (NPF4) policies[9] which are relevant to development proposals on peatland, carbon-rich soils and priority peatland. The guidance aims to ensure that developments are designed and constructed following the mitigation hierarchy, and that biodiversity enhancement is delivered through peatland restoration.

**2.12** NVC communities which are considered to be priority peatland are detailed in **Table 2.1**. Where these communities were identified, they were subject to detailed botanical survey.

### Ground Water Dependent Terrestrial Ecosystems

**2.13** GWDTEs are defined by SEPA[1] and are considered important indicators of sensitive groundwater movement. NVC communities listed in the SEPA guidance are those which, if present, are considered to indicate that a wetland is likely to be either highly or moderately groundwater dependent depending on the hydrogeological setting.

**2.14** Where these communities were identified, and they were not obviously surface or rainwater fed (e.g. marshy grassland and wet heath on watershed and ombrogenous bog systems), they were subject to detailed botanical survey. **Table 2.2** sets out a decision-making tool that was used to establish the level of groundwater dependency of each community.

**2.15** Potential GWDTEs are shown in **Figure 5.5**. Assessment of potential effects on GWDTEs are discussed in **Chapter 7** of the EIA Report.

[4] JNCC (2010). Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit. JNCC, Peterborough.
[5] DAFOR Scale: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare.
[6] Such as Scottish Biodiversity List (SBL) habitats and Local Biodiversity Action Plan (LBAP) priority habitats.
[7] Rodwell, J.S. (2006). NVC Users' Handbook. JNCC, Peterborough.
[8] NatureScot (2023). Advising on Peatland, Carbon-Rich Soils and Priority Peatland Habitats in Development Management. Available at: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management [Accessed October 2024].
[9] Available at: https://www.gov.scot/publications/national-planning-framework-4/ [Accessed October 2024].

**Table 2.1 Priority Peatland Communities**

| NVC Community | Comment |
|---|---|
| Priority Peatland Communities which should be completely avoided: | |
| M1 *Sphagnum denticulatum* | Bog pools which occupy waterlogged depressions, shallow pools and erosion channels on bogs. |
| M2 *Sphagnum fallax/S. cuspidatum* | |
| M3 *Eriophorum angustifolium* | |
| Priority Peatland Communities where impacts have the potential to raise issues of national interest: | |
| M17 *Trichophorum-Eriophorum* | These are communities of wetter peat and have species such as purple moor-grass Molinia caerulea, deergrass *Trichophorum cespitosum*, bog myrtle *Myrica gale* and cross-leaved heath *Erica tetralix*. The most characteristic Sphagnum are *S. papillosum* and *S. capillifolium*, and, in M18, *S. magellanicum*.<br>Species such as round-leaved sundew *Drosera rotundifolia*, heath spotted-orchid *Dactylorhiza maculata,* bog asphodel *Narthecium ossifragum* and tormentil *Potentilla erecta* are common in the wetter M17 and M18 bogs. |
| M18 *Erica-Sphagnum* | |
| M19 *Calluna-Eriophorum* | Occurs on drier substrates and has more bilberry *Vaccinium myrtillus*, cowberry *V. vitis-idaea*, crowberry *Empetrum nigrum* and *Sphagnum capillifolium*.<br>M19 has a darker, tussocky sward and is the more common type of bog at moderate to high altitudes. Species commonly occurring in this community include cloudberry *Rubus chamaemorus* and common cow-wheat *Melampyrum pratense.* |
| Priority Peatland Communities that are unlikely to raise issues of national interest: | |
| M20 *Eriophorum vaginatum* | A degraded form of M19 where the heather and most of the Sphagna have been eliminated by heavy grazing, repeated burning and/or atmospheric pollution. |
| M15 *Trichophorum-Erica* | Are classed as blanket bog when they are on deep peat, as they are almost always a replacement for the original bog vegetation following unfavourable management such as burning on too short a rotation followed by heavy grazing.<br>Impacts on these communities are unlikely to raise issues of national interest but should still follow the mitigation hierarchy. They could also be important candidates, as well other peatland communities, for measures to offset impacts from development and areas where enhancement measures could be located. |
| M16 *Erica-Sphagnum* | |
| M25 *Molinia-Potentilla* | |
| Montane bogs – Priority Peatland which should be avoided: | |
| M2 *Sphagnum fallax/S. cuspidatum* | These are blanket bogs which occur at altitudes above 600 m, they are particularly sensitive to damage and are incredibly difficult to restore. |
| M7 *Carex-Sphagnum* | |
| M17 *Trichophorum-Eriophorum* | |
| M19 *Calluna-Eriophorum* | |

**Table 2.2 GWDTE Decision Tool**

| Criteria | Yes | No |
|---|---|---|
| A. Is the GWDTE vegetation evidently influenced by groundwater?<br>(i.e. base-enriched (M10, M11, M37 and/or M38) and/or discharging from an evident point source such as a spring head (M31, M32, M33). | | |
| If the answer to A is 'Yes' then field assessment ends at this stage and the GWDTE is treated as 'high', as per the guidance. If 'No', continue to B. | | |
| B. Is the GWDTE polygon associated with an evident surface water feature? i.e., is the vegetation located within one of the following topographic locations: | | |
| Watershed/ridge | | |
| Watercourse | | |
| Floodplain | | |
| Ponding location, pond, loch etc (localised depression) | | |
| Surface water conveyance (drain, gully, rill, etc.) | | |
| If the answer to B is 'Yes', then the GWDTE polygon is no more than 'moderate' and very likely to be 'low'. Additional floristic and environmental data should be collected, including photographs to allow for further, desk-based determination of the groundwater dependency. If 'No', continue to C. | | |
| C. Is the GWDTE polygon associated with an ombrogenous system? i.e. with blanket bog or wet heath habitat. This is especially relevant to M6 and M25: | | |
| Presence/persistence of distinctive bog habitat, species and/or associations. | | |
| Deep peat not confined to depressions/valleys (>0.5 m visible in drains or hagged areas). | | |
| If the answer to C is 'Yes', then the GWDTE polygon is no more than 'moderate' and very likely to be 'low'. Additional floristic and environmental data should be collected, including photographs to allow for further, desk-based determination of the groundwater dependency. | | |

### Nomenclature

**2.16** Standardised vernacular names, followed by the scientific name upon first use (italicised within the text), are used for vascular plants (graminoids, herbs and shrubs). Scientific names only are used for the moss, liverwort and lichen species because although vernacular names are now in existence, they are not in general usage.

### Competency

**2.17** All habitat and vegetation surveys were undertaken within appropriate seasonal windows in 2023 and 2024, by academically and professionally qualified ecologists who are members of CIEEM. The data has been assessed by LUC ecologists with extensive experience in interpreting habitat datasets.

### Constraints and Limitations

**2.18** All ecological surveys represent a snapshot in time. Habitats and species assemblages are dynamic and change over time in response to a range of variables.

**2.19** Data presented in this appendix should not be considered a long-term interpretation of ecological data and should not be relied upon as such.

**2.20** Some areas of the ESA were not fully accessible (e.g. due to marshy terrain or presence of commercial crops). Where this was the case, areas were viewed from vantage points and binoculars were used to identify habitat types. This was sufficient for identification of the habitat and therefore, is not considered a constraint to the robustness of the surveys.

**2.21** Some habitat areas were small in extent and not easily mapped (< 0.1 ha). Where these were considered to be potential habitats of conservation interest[10] for example springs and flushes, point features (see **Target Notes, Annex B**) were recorded to capture the notable habitat or feature.

**2.22** While care has been taken to collect and review habitat data, it is not possible to account for any changes that may occur in the intervening period between data collection and submission of the EIA Report. However, no changes are considered likely to have occurred.

[10] Defined as Annex 1 habitats, Scottish Biodiversity List habitats, habitats included in the Dumfries and Galloway Local Biodiversity Action Plan (LBAP), and habitats considered to indicate potential GWDTE.

# Chapter 3
# Baseline Results

## Desk Study

**3.1** A desk study was undertaken to inform the habitat and vegetation surveys. An account of the methods adopted, and findings, is provided in **Appendix 5.1** which also sets out the legislative provisions afforded to habitats, notably habitats of conservation concern[10]

**3.2** The desk study found that there were no statutory sites within the ESA. One non-statutory site, Rattray Head to Peterhead LNCS, was located within the ESA. Impacts to the LNCS are considered in **Chapter 5**.

**3.3** In addition to the above, four statutory sites and seven non-statutory sites, relevant to terrestrial ecology, were present within the 10 km and 5 km search buffers respectively. There were no NNRs or LNRs within 10 km of the Site, and no RSPB/SWT Reserves within 5 km of the Site.

## Field Study

### Proposed Development

**3.4** The Site is located to the north-west of Peterhead within the Aberdeenshire Council administrative area and covers an area of approximately 521 hectares (ha). The location of the Site is shown in **Figure 5.1**.

**3.5** The onshore aspects of the Proposed Development will include a landfall location, an onshore cable corridor (split into two zones, A and B) and an onshore substation. The ongoing working assumption is that the connection to the grid will be made at a proposed new 400 kV substation being brought forward by SSEN, known as the SSEN Netherton Hub, located west of Peterhead.

### Site Overview

**3.6** The Site currently comprises a range of lowland habitats across a relatively level topography; mainly agricultural pasture and commercial cropland with some areas of neutral grassland, scrub and isolated stands of plantation woodland.

**3.7** The Site is drained by a number of watercourses, the largest of which is the River Ugie. The River Ugie flows through the centre of Cable Corridor Zone A, and supports areas of semi-natural broadleaved woodland, neutral grassland, scrub and inundation vegetation along its

embankments. Within the agricultural pasture and cropland, several man-made drains and channels are present.

### Survey Area

**3.8** Nineteen Phase 1 habitats and three NVC communities were recorded within the ESA. Phase 1 habitats and NVC communities are presented in **Figures 5.3a-e and Figure 5.4** and summarised in **Table 3.1**.

**3.9** Due to the large extent of common and widespread habitats recorded within the ESA, habitats are described in detail using their Phase 1 communities only.

**3.10** Some habitats of conservation interest were subject to a more precise NVC survey, where NVC community identification allowed a direct comparison with relevant guidance (such as Annex 1 habitats, Priority Peatland[8] habitats or potential GWDTEs[1]). Other habitats, such as woodlands, of conservation interest[6] were not subject to a NVC survey as policy tends to discuss these habitats within the context of Phase 1 Habitat communities.

## Landfall Zone

**3.11** While the majority of the Landfall Zone overlaps with Cable Corridor Zone A, this section relates to the habitats within the Landfall Zone boundary (i.e. all land between the North Sea and the A90). These habitats are not described within the Cable Corridor Zone A section below, to avoid unnecessary duplication.

### Phase 1 Habitats

#### A1.1.2 Broadleaved Woodland (Plantation)

**3.12** A small stand of broadleaved plantation woodland was recorded within the coniferous woodland plantation (see **A1.2.2**) located to the east of the A90. It was dominated by alder *Alnus glutinosa* with abundant cock's-foot *Dactylis glomerata* and Yorkshire fog *Holcus lanatus*. Common nettle *Urtica dioica* and cow parsley *Anthriscus sylvestris* were recorded as frequent and whitebeam *Sorbus aria* was occasional (**Image 1, Annex A**). The trees within this area were immature, and many were still contained within plastic planting tubes.

#### A1.2.2 Coniferous Woodland (Plantation)

**3.13** A stand of commercial coniferous plantation woodland separated the open dune system (see **H6.8**) from the agricultural pasture to the east of the A90. The plantation woodland was dominated by Sitka spruce *Picea sitchensis* with rare Scot's pine *Pinus sylvestris* and lodgepole pine *Pinus contorta*. This main stand was noted to be species-poor and lacking in ground vegetation (**Image 2, Annex A**).

**3.14** However, a section of woodland within the wider stand was recorded as having a more open, mossy ground layer (**Image 3, Annex A**). Species such as *Rhytidiadelphus squarrosus* were recorded as abundant. Common yarrow *Achillea millefolium* and cock's-foot were recorded as frequent and ragwort *Senecio jacobaea*, ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens* and common nettle were recorded as occasional.

#### G1 Standing Water

**3.15** The North Sea is present to the east the Landfall Zone.

#### G2 Running Water

**3.16** A narrow drainage ditch flows along the southern boundary of the coniferous plantation (see **A1.2.2**) into the North Sea.

#### H6.8 Open Dune

**3.17** An immobile / fore dune habitat was recorded between the North Sea and the fixed dune habitat further inland (**Image 4, Annex A**). Lyme grass *Leymus arenarius* and sand couch *Sporobolus virginicus* were recorded as abundant, while sea rocket *Cakile maritima* and marram grass *Ammophila arenaria* were recorded as occasional.

**3.18** Fixed dune habitat was recorded further inland. Marram grass was dominant, while cock's-foot and common knapweed *Centaurea nigra* were recorded as abundant. Common bird's-foot trefoil *Lotus corniculatus*, common yarrow, white clover *Trifolium repens*, *Syntrichia ruralis* and lady's bedstraw *Galium verum* were recorded as frequent. Mouse-eared chickweed *Cerastium fontanum*, *Pleurozium schreberi*, ribwort plantain and hawkbit *Leontodon* spp. were recorded as occasional, and lesser meadow-rue *Thalictrum minus*, hawthorn *Crataegus monogyna*, meadow vetchling *Lathyrus pratensis*, heath bedstraw *Galium saxatile*, harebell *Campanula rotundifolia*, cow parsley *Anthriscus sylvestris* and primrose *Primula* spp. were rare.

#### J1.1 Arable

**3.19** A field containing commercial crop was present between the conifer plantation and the A90.

#### J1.2 Amenity Grassland

**3.20** A small area of amenity grassland was recorded along the southern boundary of the Landfall Zone. This area is part of the Craigewan Links Golf Course and contained species such as perennial rye-grass *Lolium perenne*, white clover, daisy *Bellis perennis* and dandelion *Taraxacum officinale*.

#### J2.2.2 Defunct Hedge (Species-Poor)

**3.21** A defunct hawthorn hedge lines the length of the A90. A defunct hedge is defined as a hedge which is no longer stock-proof.

## Cable Corridor Zone A

**3.22** Some sections of Cable Corridor Zone A overlap with the Landfall Zone and Substation Zone. This section relates to the habitats recorded between Lunderton (to the west of the A90), and Easterton Cottages (to the east of the Substation Zone).

**3.23** These habitats are not described within the Landfall Zone or Substation Zone sections, to avoid unnecessary duplication.

#### A1.1.1 Broadleaved Woodland (Semi-Natural)

**3.24** Broadleaved woodland was recorded along the length of the River Ugie (**Image 5, Annex A**). Mature sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior* and beech *Fagus sylvatica* were recorded as abundant, while cock's-foot, common nettle and Yorkshire fog were recorded as frequent. Elm *Ulmus procera*, wood avens *Geum urbanum*, bramble *Rubus fruticosus*, cleavers *Galium aparine*, green alkanet *Pentaglottis sempervirens* and foxglove *Digitalis* spp. were occasional. Whitebeam and larch *Larix decidua* were rare.

#### A2.1 Scrub (Dense/Continuous)

**3.25** A dense stand of *Ulex europaeus* scrub was recorded adjacent to the River Ugie (**Image 6, Annex A**).

#### B2.2 Neutral Grassland (Semi-Improved) and B5 Marshy Grassland

**3.26** A mosaic of neutral and marshy grassland was recorded along the embankments of the River Ugie (**Image 7, Annex A**).

**3.27** Due to the potential presence of GWDTE habitats, this area was subject to a detailed NVC survey. Two NVC communities was recorded:

- **MG9 *Holcus lanatus-Deschampsia cespitosa* grassland:** This is a wet lowland grassland with a tall tussocky sward of tufted hair-grass and Yorkshire fog, mixed with other grasses and tall mesotrophic forbs.
- **MG10 *Holcus lanatus-Juncus effusus* rush-pasture:** This is damp grassland in which tussocks of soft rush *Juncus effusus* stand out in species-poor swards of Yorkshire fog and other grasses. The rushes are generally taller than the matrix of grasses and forbs, unless the community is heavily grazed.

**3.28** Other species which were recorded included broadleaved dock *Rumex obtusifolius*, cock's-foot, false-oat grass *Arrhenatherum elatius*, Scot's broom *Cytisus scoparius*, creeping thistle *Cirsium arvense*, bittersweet nightshade *Solanum dulcamara* and gorse.

#### B4 Improved Grassland

**3.29** Improved grassland habitats were recorded throughout Cable Corridor Zone A. Improved grassland habitats include meadows or pastures which have been affected by heavy grazing, drainage, or the application of herbicides, inorganic fertilisers, slurry or high doses or manure.

**3.30** A limited range of species were recorded and included perennial rye-grass, crested dog's-tail *Cynosurs cristatus*, white clover, common sorrel *Rumex acetosa*, dandelion and meadow buttercup *Ranunculus acris*.

**3.31** Stands of dock, common nettle and thistles indicated local enrichment of the soil by grazing animals. Sheep were noted to be grazing in the majority of the fields.

#### F2.1 Marginal and Inundation Vegetation – Marginal Vegetation

**3.32** Marginal vegetation habitat was recorded along the edge of the River Ugie (**Image 8, Annex A**).

**3.33** Due to the potential presence of GWDTE habitat, this area was subject to a detailed NVC survey. One NVC community was recorded:

- **S28 *Phalaris arundinacea* tall-herb fen:** This NVC community was dominated by reed canary grass *Phalaris arundinacea* which formed a dense canopy 1-1.5 m tall. There was little underlying vegetation, and so this community was recorded as species-poor.

#### G2 Running Water

**3.34** The River Ugie flows through a section of Cable Corridor Zone A. The watercourse is approximately 15-20 m in width, with moderate to fast flowing water (**Images 5-7, Annex A**).

#### J1.1 Arable

**3.35** Arable land dominates Cable Corridor Zone A. This habitat represents fields which contained commercial crop.

#### J1.2 Amenity Grassland

**3.36** Amenity grassland was recorded next to residential properties, in the form of private gardens, and adjacent to the River Ugie as a mown path (**Image 9, Annex A**).

**3.37** Perennial rye-grass, white clover, daisy *Bellis perennis* and dandelions were recorded in these areas.

#### J2.1.1 Intact Hedge (Native Species-Rich

**3.38** A species-rich hedgerow was recorded along a minor road within Cable Corridor Zone A. Species included hawthorn, elder *Sambucus nigra*, bramble, nettle and rose *Rosa* spp.

#### J2.1.2 Intact Hedge (Species-Poor)

**3.39** Intact hawthorn hedges line some of the minor roads within Cable Corridor Zone A.

#### J2.2.2 Defunct Hedge (Species-Poor)

**3.40** Defunct hawthorn hedges line some of the minor roads within Cable Corridor Zone A. A defunct hedge is defined as a hedge which is no longer stock-proof.

#### J3.6 Buildings

**3.41** Some residential properties, farm buildings and derelict structures were recorded within Cable Corridor Zone A.

## Substation Zone

**3.42** While the majority of the Substation Zone overlaps with Cable Corridor Zones A and B, this section relates to the habitats within the Substation Zone boundary. These habitats are not described within the Cable Corridor Zone sections, to avoid unnecessary duplication.

#### A1.1.2 Broadleaved Woodland (Plantation)

**3.43** A small section of broadleaved plantation woodland was located within the Substation Zone. Alder and sycamore were abundant, while common nettle was frequent. Beech, ash, cock's-foot and willow *Salix* spp. were occasional and dogwood *Cornus sanguinea* was rare (**Image 10, Annex A**).

#### B4 Improved Grassland

**3.44** Improved grassland habitats were the dominant habitat type recorded within the Substation Zone. A limited range of species were recorded and included perennial rye-grass, crested dog's-tail, white clover, common sorrel and dandelion.

**3.45** Stands of dock, common nettle and thistles indicated local enrichment of the soil by grazing animals. Sheep were noted to be grazing in the majority of the fields (**Image 11, Annex A**).

## Cable Corridor Zone B

**3.46** Some sections of Cable Corridor Zone B overlap with the Substation Zone. This section relates to the habitats recorded between Newseat (to the west of the Substation Zone) and Inverveddie (where the red line application boundary ends).

**3.47** These habitats are not described within the Substation Zone section, to avoid duplication of results.

#### A1.1.1 Broadleaved Woodland (Semi-Natural)

**3.48** A stand of woodland containing abundant ash, beech and sycamore was recorded adjacent to the A950. Birch was recorded as occasional.

#### A1.1.2 Broadleaved Woodland (Plantation) and A1.2.2 Coniferous Woodland (Plantation)

**3.49** A stand of plantation woodland, containing distinct blocks of broadleaved species and coniferous species, was recorded towards at the western boundary. Larch *Larix* spp. and Sitka spruce were the dominant coniferous species, while alder, willow and ash were noted in the broadleaved areas.

#### A1.3.2 Mixed Woodland (Plantation)

**3.50** Plantation woodland, containing a mix of broadleaved and coniferous tree species, was recorded at the eastern boundary of Cable Corridor Zone B.

**3.51** Species included abundant beech and sycamore, occasional Sitka spruce and rare ash.

#### B4 Improved Grassland

**3.52** Improved grassland habitats were recorded throughout Cable Corridor Zone B. A limited range of species were recorded and included perennial rye-grass, crested dog's-tail, white clover, common sorrel and dandelion.

**3.53** Stands of dock, common nettle and thistles indicated local enrichment of the soil by grazing animals. Sheep and cows were noted to be grazing in the majority of the fields.

#### B2.2 Neutral Grassland (Semi-Improved)

**3.54** Small sections of semi–improved neutral grassland were recorded to the west of the Substation Zone and within Cable Corridor Zone B, close to the Burn of Faichfield (**Image 12, Annex A**). False-oat grass and dock were abundant with cock's-foot occurring frequently. Marsh thistle *Cirsium palustre*, cleavers and creeping thistle were recorded as occasional.

**3.55** This habitat was frequently recorded in a mosaic with **C3.1** as described below.

#### B5 Marshy Grassland

**3.56** Marshy grassland was recorded within improved grassland pasture (see **B.4**) close to the western boundary of Cable Corridor Zone B.

**3.57** Due to the potential presence of GWDTE habitats, this area was subject to a detailed NVC survey. Two NVC communities was recorded:

- **MG10 *Holcus lanatus-Juncus effusus* rush-pasture:** This is damp grassland in which tussocks of soft rush stand out in species-poor swards of Yorkshire fog and other grasses.
- **M23b *Juncus effusus/acutiflorus-Galium palustre* rush-pasture,** *Juncus effusus* sub-community: This is a tall, deep-green sward of soft rush, entwined with grasses such as Yorkshire fog and sweet vernal-grass *Anthoxanthum odoratum*. The sub-community is identified by the presence of marsh thistle, common sorrel, and lowland grassland species such as creeping buttercup.

#### C3.1 Other Tall Herb and Fern (Ruderal)

**3.58** Small sections of ruderal vegetation were located along the western boundary of Cable Corridor Zone B, and in a mosaic with the neutral grassland (see **B2.2**) along the Burn of Faichfield. Common nettle, willow herb *Epilobium* spp., fox glove and reed canary-grass were frequent, while Scot's broom was occasional and bramble was rare.

#### J1.1 Arable

**3.59** Arable land dominates Cable Corridor Zone B. This habitat represents fields which contained commercial crop (**Image 13, Annex A**).

#### J2.1.2 Intact Hedge (Species-Poor)

**3.60** Intact hedges, containing hawthorn and beech, line some of the footpaths within Cable Corridor Zone B.

#### J2.2.2 Defunct Hedge (Species-Poor)

**3.61** Defunct hedges, containing hawthorn and beech, line some of the footpaths within Cable Corridor Zone B. A defunct hedge is defined as a hedge which is no longer stock-proof.

#### G2 Running Water

**3.62** The Burn of Faichfield flows through a section of Cable Corridor Zone B. The watercourse was approximately 2-4 m wide, with moderate to slow flowing water. The embankments were predominately grassland, with some scattered broadleaved trees.

**3.63** In addition to the above, some drainage channels were recorded within the arable fields.

#### TL Tree Line

**3.64** A line of mature hawthorn lines the road at the eastern boundary of Cable Corridor Zone B. Additionally, a line of trees were recorded on the embankments of the Burn of Faichfield. Species included ash, sycamore, alder and beech.

## Summary

### Phase 1 Habitats

**3.65 Table 3.1** summarises the Phase 1 Habitats and their associated NVC communities, where applicable, that were recorded within the ESA.

**Table 3.1 Summary of Habitat and Vegetation Types and their Conservation Interest**

| Phase 1 Habitat | NVC Community (if applicable) | Area within the Development Area (ha) | Proportion of the Development Area (%) | Mechanism for Habitat Conservation Interest |
|---|---|---|---|---|
| A1.1.1 Broadleaved Woodland (Semi-Natural) | N/A | 3.06 | 0.58 | Scottish Biodiversity List (Lowland Mixed Deciduous Woodland)<br>Local Biodiversity Action Plan (LBAP, Woodlands) |
| A1.1.2 Broadleaved Woodland (Plantation) | N/A | 1.34 | 0.26 | LBAP (Woodlands) |

| Phase 1 Habitat | NVC Community (if applicable) | Area within the Development Area (ha) | Proportion of the Development Area (%) | Mechanism for Habitat Conservation Interest |
|---|---|---|---|---|
| A1.2.2 Coniferous Woodland (Plantation) | N/A | 13.79 | 2.64 | LBAP (Woodlands) |
| A1.3.2 Mixed Woodland (Plantation) | N/A | 0.49 | 0.09 | LBAP (Woodlands) |
| A2.1 Scrub (Dense/Continuous) | N/A | 1.34 | 0.26 | N/A |
| B2.2 Neutral Grassland (Semi-Improved) and B5 Marshy Grassland | MG9 *Holcus lanatus-Deschampsia cespitosa* grassland<br>MG10 *Holcus lanatus-Juncus effusus* rush-pasture | 0.93 | 0.18 | LBAP (Grasslands and Wetlands)<br>Potential GWDTE |
| B2.2 Neutral Grassland (Semi-Improved) | N/A | 19.11 | 3.67 | LBAP (Grasslands) |
| B4 Improved Grassland | N/A | 110.08 | 21.12 | LBAP (Grasslands) |
| B5 Marshy Grassland | M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture | N/A[11] | - | Scottish Biodiversity List (Purple Moor Grass and Rush Pasture)<br>LBAP (Wetlands)<br>Potential GWDTE |
| C3.1 Other Tall Herb And Fern (Ruderal) | N/A | 1.98 | 0.38 | N/A |
| F2.1 Marginal and Inundation Vegetation – Marginal Vegetation | S28 *Phalaris arundinacea* tall-herb fen | 0.45 | 0.07 | Scottish Biodiversity List (Lowland Fens)<br>LBAP (Wetlands) |
| G1 Standing Water | N/A | 4.68 | 0.9 | LBAP (Marine and Coastal) |
| G2 Running Water | N/A | 0.93 | 0.18 | Scottish Biodiversity List (Rivers)<br>LBAP (Wetlands) |
| H6.8 Open Dune | N/A | 13.56 | 2.6 | Scottish Biodiversity List (Coastal Sand Dunes) |

[11] Point data collected. See **Target Notes, Appendix B**.

| Phase 1 Habitat | NVC Community (if applicable) | Area within the Development Area (ha) | Proportion of the Development Area (%) | Mechanism for Habitat Conservation Interest |
|---|---|---|---|---|
| | | | | LBAP (Marine and Coastal) |
| J1.1 Arable | N/A | 348.21 | 66.8 | N/A |
| J1.2 Amenity Grassland | N/A | 0.67 | 0.13 | LBAP (Grasslands) |
| J2.1.1 Intact Hedge (Native Species-Rich) | N/A | N/A[12] | - | LBAP (Woodlands) |
| J2.1.2 Intact Hedge (Species-Poor) | N/A | N/A[12] | - | LBAP (Woodlands) |
| J2.2.2 Defunct Hedge (Species-Poor) | N/A | N/A[12] | - | LBAP (Woodlands) |
| J3.6 Buildings | N/A | 0.72 | 0.14 | N/A |
| TL Tree Line | N/A | N/A[12] | - | LBAP (Woodlands) |

### Ground Water Dependent Terrestrial Ecosystems (GWDTEs)

**3.66** Three potential GWDTE communities were recorded within the ESA. According to SEPA guidance[1], these NVC communities indicate potential groundwater dependency. Their locations are shown in **Figure 5.5**.

**3.67** **Table 3.2** presents the NVC communities recorded which potentially indicates groundwater dependency. This relates to the standard SEPA guidance regarding the potential groundwater dependency of these communities and is based on the vegetation composition alone. The identified GWDTEs have been assessed and are further discussed in **Chapter 7**.

**Table 3.2 Potential GWDTE NVC Code**

| Potential GWDTE NVC Code | Groundwater Dependency as per SEPA (2017)[1] |
|---|---|
| MG9 | Moderate |
| MG10 | Moderate |
| M23 | High |

[12] Linear feature. See **Figures 5a-5e** for locations.

# Chapter 4
# Discussion and Interpretation

## Desk Study

**4.1** A desk study was undertaken to inform the habitat and vegetation surveys. An account of the methods adopted, and findings, is provided in **Appendix 5.1** which also sets out the legislative provisions afforded to habitats, notably habitats of conservation concern**Error! Bookmark not defined.**.

**4.2** The desk study found that there were no statutory sites within the ESA. One non-statutory site, Rattray Head to Peterhead LNCS, was located within the ESA. Impacts to the LNCS are discussed in detail in **Chapter 5**.

**4.3** In addition to the above, four statutory sites and seven non-statutory sites, relevant to terrestrial ecology, were present within the 10 km and 5 km search buffers respectively. There were no NNRs or LNRs within 10 km of the Site, and no RSPB/SWT Reserves within 5 km of the Site.

**4.4** None of the designated sites within the 5 km and 10 km buffers are connected structurally or ecologically to the ESA, and as a result, habitats of conservation interest**Error! B ookmark not defined.** within those designated sites will be not affected by the Proposed Development.

## Habitats of Conservation Interest

### Summary

**4.5** Habitats of conservation interest which were recorded within the ESA are detailed in **Table 3.1** and included the following:

- Five Scottish Biodiversity List habitats: Lowland Mixed Deciduous Woodland, Purple Moor Grass and Rush Pasture, Lowland Fens, Rivers and Coastal Sand Dunes.
- Four Local Biodiversity Action Plan habitats: Woodlands, Grasslands, Wetlands, and Marine and Coastal.
- Three potential GWDTE communities: MG9, MG10 and M23.

**4.6** There were no Annex 1 or priority peatland habitats within the ESA.

### Scottish Biodiversity List (SBL) Habitats and Local Biodiversity Action Plan (LBAP) Habitats

**4.7** The majority of the habitats recorded within the ESA are common and widespread in Aberdeenshire. However, a number of them are included within the SBL and the Aberdeenshire LBAP. A consideration of the potential impacts on SBL and LBAP habitats is included in **Chapter 5**. It is worth noting that, although habitats such as coniferous woodland and amenity grassland are listed within the LBAP, these habitats typically hold little intrinsic ecological value.

### GWDTEs

**4.8** A detailed assessment of GWDTEs is provided in **Chapter 7**. Communities within the ESA with potential to be GWDTEs, within 250 m of the proposed infrastructure, were considered for assessment. Potential GWDTEs outwith this distance or outwith the ESA were not subject to hydrogeological assessment.

**4.9** The 'High' potential GWDTE habitat within the ESA was recorded as MG10 and M23 rush-pasture habitat. Based on the results of the hydrology surveys undertaken by Kaya Consulting (see **Chapter 7**), it was confirmed that this area was an active spring and, as a result, is a high dependency GWDTE.

**4.10** The 'Moderate' potential GWDTE habitats within the ESA were MG9 grassland and MG10 rush-pasture. Based on their hydrogeological setting – on the embankments of the River Ugie – these communities indicate a surface water influence. The surveys undertaken by Kaya Consulting confirmed that there were no GWDTEs within this location.

# Annex A: Images

## Landfall Zone

| Image 1: Broadleaved woodland plantation (A1.1.2) | Image 2: Dense coniferous woodland plantation (A1.2.2). |
|---|---|
| | |
| Image 3: More open coniferous woodland (A1.2.2). | Image 4: Open dune system (H6.8) and the North Sea (G1). |
| | |

## Cable Corridor Zone A

| Image 5: Semi-natural broadleaved woodland (A1.1.1) on the embankments of the River Ugie (G2). | Image 6: Dense gorse (A2.1) further upstream. |
|---|---|
| | |
| Image 7: Neutral grassland (B2.2) and marshy grassland mosaic (B5) mosaic. | Image 8: Marginal and inundation vegetation (F2.1) on the embankments of the River Ugie. |
| | |

Image 9: Amenity grassland (J1.2) adjacent to the River Ugie, in the form of mowed paths and private gardens.

## Substation Zone

Image 10: Broadleaved woodland plantation (A1.1.2) adjacent to public footpath.

Image 11: Improved grassland (B5).

## Cable Corridor Zone B

| Image 12: Semi-improved neutral grassland (B2.2) close to the Burn of Faichfield. | Image 13: Arable (J1.1) pasture dominates throughout the ESA. |
| --- | --- |
| | |

# Annex B: Target Notes

**Table B.1: Target Notes**

| Target Note ID | Phase 1 Habitat | NVC Community | Comment |
|---|---|---|---|
| 1 | B5 Marshy Grassland | MG10/M23b | GWDTE spring identified by Kaya Consulting. |
| 2 | B2 Running Water | N/A | Access to southern embankment ends here. Bank becomes too narrow to pass safely. |