APPENDIX 7.6 - SHADOW HABITATS REGULATIONS ASSESSMENT FOR THE CAITHNESS AND SUTHERLAND PEATLANDS SAC / RAMSAR

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Contents

1 INTRODUCTION 3
1.1 Background 3
1.2 The Proposed Development 4
1.2.1 Description 4
1.2.2 Need Case 4
1.2.3 Alternatives 4

2 LEGISLATIVE FRAMEWORK 5
2.1 Context 5
2.2 Overview of the HRA Process 5
2.3 Mitigation by Design and Embedded Mitigation 6

3 BASELINE EVIDENCE GATHERING 7
3.1 Scoping 7
3.2 Summary of Designated Features 7
3.3 Summary of Habitat Survey for Proposed Development 10
3.3.2 Bog 10
3.3.3 Fen, Marsh and Swamp: 12
3.3.4 Acid Grassland 13
3.3.5 Dry shrub heath 14
3.4 Summary of Otter Records 14
3.5 Summary of Conservation Status of Qualifying Features 15

4 STAGE 1: SCREENING FOR LIKELY SIGNIFICANT EFFECTS (LSES) 17
4.1 Identification of Potential Construction Impacts 17
4.2 Summary of Likely Significant Effects 17

5 STAGE 2: APPROPRIATE ASSESSMENT 21
5.1 Mitigation 21
5.1.1 Sensitive Routeing and Alignment 21
5.1.2 Pre-Construction and Construction Measures 22
5.1.9 Ecological Clerk of Works (ECoW) 24
5.1.10 Operational Measures 24
5.1.11 Connagill Cluster Overarching Habitat Management Plan 24
5.2 Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary) 25
5.3 Loss of and/ or damage to Ramsar habitats supporting rare mosses and invertebrates (permanent and temporary) 25
5.4 Disturbance to Otter 26

6 IN COMBINATION EFFECTS 30
6.1 Stage 1: Screening for LSEs In Combination with Other Plans or Projects 30
6.2 Stage 2: Appropriate Assessment In Combination with Other Plans or Projects 36
6.2.1 Strathy South Wind Farm 36
6.2.2 Strathy South Wind Farm 'Southern Section' Grid Connection 36

7 CONCLUSION 38

8 REFERENCES 39

Annexes

Annex A - Caithness and Sutherland Peatlands SAC/ Ramsar Citation

1 INTRODUCTION

1.1 Background

1.1.1 Scottish and Southern Electricity Networks Transmission ("SSEN Transmission") are applying under Section 37 of the Electricity Act 1989 for consent to construct and operate a new 132 kV overhead line (OHL) to connect the consented Strathy Wood Wind Farm (and eventually the consented Strathy South Wind Farm) to the electricity transmission system at Connagill 275/132 kV substation.

1.1.2 This Shadow Habitats Regulations Assessment (HRA) has been prepared by RPS Group (RPS) and commissioned by ASH Design + Assessment Ltd (ASH) on behalf of SSEN Transmission (the Applicant) for the proposed Strathy Wood Wind Farm Grid Connection, hereafter referred to as 'the Proposed Development'.

1.1.3 The Applicant has received requests to provide other new transmission infrastructure in the wider Strathy area, to connect other consented and proposed wind farms to the transmission network at Connagill 275/132 kV substation. These wind farms include the proposed Melvich Wind Energy Hub and Kirkton Energy Park and together with the proposed Strathy Wood and Strathy South wind farm grid connections, are collectively referred to as the 'Connagill Cluster Grid Connections'[1]. To facilitate the grid connections, a new switching station, known as Strathy Switching Station, would also be required to be constructed.

1.1.4 The Proposed Development would be constructed partly within the Caithness and Sutherland Peatlands Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site; however, only terrestrial features of the SAC and Ramsar are considered in this shadow HRA. A separate shadow HRA has been prepared to examine the likely impacts and effects of the Proposed Development on the qualifying ornithology features of the SPA (see **Appendix 8.4: Shadow Habitats Regulations Assessment for the Caithness and Sutherland Peatlands SPA**).

1.1.5 The location of the Proposed Development in relation to the SAC/ Ramsar is shown on **Figure 7.2** within Volume 2 of the EIA Report. Further details of the Proposed Development are presented in **Chapter 3 - The Proposed Development** within Volume 1 of the EIA Report and are not repeated in detail in this HRA.

1.1.6 The terms of reference used in this report are consistent with those defined within the main chapters of the EIA Report. References are included, under relevant subject headings, to those chapters, appendices and/ or paragraphs within the EIA Report that contain the information required by the competent authority to undertake an "appropriate assessment" under the terms of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (commonly referred to as the 'Habitats Regulations'). It is designed to serve two key functions:

- to assist the competent authority by making it easier to undertake and consult on a Habitats Regulations Assessment; and
- to ensure that all the relevant information needed for a Habitats Regulations Assessment, which is included within the various chapters of the EIA Report, is summarised (and cross referenced to as appropriate) within one document.

[1] The proposed Armadale Wind Farm was originally included within the Connagill Cluster Grid Connections project. However, in May 2024 the developer of the proposed Armadale Wind Farm withdrew the section 36 application and consequently no longer require a grid connection. As such, this project has been removed from the Connagill Cluster Grid Connections.

1.2 The Proposed Development

1.2.1 Description

1.2.1 As described in **Chapter 1 - Introduction and Background** within Volume 1 of the EIA Report, the Proposed Development would commence from a Cable Sealing End (CSE) compound in the vicinity of the Strathy Wood Substation. From the CSE compound, approximately 4.5 km of 132 kV double circuit OHL supported by steel lattice towers would head in a northerly direction (skirting the eastern edge of Strathy Wood) where it would 'T' onto the existing Strathy North trident 'H' wood pole 132 kV OHL circuit. Two trident 'H' wood poles would be constructed to complete the connection between the new 132 kV OHL supported by steel lattice towers and the existing Strathy North trident 'H' wood pole 132 kV OHL.

1.2.2 The construction access for the Proposed Development would utilise the existing access track that was upgraded for the construction of the operational Strathy North Wind Farm. The upgrade of the track is currently being extended for use during the construction of the consented Strathy Wood and Strathy South wind farms. The Proposed Development would also use the existing Strathy North Wind Farm access tracks along with a new section of permanent track to access towers positioned on the western side of the River Strathy. The new section of permanent track would require some limited forestry felling. New permanent and temporary 'spurs' constructed off the existing track to access each tower / pole location would be required where there are no existing tracks.

1.2.3 As part of the Proposed Development design, a buffer of more than 20 m has been applied to watercourses and water features, including the River Strathy, where technically and practically possible. All the proposed towers have been designed to be outwith the 20 m watercourse buffer however the temporary working areas (in some locations) may be a minimum of 10 m from watercourses and water features. These areas would be demarked and necessary additional safeguards agreed with the site Environmental Clerk of Works (EnvCoW) prior to construction works commencing. A 10 m buffer is specified in SSEN Transmission's GEMP Working in or Near Water (Revision 1.02, March 2024, see **Appendix 3.5: SSEN Transmission General Environmental Management Plans (GEMPs)** and has been previously agreed with stakeholders. This buffer is typical for developments of this nature and provides a standoff to watercourses and water features that, in combination with industry good practice, minimises the risk to water bodies. The Proposed Development would cross over the River Strathy at two locations: NGR NC 82402 56287 (between Towers 1 and 2) and NC 82780 56932 (between Towers 4 and 5).

1.2.2 Need Case

1.2.1 The needs case for the Proposed Development is set out in **Chapter 1** within Volume 1 of the EIA Report.

1.2.3 Alternatives

1.2.1 Further detail on the routeing and alignment selection stages of the project is contained within **Chapter 2 - The Routeing Process and Alternatives** and further detail on consultation is contained within **Chapter 4 - Scope and Consultation,** both within Volume 1 of the EIA Report.

2 LEGISLATIVE FRAMEWORK

2.1 Context

2.1.1 Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('the Habitats Directive'), provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species through the establishment and conservation of a network of European sites. These are sites hosting rare and vulnerable habitats and species. This network is designed to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.

2.1.2 European sites comprise Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Wild Birds Directive. Ramsar sites are also considered as part of the appropriate assessment.

2.1.3 The procedures that must be followed when considering developments on European sites are set out in Article 6 of the Habitats Directive. In Scotland, this process is implemented through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) ('The Habitats Regulations').

2.1.4 Habitats Directive Article 6(3) sets out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

2.1.5 "*Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of* the general public."

2.2 Overview of the HRA Process

2.2.1 Having ascertained that a proposed development is not connected with the management of any European site, the HRA process comprises four main stages:

- **Stage 1 – Screening**: the first stage of the HRA process involves considering whether the plan or project will have a 'Likely Significant Effect' (LSE) on the European site in question, either alone, or in combination with other plans or projects. If the Screening process concludes that no LSE on the European site will occur, then the project may be authorised. Otherwise, Stage 2 – 'Appropriate Assessment' (AA) would be required.
- **Stage 2 – AA**: where it is determined that an LSE is possible, the competent authority must carry out an AA to assess the implications of the plan or project in respect of the conservation objectives of the European site in question. This should enable the competent authority to determine whether or not the plan or project would adversely affect the integrity of the European site. If it can be ascertained beyond reasonable scientific doubt that the plan or project would not adversely affect the integrity of the European site, then it can be authorised. If not, Stages 3 and 4 would apply.
- **Stage 3 – Alternative Solutions**: where it is determined that the plan or project would have an adverse effect on the integrity of a European site (or that there is uncertainty and a precautionary approach is taken), alternative solutions which would deliver the plan or project objective(s) need to be considered. If there are no alternatives that do not affect the integrity of the European site, Stage 4 applies.
- **Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI)**: where a plan or project adversely affects the integrity of a European site there are no alternative solutions, it may only proceed for imperative reasons of overriding public interest, subject to compensatory measures being secured.

2.3 Mitigation by Design and Embedded Mitigation

2.3.1 The ruling of The Court of Justice of the European Union (CJEU) in the matter of *People Over Wind and Sweetman v Coillte Teoranta* (EU Case Law, 2018) effectively determined that the screening stage of the HRA must be completed in the absence of proposed mitigation. However, it is recognised that the above ruling permits scope within the Screening stage to consider essential elements of a plan or project that are not primarily concerned with avoiding impacts to European sites.

2.3.2 Good practice measures would be implemented during construction of the Proposed Development, with all works carried out in accordance with the measures detailed in General Environmental Management Plans (GEMPs) which the Applicant would issue to the appointed Contractor for inclusion in a Construction Environmental Management Plan (CEMP). The GEMPs and CEMP would include good practice measures to be implemented during construction of the Proposed Development to control adverse environmental impacts, such as pollution of watercourses and protection of sensitive habitats. Further details are presented in **Appendix 3.5** and **Appendix 3.7: Outline Construction Environmental Management Plan (CEMP).**

2.3.3 As these measures are general good practice mitigation that are essential for construction of the Proposed Development to proceed safely and in accordance with relevant legislation, rather than specific mitigation to protect the SAC or any other European sites, they are considered at the Stage 1 HRA screening stage.

2.3.4 As set out in **Chapter 7 - Ecology** within Volume 1 of this EIA Report, a number of embedded mitigation measures have been considered in the ecological impact assessment. This includes the use of existing access tracks where possible, to minimise the requirement for the construction of new temporary and permanent access tracks, a phased construction process with temporary disturbed habitats restored at the earliest opportunity, micrositing of towers and infrastructure to minimise impacts on the most sensitive habitats (and habitats dependent on ground water influences that are more susceptible to the effects of localised draw down arising from construction, and the development of a landscape scale Habitat Management Plan (HMP) to capture other projects associated with the 'Connagill Cluster Grid Connections' to address the cumulative habitat losses of peatland, including within the boundaries of the Flow Country World Heritage Site (WHS) and Caithness and Sutherland Peatlands SAC/ Ramsar (see **Appendix 7.8: Connagill Cluster Outline HMP**). This mitigation has not, however, been taken into account at the Stage 1 HRA screening stage because it is primarily concerned with avoiding impacts to the European sites, and is therefore only considered at the Stage 2 Appropriate Assessment stage.

3 BASELINE EVIDENCE GATHERING

3.1 Scoping

3.1.1 There is no guidance that dictates the scope of a HRA document as the potential Zone of Impact (ZoI) is dependent on specific impact pathways. Therefore, in considering the scope, the assessment has been guided primarily by the identified impact pathways.

3.1.2 Impact pathways are routes by which the implementation of a project can lead to an effect upon a European designated site. An example of this would be visual and noise disturbance arising from the construction/ decommissioning work or operational phase associated with a project. If there are sensitive ornithology receptors within a nearby European site, this could alter their foraging and roosting behaviour and potentially affect the site's integrity. For some impact pathways (notably air pollution) there is guidance that sets out distance-based zones required for assessment.

3.1.3 For statutory designated nature conservation sites subject to the provisions of the Habitats Regulations, it is usual to consider a search radius of 10 km when examining the potential pathways for air quality impacts on the sites.

3.1.4 Three European designations were identified within this radius; Caithness and Sutherland Peatlands SAC and Ramsar site, and Strathy Point SAC.

3.1.5 National Planning Framework 4 (NPF4) (Scottish Government, 2023) states that all Ramsar sites are also European sites and/or Sites of Special Scientific Interest (SSSIs) and are extended protection under the relevant statutory regimes. Scottish Government policy on protecting Ramsar sites states that, where Ramsar interests coincide with European site qualifying interests protected under an SPA or a SAC, the interests are given the same level of (legal) protection as the European sites, while Ramsar interests that are not the same as European site qualifying interests but instead match SSSI features, these receive protection under the SSSI regime.

3.1.6 As such, qualifying habitat features of the Caithness and Sutherland Peatlands Ramsar site, the boundaries of which are within the SAC, are included in this shadow HRA for reference, but a separate assessment of LSEs on this Ramsar site is not considered necessary as the outcome of the assessment on relevant qualifying interests will be the same as for the SAC.

3.2 Summary of Designated Features

3.2.1 A summary of the qualifying features of the Caithness and Sutherland Peatlands SAC and Ramsar, and Strathy Point SAC, along with the threats and pressures to the integrity of the sites, and potential impact pathways associated with the Proposed Development is provided in **Table 1**. For the Caithness and Sutherland Peatlands Ramsar, only terrestrial ecology features are considered in this Appendix; qualifying ornithology features are considered in a separate shadow HRA for the Caithness and Sutherland Peatlands SPA and Ramsar (see **Appendix 8.4**).

Table 1: Summary of the European sites within a Zone of Influence (ZoI) of 10 km of the Proposed Development[2]

European site	Approx. distance from Proposed Development (km)	Qualifying species/ habitats (non-ornithological)	Threats and pressure to site integrity	Potential Impact pathways linking to the Proposed Development
Caithness and Sutherland Peatlands SAC	Within site boundary	**Habitats and species that are a primary reason for selection of this site:** • Blanket bog • Natural dystrophic lakes and ponds • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • Otter *Lutra lutra*. • Marsh saxifrage *Saxifraga hirculus* **Habitats and species present as a qualifying feature, but not a primary reason for selection of this site:** • Northern Atlantic wet heaths with *Erica tetralix* • Transition mires and quaking bogs • Depressions on peat substrates of the Rhynchosporion	• Grazing pressure and trampling (particularly due to deer). • Forestry operations • Burning • Active drainage/ water management and vehicle use affecting hydrology • Water pollution	Loss of and/ or damage to habitat (permanent and temporary) Loss of and/ or damage to aquatic habitats supporting otter. Disturbance to otter. Loss of and/ or damage to habitats supporting marsh saxifrage.
Caithness and Sutherland Peatlands Ramsar	Within site boundary	**Criterion 1:** • Blanket bog • Mire • Oligotrophic lochs • Dystrophic lochs • Lochans and pools • Wet heaths **Criterion 2:** • Supports nationally rare mosses *Sphagnum lindbergii* and *Shapgnum majus.*	Same as Caithness and Sutherland Peatlands SAC	Loss of and/ or damage to habitat (permanent and temporary) Loss of and/ or damage to habitats supporting nationally rare mosses. Loss of and/ or damage to habitats supporting bog orchid. Loss of and/ or damage to habitats supporting invertebrates.

[2] For a full summary of European sites, including an introduction to sites, Ramsar qualifying features and Conservation Objectives, please refer to **Appendix A** of this document.

European site	Approx. distance from Proposed Development (km)	Qualifying species/ habitats (non-ornithological)	Threats and pressure to site integrity	Potential Impact pathways linking to the Proposed Development
		• Nationally scarce bog orchid *Hammarbya paludosa.* • Invertebrate assemblage including *Oreodytes alpinus* • Otter • Freshwater pearl mussel *Margaritifera margaritifera*		Loss of and/ or damage to aquatic habitats supporting otter. Disturbance to otter. Loss of and/ or damage to aquatic habitats supporting freshwater pearl mussel.
Strathy Point SAC	5.06	**Habitats and species that are a primary reason for selection of this site:** • Annex I habitat that is the primary reason for selection is Vegetated Sea cliffs of the Atlantic and Baltic Coasts. Vegetation communities include maritime heath and grassland, with a large population of Scottish primrose.	• Livestock (grazing and trampling) • Anthropogenic disturbance (visitors) • Invasive/ vigorous native species colonising sea cliffs	No impact pathways identified due to distance from Proposed Development and lack of habitat connectivity.

3.3 Summary of Habitat Survey for Proposed Development

3.3.1 Full details on the habitats present in the survey area are presented in **Appendix 7.3: Habitat Technical Report.** A summary of the habitats identified that are relevant to this shadow HRA is provided below and shown on **Figure 7.7 (Habitat Survey Results)** within Volume 2 of the EIA Report.

3.3.2 The Proposed Development passes over upland habitats typical of the landscape; dominated by mire and wet heath habitats which are classified as Annex 1 Habitats as defined under the Habitats Directive. Similarly, a number of NVC communities are reliant on ground water influences.

3.3.2 Bog

M15 - *Scirpus cespitosus-Erica tetralix* wet heath

3.3.3 This is a vegetation type consisted of a wide variation of species dominance and other associated flora. Purple moor-grass *Molinia caerulea*, deer grass *Scirpus cespitosus*, cross-leaved heath *Erica tetralix* and common heather *Calluna vulgaris* were all dominant and of high frequency. Purple moor-grass was the most abundant; in other stands deer grass was very prominent and both, in some instances shared dominance with common heather. Other abundant species included tormentil *Potentilla erecta,* and in moister stands, heath milkwort *Polygala serpyllifolia,* bog asphodel *Narthecium ossifragum* and common cotton grass *Eriophorum angustifolium*. In contrast hair's tail cotton grass *E. vaginatum* was rare. Frequent to occasional *Sphagnum* spp. were recorded these included acute-leaved bog-moss *Sphagnum capillifolium* and lustrous bog-moss *S. subnitens*. Blunt-leaved bog-moss *Sphagnum palustre*, flexuous bog-moss *S. flexuosum* and cow-horn bog-moss *S. auriculatum* in wetter stands.

3.3.4 This wet heath community and its associated subcommunities were present east of Am Bodach and continued north to Strathy North Substation. M15 and its associated subcommunities were characteristic of moist and generally acid and oligotrophic peats and peaty mineral soils. Grazing and burning was evidently having effects on the floristics and structure of this community, and draining and peat-cutting were also evident in areas.

M15b - *Scirpus cespitosus-Erica tetralix* wet heath, typical sub-community

3.3.5 The dominant species identified within this sub-community were very variable. Deer grass, common heather and purple moor-grass shared dominance. Cross-leaved heath was abundant and bog myrtle *Myrica gale*, bog asphodel and common cotton grass were all occasionally recorded. Mat-grass *Nardus stricta* and heath rush *Juncus squarrosus* were frequently recorded. Rare occurrences of sedge species included carnation sedge *Carex panicea* and star sedge *C. 10chinate*. Bryophyte coverage included frequent papillose bog-moss *Sphagnum papillosum*. However, *Sphagnum* spp. Coverage was only occasional to rare and mosses such as woolly fringe-moss *Racomitrium lanuginosum* and broom forkmoss *Dicranum scoparium* dominated and provided the remaining coverage.

M15c – *Scirpus cespitosus-Erica tetralix* wet heath, *Cladonia* spp. Sub-community

3.3.6 Within this vegetation sub-community, common heather was dominant alongside abundant tormentil. Heath milkwort and bog asphodel were occasional and common cotton grass and bog myrtle rarely occurred. *Sphagnum* spp. were rarely represented and Cypress-leaved plait-moss *Hypnum cupressiforme* and woolly fringe-moss were frequently recorded. *Cladonia* spp. were abundant, particularly reindeer lichen *Cladonia impexa*.

M17 - *Scirpus cespitosus-Eriophorum vaginatum* blanket mire

3.3.7 This community was dominated by mixtures of monocotyledons, ericoid sub-shrubs and *Sphagnum* spp. It occurred as extensive, relatively uniform tracts, or as hummock and hollow complexes. Among the bulkier vascular species, the most dominant species were deer grass, hair's-tail cotton grass, purple moor-grass, common heather and cross-leaved heath. Bog myrtle was occasional. Common cotton grass and bog asphodel were both very frequent and round leaved sundew *Drosera rotundifolia* was abundant in wetter areas. Tormentil was abundant which helped to distinguish this community from other *Sphagnetalia* mires (M18-M21). Other occasionally recorded species at low frequencies throughout included common lousewort

Pedicularis sylvatica, fir clubmoss *Huperzia selago*, sheep's fescue *Festuca ovina* and star sedge. Blaeberry *Vaccinium myrtillus*, crowberry *Empetrum nigrum* ssp. *nigrum* and cloudberry *Rubus chamaemorus* were all rarely recorded.

3.3.8 Acute leaved bog-moss and papillose bog-moss were dominant and in some instances accompanied by occasional soft bog-moss S. *tenellum* and lustrous Bog-moss, forming carpets. Woolly fringe moss was an abundant moss throughout, but became most abundant on hummock tops and in degraded mires.

3.3.9 This blanket bog community and its associated subcommunities were scatted across the entire alignment north to south. These communities are characteristic of blanket bog vegetation of the more oceanic parts of Britain, occurring extensively on waterlogged ombrogenous peat. The peats show varying humification but are typically highly acidic, with a surface pH usually not above 4 and often less. Grazing and burning was evidently having effects on the floristics and structure of this community, and draining and peat-cutting were also evident in areas.

M17a - *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, *Drosera rotundifolia-Sphagnum* spp. sub-community

3.3.10 The M17a sub-community was distinguished by the presence of extensive wet lawns of *Sphagnum* spp. and the frequency of round leaved sundew. The larger areas of M17a are located on lower lying ground with smaller fragments occupying depressions, level areas and gentle inclines on the slopes above. The vascular vegetation cover is a relatively even assemblage of the grasses and sedges and mosses already listed above. Common heather is only rarely prominent in the vegetation, over areas of a few square metres.

3.3.11 Grazing was evidently having effects on the floristics and structure of this community, and draining and peat-cutting were also evident in areas.

M17b - *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, *Cladonia* spp. sub-community

3.3.12 Within the survey area where lower lying areas transitioned to steeper ground the M15 NVC community transitions to resemble the M17b sub-community. This sub-community consisted of species including dominant common heather, deer grass and purple moor-grass. Abundant species included bog asphodel, woolly fringe moss and reindeer lichen. Those species that frequently occurred included heath rush, hair's tail cotton grass and tormentil. Here bell heather *Erica cinerea* occurred more occasionally compared to the lower lying areas where it rarely occurred. This is likely due to drier and well drained peats situated around exposed rock on the higher ground. Other occasional species included heath milkwort. Rarely occurring species included round leaved sundew, red bog-moss *Sphagnum rubellum*, red stemmed feather moss *Pleurozium schreberi* and black sedge.

3.3.13 Some grazing and in places trampling by deer was evident throughout the M17b sub-community. There were no obvious signs of burning.

M20 - *Eriophorum vaginatum* mire

3.3.14 M20 blanket mire comprises species poor ombrogenous bog vegetation dominated by hare's tail cotton-grass. The dominance of hare's tail cotton-grass and absence of cloudberry is characteristic of M20 species poor communities. However, common cotton-grass, purple moor-grass, and ericoid sub-shrubs were occasional and red bog-moss and papillose bog-moss were frequent. Broom fork-moss was rare. This community is characteristic of ombrogenous peats on bogs where management has greatly affected the vegetation; grazing by deer and past burning have degraded this community.

M25 - *Molinia caerulea-Potentilla erecta* mire

3.3.15 This habitat was dominated by purple moor-grass with occasional wavy hair-grass *Deschampsia flexuosa*. The associated flora was relatively poor, and was restricted to occasional tormentil, devil's-bit scabious *Succisa pratensis*, barren strawberry *Potentilla sterilis* and heath rush. Ericoid sub-shrubs were occasional, particularly heather and cross-leaved heath. Bog myrtle was also extensively spread throughout the area. This mire is a community typical of moist, but well aerated, acid to neutral peats and peaty mineral soils in the wet and cool western lowlands of Britain. It occurs over gently-sloping ground, marking out seepage zones and flushed margins of sluggish streams, water-tracks and topogenous mires, but also extends onto the fringes of

ombrogenous mires. Although both climate and soils influence the composition of the vegetation, treatments such as burning, grazing and drainage are likely to be largely responsible for the development of this community over ground that would naturally carry some other kind of mire or wet heath vegetation.

3.3.16 Grazing pressure by deer would seem to be the driving factor behind the development of this community within the survey area. Although this community is of poor species diversity there is potential for this habitat to recover. This vegetation community and its associated subcommunities were scatted across the entire alignment north to south.

M25a - *Molinia caerulea-Potentilla erecta mire*, *Erica tetralix* sub-community

3.3.17 M25a was relatively common and scattered across the survey area. It was found on slopes and as a network of wet grassland adjacent to watercourses meeting the larger River Strathy. On the slopes the M25a sub-community followed the movement of water down slopes and often had trickling water within it. The M25a was dominated by purple moor-grass with cross-leaved heath and heather as occasional sprigs. Other graminoids present included frequent common bent *Agrostis capillaris*, red fescue *Festuca rubra*, hare's-tail cotton grass and common cotton grass. There was also occasional bulbous rush *Juncus bulbosus*, carnation sedge and deer grass. Tormentil and bog asphodel were constant and abundant in the M25a sub-community. There was also occasional species such as heath bedstraw, devil's-bit scabious, marsh violet and heath milkwort. The sub-community exhibited a patchy moss layer with common haircap and red bog-moss.

M25b - *Molinia caerulea-Potentilla erecta mire, Anthoxanthum odoratum* sub-community

3.3.18 Scattered occurrences of the M25b sub-community were evident throughout the survey area as the purple moor-grass dominated M25 had an increase and abundance of sweet vernal grass, hare's-tail cotton grass and graminoids, particularly common bent and red fescue, but also sweet vernal-grass. Otherwise, the species assemblage was similar to the M25a sub-community.

3.3.3 Fen, Marsh and Swamp:

M4 - *Carex rostrata-Sphagnum recurvum* mire

3.3.17 Within a small section of fen, marsh and swamp habitat located within the survey area east of the Strathy North Substation a homogenous stand of vegetation that most closely resembled the M4 - *Carex rostrata-Sphagnum falax* mire community was identified. This mire typically consisted of sedges over a carpet of semi-aquatic *Sphagnum* spp. bottle sedge *Carex rostrata* was dominant, but was also accompanied by abundant white sedge *C. curta,* woollyfruit sedge *C. lasiocarpa,* bog sedge *C. limosa* or black sedge *C. nigra*. Common cotton grass*, soft rush* were occasional within the taller stands of vegetation. There was an extensive wet carpet of *Sphagnum* spp. flexuous bog-moss and feathery bog-moss were frequent and abundant and cow-horn bog-moss was also abundant. Blunt-leaved bog-moss was occasional, with rare records for lustrous bog-moss and papillose bog-moss. Common haircap was very frequent forming scattered patches.

M6 - *Carex echinata-Sphagnum recurvum/auriculatum* mire

3.3.18 Various sections of fen, marsh and swamp habitat located within the survey area including east of the Strathy North Substation, east and southeast of Am Bodach all sections were consistent with homogenous stands of vegetation that most closely resembled the M6 vegetation community. The vegetation consisted of a range of species including dominant common cotton grass *Eriophorum angustifolium,* star sedge *Carex echinata*, abundant cross-leaved heath *Erica tetralix*, soft rush *Juncus effusus*, bulbous rush *Juncus bulbosus*, jointed rush *Juncus articulatus* and heath rush *Juncus squarrosus*. Other abundant species included lesser spearwort *Ranunculus flammula*, common haircap moss *Polytrichum commune*, cow-horn bog moss *Sphagnum denticulatum* flat topped bog moss *Sphagnum fallax* and *flexuous* bog-moss *Sphagnum flexuosum*. Frequently occurring species included bog pondweed, bog asphodel, round-leaved sundew, devil's bit scabious, purple moor-grass and common cotton grass. Some grazing of the habitat by sheep and deer was evident.

M6c - *Carex echinata-Sphagnum recurvum/auriculatum* mire, *Juncus effusus* sub-community

3.3.19 Various sections of fen, marsh and swamp habitat located within the survey area including east of the Strathy North Substation, east, north-east and south-east of Am Bodach and Brarathy. All sections of this habitat were consistent with homogenous stands of vegetation that most closely resembled the M6c vegetation sub-community. This vegetation sub-community was dominated by soft rush whilst sedges were less frequent and abundant. Frequent vascular associates were few but there was some *Agrostis canina* ssp. *canina*, tormentil *Potentilla erecta*, and heath bedstraw *Galium saxatile*. Star sedge, purple moor-grass *Molinia caerulea* and marsh violet *Viola palustris* were fairly abundant. The *Sphagnum* carpet was generally extensive with S. *recurvum* being dominant. *Polytrichum commune* remained frequent and sometimes abundant. This sub-community is found throughout the range of M6.

M23b - *Juncus effusus/acutiflorus-Galium palustre* rush-pasture, *Juncus effusus* sub-community

3.3.20 There were several stands of M23b scattered throughout the survey area from north to south. The M23b sub-community was dominated by soft rush and was very wet underfoot. There was frequent marsh violet along with tormentil and marsh bedstraw *Galium palustre*. Creeping bent *Agrostis stolonifera*, star sedge, common sedge and common bent were all occasional. The moss layer was sparse, and lacked bog-mosses, but common haircap was occasional and locally abundant.

3.3.4 Acid Grassland

U20 - *Pteridium aquilinum-Galium saxatile* community

3.3.22 The U20 community and its associated subcommunities were bracken-dominated vegetation occurring in scattered instances along the entire survey area. The bracken appears to be spreading into acid grassland habitats and much of it still has a grassy flora beneath the bracken canopy. The ground flora is dominated by common bent and sweet vernal-grass. Bracken is a common and widespread habitat in the UK, it is not a priority habitat, has low species diversity, and low intrinsic nature conservation value.

U20a - *Pteridium aquilinum-Galium saxatile* community, *Anthoxanthum odoratum* sub-community

3.3.23 This sub-community was frequent in small stands across all the units. Herb species within this community were low in abundance but did include some species including common milkwort *Polygala vulgaris* and tormentil. Common species included sweet vernal grass and Yorkshire fog.

U20b – *Pteridium aquilinum-Galium saxatile* community, *Vaccinium myrtillus-Dicranum scoparium* sub-community

3.3.24 This sub-community assemblage was similar to U20 and U20a but differed slightly due to the higher abundance of blaeberry and broom-forkmoss.

U4 - *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland

3.3.25 The U4 grassland is a form of predominately upland grassland of well-drained, acidic and base-poor mineral soils throughout the wet and cool regions of north-west Britain where it dominates extensive areas of pastureland. Throughout this geographic range the community can often be found forming a distinctive component of larger mosaics of other grasslands, heaths, and mires. U4 grassland communities were identified on the presence of an often close-cropped, grass-rich sward dominated by various combinations of common bent, red fescue and sweet vernal grass, with heath bedstraw and tormentil consistent associates.

3.3.26 A well-developed moss layer was characteristic, but in the U4b sub-community described below it was limited by the dense, relatively productive sward of grasses. U4 is found in small instances along the length of the study area. It covers small discrete patches in mosaics with mire, heath and other grassland communities. Some U4 grasslands often occupy the best-drained situations that are subject to grazing by sheep.

U4b - *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland, *Holcus lanatus-Trifolium repens* sub-community

3.3.27 The U4b sub-community occurred in small, scattered instances within the survey area, especially at lower altitudes. The vegetation is relatively productive, broad-leaved grass sward with dominant mixtures of common bent, red fescue and Yorkshire fog. In season, the flowers of frequent to abundant white clover *T. repens* serve as another point of distinction. Dependent on relatively fertile conditions to maintain its productivity, this community is generally confined to the floodplain of the River Strathy and the more accessible lower slopes above. Small patches of grassland amongst heath are usually referable to the U4a subcommunity whereas U4b forms more continuous extents that may have been derived by means other than grazing alone in the past. The swards within the study area are dominated by mixtures of common bent, red fescue, sheeps fescue, sweet vernal and Yorkshire fog; in some stands Yorkshire fog is very abundant and dominates the sward. White clover is frequent and abundant locally. Associates include frequent to occasional: mouse ear *Cerastium fontanum*, crested dogs-tail *Cynosurus cristatus*, perennial ryegrass *Lolium perenne*, ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens*, meadow buttercup *R. acris,* creeping thistle *Cirsium arvense*, field woodrush *Luzula campestris*, germander speedwell *Veronica chamaedrys*, softrush, tufted hairgrass and yarrow *Achillea millefolium*.

3.3.5 Dry shrub heath

H10 - *Calluna vulgaris-Erica cinerea* heath

3.3.28 H10 is a dry heath community that occurs widely throughout the more oceanic sections of Scotland and around the east-central part of the Highlands. It is a community characteristic of acid to circumneutral and generally free-draining soils and is typically dominated by common heather. Bell heather is frequent but generally subordinate to common heather. H10 is commonly found in zonation's and mosaics with grasslands, other heath types and mire communities (Rodwell *et al* 1991; Elkington *et al* 2001).

H10 was recorded scattered throughout the survey area. The community did not resemble a subcommunity. The vegetation was dominated by a canopy of common heath and bell heather, with heath bedstraw, tormentil and a carpet of pleurocarpous mosses. Less frequent additional associates included common bent, mat-grass, green-ribbed sedge *Carex binervis* and deer fern *Blechnum spicant*.

H12 - *Calluna vulgaris-Vaccinium myrtillus* heath

3.3.29 H12 heath is a typical sub-shrub community of acidic to circumneutral, free-draining mineral soils throughout the cold and wet sub-montane zone, generally between 200 m and 600 m. H12 is generally dominated by common heather although a more open cover of degenerate common heather can often also be present. Blaeberry is constant though it is usually subordinate to common heather. The ground layer is generally characterised by bulky mosses (Rodwell *et al* 1991; Elkington *et al* 2001). H12 heaths are rather uniform and they cover extensive areas throughout large parts of Scotland.

3.3.30 H12 heath was present in rare occurrences across the survey area, particularly on sloping ground. The community was dominated by common heather, with blaeberry and cowberry Vaccinium vitis-idaea also abundant. The community is maintained by grazing, occupying land that would naturally have been woodland (mainly pine and birch).

3.4 Summary of Otter Records

3.4.1 A summary of the desk study and field survey records for otter are presented in **Appendix 7.4**: **Protected Species Technical Report**.

3.4.2 The HBRG desk study returned one record of otter, which was on the River Naver at Bettyhill (NC 705 608) approximately 13 km north-west.

3.4.3 Several otter spraints, couches and feeding remains were recorded on the River Strathy and Halladale River during surveys in 2021 for other elements of the Connagill Cluster Grid Connection. Two holts were recorded at NC 894 603 on the Halladale River but were not considered to be natal (breeding) holts; these are approximately 6 km north-east of the Proposed Development.

3.4.4 Several otter couches and spraints were recorded on the River Strathy within the Proposed Development survey area, although no holts were recorded. It is assumed that otter is widespread throughout the River Strathy and suitable tributaries based on the results of surveys in the wider local area. Otter is a designated feature of the Caithness and Sutherland Peatlands SAC/ Ramsar, which indicates the importance of the wider local area for the species.

3.5 Summary of Conservation Status of Qualifying Features

3.5.1 Information regarding the baseline conservation status of the qualifying features of the Caithness and Sutherland Peatlands SAC/ Ramsar has been obtained from the Conservation Advice Package on the NatureScot website[3].. This has assisted with the screening of impacts for LSE on qualifying features, and the identification of threats and pressures to the integrity of the SAC. A summary of the condition assessments for the relevant features are provided below:

- Wet heathland with cross-leaved heath - the wet heath in the SAC usually occurs on acidic, nutrient-poor substrates such as shallow peats or sandy soils with impeded drainage and is found on gently sloping ground where there is more drainage than in a blanket bog (but is not as well drained as in a dry heath habitat. This feature has been assessed as being in 'unfavourable' condition at the SAC *"….due to the effects of large uncontrolled fires and too much browsing by red deer (which have made the habitat more grassy and less heathery than it should be and are encouraging the spread of bracken), trampling by red deer (which has led to creation of too much bare, disturbed ground) and inappropriate drainage (mainly from ditches that were dug around the 1950s, but in some cases associated with contemporary conifer plantations)."*[3] Other key management issues that are negatively affecting the habitat on the SAC are the nature and extent of grazing/ trampling by livestock, vehicle use, peat cutting, self-seeded conifers from nearby plantations, air pollution and the potential for habitat loss for development.
- Blanket bog – this habitat is found in areas of moderate to high rainfall and low levels of evapotranspiration that allow peat to develop over large expanses of undulating ground. This feature has been assessed as being in 'unfavourable' condition at the SAC, which suffers from the same threats and pressures to those described above for the wet heathland habitat.
- Very wet mires (ladder fens) – this habitat contains vegetation that is transitional between acid bog and alkaline fens, which forms as a result of flows of water that are slightly enriched with nutrients from mineral soils underneath the surrounding blanket bog. Ladder fens are found on gently sloping ground and are more common in the undulating landscapes of the west of the SAC. This habitat has been assessed as being in 'favourable but declining' condition at this SAC because some of the ladder fens appear to be drying out. The condition assessment for this feature states that "*This may be part of a natural cycle of creation and loss of ladder fen, but could be caused by drainage ditches making large scale changes to hydrology. This habitat could also be affected by tracks from vehicles and over/under-grazing and trampling by red deer and livestock."*[3]
- Depressions on peat substrates – this habitat occurs in complex mosaics with wet heath and blanket bog on the SAC and is more common in the west of the SAC. This feature has been assessed as being in 'unfavourable' condition at this SAC, with the threats and pressures to this habitat the same as those described above for the wet heathland and blanket bog.
- Otter – this species is listed as wide ranging and normally occurring at low densities, and the feature has been assessed as being in 'unfavourable' condition at the SAC because the most recent survey (in 2011) recorded reduced field signs of otter use. The reasons for this are unclear (it may be due to a particularly cold winter in 2010/11 which preceded the survey); the conservation objectives for this feature are therefore identified as *"ensuring that the conditions on site are suitable to support a population recovery".*[3]
- Marsh saxifrage – this species is found in wet flushes in the blanket bog in two parts of the SAC at Shielton Peatlands SSSI and near Loch Ruard on the boundary of Blar nam Faoileag

[3] Caithness and Sutherland Peatlands Special Area of Conservation (SAC) Conservation Advice Package: available on NatureScot website: https://sitelink.nature.scot/site/8218

SSSI and Coire na Beinne Mires SSSI; the habitat in which this species is recorded is listed as 'unusual within the SAC'. The main threats to this species are listed as *"… over or under grazing (by livestock and red deer), trampling/ wallowing, changes to hydrological conditions and potentially forest planting on open ground. There is also a concern that lack of genetic diversity within marsh saxifrage populations (due to this plant spreading mainly by cloning) could result in reduced viability of seed produced. This could make it difficult for marsh saxifrage to spread to nearby suitable habitat if growing conditions were to change in the places where it is currently found."*[3]

4 STAGE 1: SCREENING FOR LIKELY SIGNIFICANT EFFECTS (LSES)

4.1 Identification of Potential Construction Impacts

4.1.1 The majority of the impacts of the Proposed Development will be temporary, with ground disturbance required for construction access and the working areas for the OHL towers and poles. Potential effects of the Proposed Development on SAC/ Ramsar qualifying features are considered to comprise:

- Temporary or permanent direct or indirect loss of Annex I habitats and the habitats and species they support;
- Temporary or permanent direct or indirect damage, change and/or fragmentation of Annex I habitats and the habitats and species they support;
- Temporary or permanent loss of, modification or disturbance to otter foraging areas and commuting routes;
- Accidental damage or destruction of otter setts;
- Noise and/or visual disturbance and/or displacement of otter; and
- Indirect impacts on otter due to accidental contamination/pollution of groundwater and/or watercourses.

4.2 Summary of Likely Significant Effects

4.2.1 Likely significant effects could not be screened out for the following pathways, and therefore they have been taken forward to Stage 2 Appropriate Assessment. A summary of the screening task is provided in **Table 2**:

- Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary);
- Loss of and/ or damage to Ramsar habitats supporting rare mosses and invertebrates (permanent and temporary); and
- Disturbance to otter during construction and operation.

Table 2: LSE Screening for Caithness and Sutherland Peatlands SAC and Ramsar site

Qualifying feature (non-ornithological)	Potential Impacts from Proposed Development	LSE Screening	Conclusion regarding LSE
Caithness and Sutherland Peatlands SAC			
Blanket Bog Northern Atlantic wet heaths with *Erica tetralix*	Loss of and/ or damage to habitat (permanent and temporary)	The Proposed Development would result in permanent and temporary direct impacts on designated habitats and would result in permanent changes to Ground Water Dependent Terrestrial Ecosystems (GWTE) such as fen, marsh and swamp habitats, within the ZoI.	**Likely significant effects**
Transition mires and quaking bogs Depressions on peat substrates of the *Rhynchosporion*	Loss of and/ or damage to habitat (permanent and temporary)	These habitats are not present in the survey area and therefore there are no pathways by which they could be affected by the Proposed Development	No likely significant effects
Natural dystrophic lakes and ponds Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	Loss of and/ or damage to habitat (permanent and temporary)	These habitats are not present in the survey area and therefore there are no pathways by which they could be affected by the Proposed Development	No likely significant effects
Marsh saxifrage	Loss of and/ or damage to habitats supporting marsh saxifrage.	There are no habitats within the ZoI of the Proposed Development that could support this species. Marsh saxifrage colonies are only found in wet flushes within the blanket bog in two parts of the SAC (one within Shielton Peatlands SSSI and one near Loch Ruard on the boundary of Blar nam Faoileag SSSI and Coire na Beinne Mires SSSI), both of which are more than 30 km south-east of the Proposed Development (NatureScot, 2021).	No likely significant effects
Otter	Loss of and/ or damage to aquatic habitats supporting otter.	The River Strathy is crossed twice by the Proposed Development; between Towers 1 and 2, and between Towers 4 and 5. However, the Proposed Development would not result in any direct or indirect impacts to habitats supporting otter e.g. River Strathy and its tributaries, and associated riparian habitats. As part of the Proposed Development design, no construction would be undertaken within a 10 m buffer from watercourses. Standard embedded mitigation measures to control surface water run-off during construction would be implemented as required for environmental legislative compliance and would be set out in the CEMP. Impacts to otter riparian habitats are therefore predicted to be negligible.	No likely significant effects

Qualifying feature (non-ornithological)	Potential Impacts from Proposed Development	LSE Screening	Conclusion regarding LSE
	Disturbance to otter.	No holts or natal holts were identified within the survey area, and therefore there is no potential for disturbance to breeding otter. However, given the proximity of otter couches and other evidence to indicate the widespread presence of otter on the River Strathy adjacent to the Proposed Development, likely significant effects due to construction and operational disturbance are not discounted and this species is taken forward for appropriate assessment on a precautionary basis.	**Likely significant effects**
Caithness and Sutherland Peatlands Ramsar			
Blanket bog Wet heaths	Same as for SAC screening.		**Likely significant effects**
Mire	Same as for SAC screening.		No likely significant effects
Oligotrophic lochs Dystrophic lochs Lochans and pools	Same as for SAC screening.		No likely significant effects
Nationally rare mosses *Sphagnum lindbergii* and *Sphagnum majus.*	Loss of and/ or damage to habitats supporting nationally rare mosses.	These species were not recorded within the study area, although it is acknowledged that sphagnum mosses can be difficult to identify in the field. There is suitable habitat for *Sphagnum linbergii* in the study area (it being associated with oligortrophic flushes and springs, often in drainage channels and pools among blanket bogs[4]) and for Sphagnum majus (it being found in nutrient-poor to weakly enriched pools and wet hollows in bogs[5]). The Proposed Development would result in permanent and temporary direct impacts on designated habitats and may result in permanent changes to Ground Water Dependent Terrestrial Ecosystems (GWTE) such as fen, marsh and swamp habitats, within the ZoI. This could affect nationally rare mosses that are a component of the bog, fen marsh and swamp and mire habitats. On a precautionary basis, LSE on	**Likely significant effects**

[4] Atlas of British and Irish Bryophytes 2020 (*Sphagnum lindbergii*): https://www.britishbryologicalsociety.org.uk/wp-content/uploads/2020/12/Atlas-of-British-and-Irish-Bryophytes-V1-396.pdf

[5] Atlas of British and Irish Bryophytes 2020 (*Sphagnum majus*): https://www.britishbryologicalsociety.org.uk/wp-content/uploads/2020/12/Atlas-of-British-and-Irish-Bryophytes-V1-388.pdf

Qualifying feature (non-ornithological)	Potential Impacts from Proposed Development	LSE Screening	Conclusion regarding LSE
		habitats supporting these species cannot be ruled out, and it is taken forward for appropriate assessment.	
Nationally scarce bog orchid *Hammarbya paludosa.*	Loss of and/ or damage to habitats supporting bog orchid.	This species was not recorded in the study area, and therefore there are no pathways by which it could be affected.	No likely significant effects
Invertebrate assemblage including *Oreodytes alpinus*	Loss of and/ or damage to habitats supporting invertebrates.	The Proposed Development would result in permanent and temporary direct impacts on designated habitats and may result in permanent changes to GWDTE such as fen, marsh and swamp habitats, within the ZoI. This could affect the invertebrate community that inhabits the bog, fen marsh and swamp and mire habitats that are impacted by the Proposed Development. Although a specific survey for invertebrates was not undertaken, there is no potential for the beetle *Oreodytes alpinus* to be present within the ZoI of the Proposed Development. This is because it is an aquatic species which in the UK is found in lochs where the substrate is predominantly sandy and unstable due to wave action[6], and no lochs are present within the ZoI for potential water pollution arising from the Proposed Development. This invertebrate species is therefore screened out at the LSE stage.	**Likely significant effects**
Otter	Same as for SAC screening		**Likely significant effects**
Freshwater pearl mussel	Loss of and/ or damage to habitats supporting freshwater pearl mussel.	The Proposed Development would not result in any direct or indirect impacts to habitats supporting freshwater pearl mussel (River Strathy). As part of the Proposed Development design, no construction would be undertaken within a 10 m buffer from watercourses. Towers have been designed to be a minimum of 20 m from watercourses. Standard embedded mitigation measures to control surface water run-off during construction will be implemented as required for environmental legislative compliance and would be set out in the CEMP. No surface water pollution to any watercourse is anticipated and there is not considered to be any pathway for direct or indirect effects on aquatic species such as freshwater pearl mussel.	No likely significant effects

[6] UK Beetles website: https://www.ukbeetles.co.uk/oreodytes-alpinus

5 STAGE 2: APPROPRIATE ASSESSMENT

5.1 Mitigation

5.1.1 Sensitive Routeing and Alignment

5.1.1 The routeing and alignment selection process for the Proposed Development has taken into consideration the potential for significant effects on ecological features and for such effects to be avoided or minimised where possible (see **Chapter 2** within Volume 1 of this EIA Report). This has continued through the EIA process, with survey data informing the siting of infrastructure and access routes to further minimise effects on habitats and species where practicable, following the mitigation hierarchy as described in CIEEM guidance (CIEEM, 2018). This includes minimising impacts on sensitive habitats within the SAC / Ramsar and SSSI designated sites boundary.

5.1.2 The following tasks were undertaken to establish potential environmental constraints when considering the routeing and alignment of the Proposed Development, to minimise effects on habitats within the SAC / Ramsar:

- Mapping areas of historic damage to the peatlands surrounding the existing track, with the aim of locating infrastructure outside areas of qualifying habitat of the SAC;
- Targeted National Vegetation Classification (NVC) habitat surveys, protected species surveys and peat depth and condition surveys to supplement existing data;
- Site reconnaissance visits by the SSEN Transmission engineering and environmental team and their advisors, to review route and alignment options; and
- Review of consultation comments received from stakeholders during the route and alignment optioneering selection stage.

Routeing Stage

5.1.3 As set out in **Chapter 2** within Volume 1 of the EIA Report, the optimal route (Route Option 2a and 2b) selected to be taken forward to alignment selection stage[7], was chosen as it closely follows disturbed ground alongside an existing track. It was considered that this route option offered opportunities at alignment selection stage to minimise / avoid adverse effects on the qualifying habitats and species of the Caithness and Sutherland Peatlands SAC / Ramsar.

Alignment Stage

5.1.5 During consideration of alignment options that pass through the Caithness and Sutherland Peatlands SAC / Ramsar, the area to the east of the existing access track (traversed by Alignment Variant 2 (OHL)) was considered to be less sensitive in comparison to those to the west of the track (traversed by Alignment Option 1 (OHL)). The habitats present to the east are on shallower peats due to the sloping topography of the ground and are considered to be less reliant on a stable hydrological regime to maintain their vegetation species composition. As such, any modification to the habitats through the construction process were determined to be less impactful and the habitats likely to recover to their existing condition in a shorter period of time in comparison to those on deeper peats to the west of the existing track.

5.1.6 Further to this, through detailed habitat surveys of the alignment options, habitats to the east of the existing track were identified as exhibiting greater evidence of habitat modification through both over grazing by deer and from historical fire damage. This has significantly altered their species composition away from those typically described in relevant literature, being dominated by poorer quality habitats which are less likely to meet the requirements of a qualifying interest of the Caithness and Sutherland Peatlands SAC and consists of shallower peat.

[7] Connagill Cluster Grid Connections: Consultation Document: Routeing Stage (December 2023), produced by SSEN Transmission

5.1.7 Alignment Variant 2 (OHL) was therefore considered optimal from both an environmental and engineering perspective over the comparable section of Alignment Option 1 (OHL) through the SAC / Ramsar, as summarised in the alignment stage Consultation Document[8].

5.1.2 Pre-Construction and Construction Measures

General Environmental Management

5.1.1 This Stage 2 Appropriate Assessment has been carried out on the basis that all construction works would be carried out in accordance with industry good practice measures, guidance and legislation. Furthermore, the Applicant has developed a series of General Environmental Management Plans (GEMPs) (**Appendix 3.5**) and Species Protection Plan (SPPs) (**Appendix 3.6**) in agreement with statutory consultees including SEPA and NatureScot.

5.1.2 The appointed Principal Contractor would be committed to the implementation of a comprehensive and Site-specific Construction Environmental Management Plan (CEMP). This document would detail how the Principal Contractor would manage the works in accordance with all commitments and mitigation detailed in the EIA, the Applicant's GEMPs and SPPs, statutory consents and authorisations, and industry good practice and guidance, including pollution prevention guidance. It would also detail measures to manage, control and monitor the potential effects of construction including noise, dust, waste, pollution and personnel / vehicular movements. Best practice pollution control measures, with reference to Guidance for Pollution Prevention (GPPs) and COSHH guidelines, would be included in the CEMP. Particular reference would be made to managing handling, storage and use of hazardous chemicals and fuels used during the construction process. A detailed spill response plan would be developed as part of the CEMP and fully-briefed to all site operatives. An Ecological Management Plan (EMP) would also be included as part of the CEMP, which would include relevant information on habitats and protected species local to the Proposed Development, requirements for pre-construction surveys and toolbox talks (TBTs). An Outline CEMP is provided in **Appendix 3.7**. The CEMP would also include detailed methods for the stripping and temporary storage of topsoils and subsoils (including peat).

Pre-construction Surveys

5.1.3 Pre-construction surveys for protected species would be undertaken no more than 6 months in advance to identify any new ecological constraints and to ascertain the activity status of previously identified features within proximity of planned works.

Micrositing of Infrastructure

5.1.4 Any micrositing of infrastructure within the defined OHL, CSE compound and access track Limits of Deviations (LoD's) would be based on a review of existing ecological data and the completion of pre-construction surveys, to take into consideration the potential for direct encroachment onto protected species features, sensitive habitats or GWDTEs, or indirect alteration of hydrological flows supporting sensitive habitats of GWDTEs.

Construction Access

5.1.5 Vehicle access would be required to each tower location for the creation of foundations and to facilitate tower installation. **Figure 3.1 – The Proposed Development** within Volume 2 of the EIA Report shows the proposed access arrangements, which comprises the use of existing tracks and a combination of new temporary and permanent access tracks.

5.1.6 Access for construction would largely utilise an existing access track which was upgraded for use during the construction of the operational Strathy North Wind Farm. The upgrade of the track is currently being extended for use during the construction of the consented Strathy Wood and

[8] Connagill Cluster Grid Connections: Consultation Document: Alignment Stage (May 2024), produced by SSEN Transmission

Strathy South wind farms. It is anticipated that no further upgrade works would be required to enable access for the Proposed Development.

5.1.7 The Proposed Development would also use the existing Strathy North Wind Farm access tracks (in addition to a new section of permanent track) to access towers positioned on the western side of the River Strathy. No upgrade to the existing track would be required, but the construction of a permanent access track leading to Towers 2, 3 and 4 would require some limited woodland felling.

5.1.8 New permanent and new temporary access tracks would be required where no existing tracks can be used. These are shown on **Figure 3.1** and an access track schematic is included in **Appendix 3.2 - Access Track Schematic**. Where the existing ground provides the appropriate bearing capacities, the new accesses would be constructed on-formation. Where the existing ground does not provide the appropriate bearing capacities and / or where peat is located, the new accesses would likely be floated on top of the soft ground, circumnavigating the requirement for deep excavations and disturbance to the peat. All new tracks would be constructed in accordance with best practice construction methods, and with reference to NatureScot's good practice guide on constructing tracks in Scottish uplands[9].

5.1.9 Other access by low ground pressure vehicles may be required between poles and towers. Such access would not require formal access tracks as access would either be via tracked vehicles, or temporary trackway systems would be utilised in boggy / soft ground areas where required.

5.1.10 For steel lattice tower construction, it is anticipated that access would mainly be achieved through installation of new stone 'spur' tracks (permanent and temporary), to access each steel tower from the existing track. Floating stone road or trackway panel construction (typically a short-term solution) may be installed in sensitive areas such as over deeper areas of peat.

5.1.11 For wood pole construction, vehicle access is required to each pole location during construction to allow excavation and creation of foundations and pole installation. Preference would be given to lower impact access solutions including the use of low pressure tracked personnel vehicles and trackway in boggy / soft ground areas to reduce any damage to, and compaction of, the ground. These journeys would be kept to a minimum to minimise disruption to habitats along the route.

Habitat Reinstatement

5.1.12 Reinstatement would be undertaken during construction (and immediate post-construction phase) to address any areas of ground disturbance and changes to the landscape as part of the construction works and minimise the impacts on habitats disturbed during construction.

5.1.13 An outline site reinstatement and restoration plan has been prepared to describe the principles and best practice guidance and measures that would be followed in the reinstatement and restoration of disturbed ground. This is included in **Appendix 3.4: Outline Site Restoration Plan**, and would be developed by the Applicant, the Principal Contractor and consenting authorities as required prior to construction commencing. In more sensitive areas, further site-specific measures would be implemented to ensure successful reinstatement, including site specific soil and peat management measures, and the employment of specialist advisers (i.e. ECoW). Such measures are set out in **Appendix 3.4**.

5.1.14 A summary of the construction working areas that would be reinstated, and typically how this would be achieved is provided in the paragraphs below.

Reinstatement of Access Tracks

5.1.15 As shown in **Figure 3.1**, new permanent and new temporary tracks are required to facilitate construction and operation of the Proposed Development. Tracks to be retained would be partially reinstated on commissioning of the OHL to reduce their width to approximately 5 m (this includes a 1.5 m allowance for drainage) or use by SSEN Transmission for maintenance access (this is also included below as operational mitigation). Other tracks noted as temporary would be removed and the land reinstated.

[9] Constructed tracks in the Scottish Uplands (Updated September 2015), NatureScot.

5.1.16 Reinstatement would involve replacement of subsoil, then topsoil, grading and installation of drainage as required with turves replaced vegetation side up. Where there are insufficient turves the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Methods for the reinstatement of peat would be set out in the Peat Management Plan (see **Appendix 9.2: Outline Peat Management Plan**).

Reinstatement of Work Areas (Towers and Poles)

5.1.17 Soil would be stored within the working area for each element of the work during construction. Subsoils and topsoil removed to enable the construction of the foundations would be temporarily stockpiled in separate bunds within the working area or corridor, with stripped turves stored on top of the bunds.

5.1.18 Reinstatement would involve replacement of subsoil, then topsoil with turves replaced vegetation side up. Where there are insufficient turves the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise.

5.1.9 Ecological Clerk of Works (ECoW)

5.1.26 To ensure all reasonable precautions are taken to avoid negative effects on habitats (and protected species) during construction, a suitably qualified ECoW will be appointed prior to the commencement of construction to advise the Applicant and the Principal Contractor on all ecological matters. The ECoW would be required to be present on site as appropriate during the construction phase and would carry out monitoring of works and briefings with regards to any ecological sensitivities to the relevant staff of the Principal Contractor and subcontractors.

5.1.10 Operational Measures

Access Tracks

5.1.27 To minimise longer term impacts on habitats (both direct and indirect), the sections of permanent access track width would be reduced to approximately 5 m (this includes a 1.5 m allowance for drainage) for the operational period, with all track-side habitat reinstated.

Maintenance

5.1.28 In general, OHLs require very little maintenance. Regular inspections are undertaken to identify any unacceptable deterioration of components, so that they can be replaced. From time to time, inclement weather, storms or lightning can cause damage to either the insulators or the conductors on OHLs. If conductors are damaged, short sections may have to be replaced.

5.1.29 During the operation of the Proposed Development, it may be necessary to manage vegetation to maintain required safety clearance distances from infrastructure. However, this will be undertaken with advice from an ecologist and an ECoW employed for the duration of any works as necessary.

5.1.11 Connagill Cluster Overarching Habitat Management Plan

5.1.30 As discussed in paragraph 1.1.3, the Proposed Development forms part of the Connagill Cluster Grid Connections, required to connect four consented or proposed wind farms to the transmission network at Connagill 275/132 kV substation. These include the consented Strathy South and Strathy Wood wind farms, and the proposed Melvich Energy Hub and Kirkton Energy Park[1]. To facilitate the grid connections, a new switching station, known as Strathy Switching Station, would also be required to be constructed.

5.1.31 To address the potential for adverse effects on the Caithness and Sutherland Peatlands SAC / Ramsar and its component SSSIs as a result of cumulative habitat loss / damage, an overarching Habitat Management Plan (HMP) for the 'Connagill Cluster Grid Connections' projects has been

prepared in consultation with NatureScot (see **Appendix 7.8**). This has taken into consideration the HMPs that have been produced for the associated wind farm submissions to demonstrate a joined-up approach to habitat mitigation and enhancement to offset permanent losses of peatland habitat in the area.

5.2 Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary)

5.2.1 The Proposed Development identifies a total overall effect to habitats of 2.57 ha within the Caithness and Sutherland Peatlands SAC boundary resulting from the Construction Phase, which is approximately 0.002 % of the total designated area. This includes 0.42 ha of direct permanent habitat loss, 1.07 ha of temporary habitat loss and 1.08 ha of indirect permanent habitat loss due to habitat change.

5.2.2 No permanent dewatering or groundwater management is required for the Proposed Development, and therefore the magnitude of indirect permanent habitat change to habitats is associated with localised drawdown due to the presence of permanent structures (tower feet and H poles), as well as a new section of permanent access track to towers 5 and 17.

5.2.3 The majority of the habitat impacted by the Proposed Development within the SAC boundary is blanket bog, dwarf shrub heath and upland acid grassland. Of these habitats, 'Blanket Bog' and 'Northern Atlantic wet heaths with Erica tetralix' are Annex I habitats that are qualifying features of the SAC and are therefore internationally important, although they are common and widespread in the regional context. The magnitude of impact is assessed as Low, as the direct and indirect habitat losses are very small in context with the whole SAC designation, which covers many thousands of hectares of peatland. The permanent unmitigated losses would not reasonably substantially affect the distribution or extent of Annex I habitats within the designated site, or undermine the conservation objectives for Blanket Bog and Northern Atlantic wet heaths with Erica tetralix. With mitigation to offset permanent habitat losses (however small), it is assessed that the Proposed Development would result in no adverse effect on the integrity of the qualifying habitats of the SAC.

5.2.4 A summary of the appropriate assessment against the conservation objectives for the relevant habitat features is provided in **Table 3**.

5.3 Loss of and/ or damage to Ramsar habitats supporting rare mosses and invertebrates (permanent and temporary)

5.3.1 The Proposed Development identifies a total overall effect to habitats of 2.57 ha within the Caithness and Sutherland Peatlands Ramsar boundary resulting from the Construction Phase, which is approximately 0.002 % of the total designated area. This includes 0.425 ha of direct permanent habitat loss, 1.07 ha of temporary habitat loss and 1.08 ha of indirect permanent habitat loss due to habitat change.

5.3.2 The majority of the habitat impacted by the Proposed Development within the Ramsar boundary is blanket bog, dwarf shrub heath and upland acid grassland. These are Annex I habitats that are qualifying features of the SAC and are therefore internationally important, although they are common and widespread in the regional context. The magnitude of impact is assessed as Low, as the direct habitat losses are very small in context with the whole Ramsar designation, which covers many thousands of hectares of peatland. Any impacts on rare mosses or invertebrate species within the Ramsar site would therefore be mostly reversible, and any displacement of terrestrial invertebrates would be minor when considered in the context of the wider site. As assessed in respect of the habitat losses within the SAC, the permanent unmitigated losses (and thus potential impacts on mosses and invertebrates) would not reasonably substantially affect the distribution or extent of Annex I habitats within the designated site. With mitigation to offset permanent habitat losses (however small), it is assessed that the Proposed Development would result in **no adverse effect on the integrity** of the qualifying habitats supporting nationally rare mosses or invertebrates.

5.3.3 A summary of the appropriate assessment against the conservation objectives for the relevant habitat features that could support rare mosses and invertebrates is provided in **Table 3**.

5.4 Disturbance to Otter

5.4.1 The otter couches identified on the River Strathy are approximately 50 m from the nearest construction works (associated with Towers 3, 4, 8 and 9). The implementation of a minimum 10 m buffer alongside watercourses as part of the embedded mitigation for the construction phase of the Proposed Development would minimise the potential for any noise or visual disturbance to riparian and aquatic habitats that may be used by otter for foraging/ on passage, or to any new couches that may be established in the intervening period prior to the commencement of construction activities. No nighttime working would be undertaken, and therefore there is negligible potential for noise or visual disturbance to foraging/ commuting otter. It is assessed that the Proposed Development would result in **no adverse effect on the integrity** of this qualifying feature.

5.4.2 A summary of the appropriate assessment against the conservation objectives for this qualifying feature is provided in **Table 3**.

Table 3: Appropriate Assessment of the Potential Impacts of the Proposed Development on the Caithness and Sutherland Peatlands SAC/ Ramsar in view of its Conservation Objectives

Qualifying Feature (non-ornithological)	Relevant mitigation	Potential Impacts on Site Integrity	Conclusion
HABITATS			
Conservation objective 1: To ensure that the qualifying features of the Caithness and Sutherland Peatlands SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status			
Blanket Bog Northern Atlantic wet heaths with *Erica tetralix*	• Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction such as polluted surface water-run off and dust emissions. • Landscape-scale HMP to address habitat losses across the peatlands of Caithness and Sutherland associated with the Connagill Cluster Grid Connections.	These habitats are currently assessed as being in unfavourable condition. The construction and operation of the Proposed Development would not result in any impact on the condition of the blanket bog or wet heath habitats at the site level because the effects are very small and localised. The implementation of a landscape-scale HMP, which demonstrates a joined-up approach to habitat mitigation and enhancement to offset permanent losses of peatland habitat associated with the Connagill Cluster Grid Connections (in the context of the associated wind farms HMPs), would not undermine this conservation objective, and may contribute towards achieving favourable conservation status for this habitat in the long term. This appropriate assessment is also applicable to the corresponding habitat features of the Ramsar site.	No adverse effects on integrity
Conservation objective 2a: Maintain the extent and distribution of habitat within the site			
Blanket Bog Northern Atlantic wet heaths with *Erica tetralix*	• Landscape-scale HMP to address habitat losses across the peatlands of Caithness and Sutherland associated with the Connagill Cluster Grid Connections.	The construction and operation of the Proposed Development would not result in any significant change in the extent and distribution of these habitats within the SAC, because the effects are very small and localised. The permanent and temporary habitat losses are minor when considered in context of the wider site, and the effect on the SAC is assessed as negligible. The implementation of a landscape-scale HMP, which demonstrates a joined-up approach to habitat mitigation and enhancement to offset permanent losses of peatland habitat associated with the Connagill Cluster Grid Connections (in the context of the associated wind farms HMPs), will not undermine this conservation objective, and may contribute towards maintaining the extent and distribution of these habitats within the SAC in the long term. This appropriate assessment is also applicable to the corresponding habitat features of the Ramsar site.	No adverse effects on integrity
Conservation objective 2b. Restore the structure, function and supporting processes of the habitat			
Blanket Bog Northern Atlantic wet heaths with *Erica tetralix*	• Landscape-scale HMP to address habitat losses across the peatlands of Caithness and Sutherland associated with the Connagill Cluster Grid Connections .	The implementation of a landscape-scale HMP, which demonstrates a joined-up approach to habitat mitigation and enhancement to offset permanent losses of peatland habitat associated with the Connagill Cluster Grid Connections , will not undermine this conservation objective, and may contribute towards the restoration of	No adverse effects on integrity

Qualifying Feature (non-ornithological)	Relevant mitigation	Potential Impacts on Site Integrity	Conclusion
		the structure, function and supporting processes of the habitats within the SAC in the long term. This appropriate assessment is also applicable to the corresponding habitat features of the Ramsar site.	
Conservation objective 2c: Restore the distribution and viability of typical species			
Nationally rare mosses *Sphagnum lindbergii* and *Sphagnum majus.*	• Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction such as polluted surface water-run off and dust emissions.	The current conservation status of these nationally rare mosses within the Ramsar is not known, as it is not a monitored feature of the SAC and consequently it is not referred to in the NatureScot conservation advice package. However, the assessment undertaken for potential impacts on blanket bog habitat, which may be suitable to support these moss species, is considered applicable to the assessment of potential effects on this Ramsar feature. It is considered unlikely that these species would be present in the ZoI of the Proposed Development because they were not recorded during the botanical surveys. However, even if they were present in the blanket bog habitat within the ZoI, the magnitude of permanent and temporary habitat loss resulting from the construction of the Proposed Development is low when considered in the context of the wider site, and would not reasonably affect the distribution and viability of these nationally rare mosses at the site level.	No adverse effects on integrity
Invertebrate assemblage (excluding *Oreodytes alpinus)*	• Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction such as polluted surface water-run off and dust emissions. • Landscape-scale HMP to address habitat losses across the peatlands of Caithness and Sutherland associated with the Connagill Cluster Grid Connections.	The current conservation status of invertebrates within the Ramsar is not known, as it is not a monitored feature of the SAC and consequently it is not referred to in the NatureScot conservation advice package. However, the assessment undertaken for potential impacts on the sensitive peatland habitat mosaic, which may support a notable assemblage of invertebrate species, is considered applicable to the assessment of potential effects on this Ramsar feature. As assessed above in respect of impacts on SAC/ Ramsar habitats, the magnitude of permanent and temporary habitat loss resulting from the construction of the Proposed Development is low when considered in the context of the wider site, and would not reasonably affect the distribution and viability of the invertebrate assemblage across the site.	No adverse effects on integrity
<u>OTTER</u> **Conservation objective 2a: Restore the population of otter as a viable component of the site**			
Otter	• 10 m minimum buffer from watercourses. • Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction	This feature was assessed as being in unfavourable condition because there were fewer signs of otter than expected in the most recent survey, however the conservation advice package states that management of the SAC appears appropriate for otter.	No adverse effects on integrity

Qualifying Feature (non-ornithological)	Relevant mitigation	Potential Impacts on Site Integrity	Conclusion
	such as polluted surface water-run off and dust emissions. • No night-time working.	The implementation of a minimum 10 m buffer from all watercourses would l minimise the risk of noise and visual disturbance to otters resting up during the day (although the nearest couches are >50m from the nearest construction activities and therefore would be unlikely to be disturbed at this distance). There would be no night-time working, and therefore there is negligible potential for disturbance to foraging or commuting otter, as this species is largely nocturnal. The construction and operation of the Proposed Development would therefore not affect the conservation objective to restore the otter population.	
Conservation objective 2b: Maintain the distribution of otter throughout the site			
Otter	• 10 m buffer from watercourses. • Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction such as polluted surface water-run off and dust emissions. • No night-time working.	The implementation of a minimum 10 m buffer from the watercourse would ensure that there are no direct impacts on watercourses that support otter. The implementation of a minimum 10 m buffer from the watercourse would minimise the risk of noise and visual disturbance to otters resting up during the day (although the nearest couches are >50m from the nearest construction activities and therefore would be unlikely to be disturbed at this distance). There would be no night-time working, and therefore there is negligible potential for disturbance to foraging or commuting otter, as this species is largely nocturnal. The construction and operation of the Proposed Development would therefore not negatively change the distribution of otter throughout the site.	No adverse effects on integrity
Conservation objective 2c: Maintain the habitats supporting otter within the site and availability of food.			
Otter	• 10 m buffer from watercourses. • Good practice mitigation detailed in the GEMPs and CEMP to control adverse environmental impacts during construction such as polluted surface water-run off and dust emissions.	The implementation of a minimum 10 m buffer from the watercourse would ensure that there are no direct impacts on watercourses that support otter, and standard construction mitigation would minimise the risk of pollution to the watercourse that could affect the availability of food for otters. The construction and operation of the Proposed Development would therefore not impact the ability of the watercourses (primarily the River Strathy) to support otter.	No adverse effects on integrity

6 IN COMBINATION EFFECTS

6.1 Stage 1: Screening for LSEs In Combination with Other Plans or Projects

6.1.1 The HRA process requires potential effects to be discussed in-combination with other plans and projects. This is to account for cumulative impacts of development plans, where the individual effects of a proposal are screened out due to there being an insufficient magnitude of impact. Ultimately, this approach allows the identification of individually small, but cumulatively material effects with the potential to cause LSEs or adverse effects.

6.1.2 The projects in **Table 4** below were screened for likely significant in-combination effects with the Proposed Development, and the screening rationale is presented in **Table 5**. Likely significant in-combination effects could not be screened out for the following projects, and therefore they have been taken forward to Stage 2 appropriate assessment:

- Strathy South Wind Farm - likely significant in-combination effects on Caithness and Sutherland Peatlands SAC / Ramsar Annex I habitats due to direct impacts associated with the access track upgrade and resulting likely significant in-combination effects on the nationally rare mosses and invertebrates (excluding *Oreodytes alpinus*) that these habitats support.
- Strathy South Wind Farm 'Southern Section' Grid Connection - Associated with the Strathy South Wind Farm access track is the Strathy South Underground Cable (UGC). The UGC will be constructed in conjunction with the upgrade of the access track with the route falling within the disturbed ground created from the construction of the existing track. The areas of disturbed ground were mapped as part of the Strathy South Wind Farm's planning submission and ground truthed for the purpose of the UGC's HRA. Likely in-combination effects are as described for the Strathy South Wind Farm and given the location of the UGC these have been considered singularly for the purpose of this assessment.

6.1.3 Strathy South Wind Farm 'Northern Section' Grid Connection Proposed Alignment and Strathy South Wind Farm 'Northern Section' Grid Connection Alternative Alignment both have two towers that are located within the Caithness and Sutherland Peatlands SAC / Ramsar, although the majority of both grid connection options have been designed to avoid the designated site by routeing around the northern boundary. It is therefore likely that there will be direct and indirect impacts within the designated site, albeit likely limited in magnitude, and there is potential for in-combination LSE with the Proposed Development. However, as the EIAs for these projects have not yet been completed, it is not possible to quantify the direct and indirect impacts to designated habitats or determine whether Annex I or qualifying features are affected, and there is therefore insufficient information to inform LSE screening at this stage. These two projects are therefore screened out of the in-combination LSE assessment, with the reasonable assumption that the HRA's for these projects will need to consider in-combination LSE with the Proposed Development.

Table 4: Projects Screened for LSE with the Proposed Development

Project	Project Details	Planning Status	Total permanent land take for development (ha)	Documents Reviewed
Kirkton Energy Park (including Kirkton Substation)	11 turbines with 53 MW generating capacity	Planning application submitted October 2023. ECU Ref: ECU00003244	15.29	EIA Report Chapter 8 – Ecology (SLR, 2022) Shadow HRA (Atmos Consulting, 2022)
Melvich Wind Energy Hub (including Melvich Substation)	12 turbines with 57.6 MW generation capacity and electricity substation/ energy storage	Planning application submitted March 2023. ECU Ref: ECU00004514	10.65 (plus 18.94 ha of indirect habitat loss)	EIA Report Chapter 7 – Ecology and Nature Conservation (Belltown Power, 2023a) HRA Report (Belltown Power, 2023b)
Strathy Wood Wind Farm (including substation)	11 turbines with 63 MW generating capacity	Consented in December 2021, construction commenced in September 2024 ECU Ref: EC00005239	13.0	ES Chapter 8 – Ecology (EON, 2013)
Strathy South Wind Farm (including substation)	35 turbines with 208 MW generating capacity	Consented in November 2021, following various amendments to the initial proposals submitted in 2007. ECU Ref: ECU0002133	28.38 (plus 24.19 ha of permanent habitat change).	EIA Report Chapter 9 – Ecology (non-avian) (SSE, 2020) Further Information Report Chapter 9 – Ecology (SSE Generation Ltd, 2021)
Strathy South Wind Farm 'Southern Section' Grid Connection	Application to construct and operate a new 132 kV underground cable (UGC) to connect the consented Strathy South Wind Farm to a new CSE compound near to Braerathy Lodge.	Anticipated to the Permitted Development	Cable trench to be laid within the footprint of the upgraded access track to Strathy South Wind Farm (5.4 km in length)	Report Chapter 9 – Ecology (non-avian) (SSE, 2020) Further Information Report Chapter 9 – Ecology (SSE Generation Ltd, 2021) Habitat Regulation Appraisal of the UGC (RPS, 2024 unpublished)
Strathy South Wind Farm 'Northern Section' Grid	Approximately 10 km of new 132kV OHL connecting the Proposed Development to Connagill Substation	Proposed ECU Ref: ECU00005081	Not yet quantified	Scoping Report (SSEN Transmission, March 2024)

Connection Proposed Alignment				
Strathy South Wind Farm 'Northern Section' Grid Connection Alternative Alignment	Alternative route for above development comprising approximately 13 km of new 132kV OHL connecting the Proposed Development to Connagill Substation	Proposed ECU Ref: ECU00005081	Not yet quantified	Scoping Report (SSEN Transmission, March 2024)

Table 5: Screening for Likely Significant in Combination Effects on the Caithness and Sutherland Peatlands SAC/ Ramsar

Development	Potential Cumulative Impacts with the Proposed Development			Conclusion regarding In Combination LSE
	Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary)	Loss of and/ or damage to Ramsar habitats supporting nationally rare mosses and invertebrate assemblage (excluding *Oreodytes alpinus)*	Disturbance to otter	
Kirkton Energy Park (including Kirkton Substation)	There would be no direct habitat loss within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development.	There would be no direct habitat loss within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development.	The EIA Report concluded there would be no significant effects on otter therefore there is no potential for in-combination likely significant effects on this species with the Proposed Development.	No likely significant effects
Melvich Wind Energy Hub (including Melvich Substation)	There would be no direct or indirect habitat loss or damage within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development. Potential indirect effects on nearby designated habitats due to the hydrological connectivity were ruled out due to the SAC habitats being outside the ZoI.	There would be no direct or indirect habitat loss or damage within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development. Potential indirect effects on nearby designated habitats due to the hydrological connectivity were ruled out due to the SAC habitats being outside the ZoI.	The EIA Report concluded that there would be no significant effects on otter because all development would be >50 m from any watercourse, so there is therefore no potential for likely significant in-combination effects with the Proposed Development.	No likely significant effects
Strathy South Wind Farm 'Southern Section' Grid Connection	The UGC would be laid within the footprint of the upgraded access track for the Strathy South Wind Farm, which crosses the SAC / Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development.	The UGC would be laid within the footprint of the upgraded access track for the Strathy South Wind Farm, which crosses the Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development.	As the UGC follows the route of the existing access track to the Strathy South Wind Farm, there is no potential for impacts to watercourses supporting otter, and therefore the potential for cumulative effects on this species can be discounted.	**Likely significant effects (SAC/ Ramsar habitats and Ramsar nationally rare mosses and invertebrates)**
Strathy South Wind Farm 'Northern Section' Grid Connection – Alternative Alignment*	The EIA for this project has not yet been completed. However, the Scoping Report indicates that there will be some direct habitat loss within the Caithness and Sutherland Peatlands SAC / Ramsar. Indirect effects on peatland habitats may also occur in localised areas where SAC	As for Annex I habitats, this project will likely result in some direct habitat loss within the Ramsar, and may also indirectly affect peatland habitats within the ZoI of construction activities e.g. through changes in hydrology. However, direct and indirect impacts on Ramsar habitats	The EIA for this project has not yet been completed. However, the scheme crosses several watercourses that are suitable for otter breeding, resting and foraging. The tower locations have a buffer of 20m designed-in as an offset from watercourses, although temporary	Screened out due to insufficient information.

Development	Potential Cumulative Impacts with the Proposed Development			Conclusion regarding In Combination LSE
	Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary)	**Loss of and/ or damage to Ramsar habitats supporting nationally rare mosses and invertebrate assemblage (excluding *Oreodytes alpinus*)**	**Disturbance to otter**	
	habitats are within the ZoI of construction activities e.g. through changes in hydrology. However, at this stage, direct and indirect impacts on Annex I habitats cannot be quantified in the absence of detailed survey and assessment information.	cannot be quantified in the absence of detailed survey and assessment information.	construction activities may be undertaken up to 10m from watercourses. Given this offset, it is reasonable to concluded that there would be no significant effect to otter or its habitats, and therefore the potential for likely significant in-combination effects to otter is considered to be low.	
Strathy South Wind Farm 'Northern Section' Grid Connection – Proposed Alignment**	The EIA for this project has not yet been completed. However, the Scoping Report indicates that there will be some direct habitat loss within the Caithness and Sutherland Peatlands SAC / Ramsar. Indirect effects on peatland habitats may occur in localised areas where SAC habitats are within the ZoI of construction activities e.g. through changes in hydrology. However, this cannot be quantified in the absence of detailed survey and assessment information.	As for Annex I habitats, this project will likely result in some direct habitat loss within the Ramsar, and may also indirectly affect peatland habitats within the ZoI of construction activities e.g. through changes in hydrology. However, direct and indirect impacts on Ramsar habitats cannot be quantified in the absence of detailed survey and assessment information.	The EIA for this project has not yet been completed. However, the scheme crosses several watercourses that are suitable for otter breeding, resting and foraging. The tower locations have a buffer of 20 m designed-in as an offset from watercourses, although temporary construction activities may be undertaken up to 10 m from watercourses. Given this offset, it is reasonable to conclude that there would be no significant effect to otter or its habitats, and therefore the potential for likely significant in-combination effects is considered to be low.	Screened out due to insufficient information.
Strathy South Wind Farm	There would be no direct habitat loss within the Caithness and Sutherland SAC/ Ramsar resulting from the turbine footprints. The access track crosses the SAC/ Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development.	There would be no direct habitat loss within the Caithness and Sutherland Ramsar resulting from the turbine footprints. The access track crosses the Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development.	The ES concluded there would be no significant effects on protected species including otter and therefore there is no potential for likely significant in-combination effects on otter with the Proposed Development.	**Likely significant effects (SAC/ Ramsar habitats and Ramsar nationally rare mosses and invertebrates)**
Strathy Switching Station	An EcIA has not yet been undertaken for this project. However, the area being considered for the location of the switching	An EcIA has not yet been undertaken for this project. However, the area being considered for the location of the switching	Given the minor footprint of the development, the potential for likely significant in-combination effects on otter	No likely significant effects

Development	Potential Cumulative Impacts with the Proposed Development			Conclusion regarding In Combination LSE
	Loss of and/ or damage to SAC/ Ramsar Annex I habitats (permanent and temporary)	**Loss of and/ or damage to Ramsar habitats supporting nationally rare mosses and invertebrate assemblage (excluding *Oreodytes alpinus*)**	**Disturbance to otter**	
	station is several kilometres north of the SAC / Ramsar boundary and there would be no direct or indirect habitat loss within the Caithness and Sutherland SAC / Ramsar. There is therefore no potential for likely significant in-combination effects with the Proposed Development.	station is several kilometres north of the Ramsar boundary and there would be no direct or indirect habitat loss within the Caithness and Sutherland SAC/ Ramsar. There is therefore no potential for likely significant in-combination effects with the Proposed Development.	populations within the boundary of the SAC with the Proposed Development can be discounted.	
Strathy Wood Wind Farm	There would be no direct habitat loss within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development.	There would be no direct habitat loss within the Caithness and Sutherland SAC/ Ramsar, and therefore there is no potential for likely significant in-combination effects with the Proposed Development.	The assessment concluded there would be no significant effects on protected species including otter and therefore there is no potential for likely significant in-combination effects on otter with the Proposed Development.	No likely significant effects

6.2 Stage 2: Appropriate Assessment In Combination with Other Plans or Projects

6.2.1 The projects in **Table 4** were considered for likely significant in-combination effects. However, it was ultimately concluded that **no adverse effect on integrity** of the SAC / Ramsar would arise from the construction or operation of the Proposed Development in combination with any other projects in the Connagill Cluster Grid Connections or their associated wind farms. This is because none of the other projects alone would result in direct or indirect permanent or temporary habitat losses within the boundary of the designated sites.

6.2.2 In addition, there are appropriate offsetting measures in place through the development of the landscape-scale HMP (see **Appendix 7.8**) to address cumulative peatland habitat losses and deliver habitat enhancements to complement the conservation objectives for habitats and protected species within the Caithness and Sutherland Peatlands SAC/ Ramsar.

6.2.1 Strathy South Wind Farm

6.2.1.1 Loss of and/ or damage to SAC/ Ramsar Annex I habitats

6.2.3 The access track to the Strathy South Wind Farm crosses the SAC / Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development. However, the access track is already in place and would be upgraded; the direct and indirect impacts on qualifying habitats are very minor in extent (approximately 3.71 ha of peatland, of which 3.02 ha is atypical having been hydrologically impacted by the original construction of the access track). When added to the direct and indirect habitat losses of 2.57 ha from the Proposed Development, this results in a cumulative total habitat loss of 6.28 ha (including the atypical habitats along the existing track), which represents 0.004 % of the overall SAC / Ramsar habitats.

6.2.4 Given that habitat losses associated with the Proposed Development alone are very minor when considered in the wider context of the SAC/ Ramsar, it is concluded that the construction and operation of the Strathy South Wind Farm access track would not contribute to any significant changes to the structure, function and distribution of Annex I habitats throughout the SAC / Ramsar. The appropriate assessment has concluded that the upgrade to the access track would result in **no adverse in-combination effect on the integrity** of the qualifying habitats with the Proposed Development.

6.2.1.2 Loss of and/ or damage to Ramsar habitats supporting rare mosses and invertebrates

6.2.5 As assessed above in respect of the direct and indirect impacts on SAC/ Ramsar habitats, the construction and operation of the Strathy South Wind Farm access track would not contribute to any significant changes to the structure, function and distribution of Annex I habitats throughout the SAC/ Ramsar, or the populations of rare mosses and invertebrates they support. The appropriate assessment has concluded that the upgrade to the access track would result in **no adverse in-combination effect** on the integrity of qualifying habitats to support rare plants and invertebrates with the Proposed Development.

6.2.2 Strathy South Wind Farm 'Southern Section' Grid Connection

6.2.2.1 Loss of and/ or damage to SAC/ Ramsar Annex I habitats

6.2.1 The UGC will be laid within the footprint of the upgraded access track for the Strathy South Wind Farm, which crosses the SAC / Ramsar and therefore there is the potential for likely significant effects in-combination with the Proposed Development. However, as discussed above the access track is already in place and the route of the UGC has been carefully chosen to avoid Annex I habitats. The UGC route will impact habitat on the western side of the existing access track; the peatland habitats in this location are atypical having been hydrologically impacted by the original

construction of the access track. None of the habitats impacted are Annex I habitats. The impacts will also be temporary given the nature of the construction activities.

6.2.2 Given that habitat losses associated with the Proposed Development alone are very minor when considered in the wider context of the SAC / Ramsar, it is concluded that the construction and operation of the UGC would not contribute to any changes to the structure, function and distribution of Annex I habitats throughout the SAC / Ramsar. The appropriate assessment has concluded that the construction and operation of the UGC would result in **no adverse in-combination effect on the integrity** of the qualifying habitats with the Proposed Development.

6.2.2.2 Loss of and/ or damage to Ramsar habitats supporting rare mosses and invertebrates

6.2.1 As assessed above in respect of the direct and indirect impacts on SAC / Ramsar habitats, the construction and operation of the UGC would not contribute to any significant changes to the structure, function and distribution of Annex I habitats throughout the SAC / Ramsar, or the populations of rare mosses and invertebrates they support. The appropriate assessment has concluded that the UGC would result in **no adverse in-combination effect** on the integrity of qualifying habitats supporting rare plants and invertebrates with the Proposed Development.

7 CONCLUSION

7.1.1 The Shadow HRA has concluded that the construction and operation of the Proposed Development would result in **no adverse effect on integrity** on the Caithness and Sutherland Peatlands SAC / Ramsar, either alone or in-combination with any other project within the Connagill Cluster Grid Connection or associated wind farm developments. This is largely because the Proposed Development alone affects only a very small area of habitat within the SAC / Ramsar boundary, and therefore there is limited potential for any significant in-combination effects to arise alongside construction and operation of other wind farms and their associated grid connections that are part of the Connagill Cluster.

7.1.2 With the exception of Strathy South Wind Farm and the associated UGC, the wind farms at Strathy Wood (consented), Melvich (proposed) and Kirkton (proposed), avoid both direct and indirect impacts on the Caithness and Sutherland Peatlands SAC / Ramsar, and therefore likely significant in-combination effects for these projects with the Proposed Development were screened out at Stage 1.

7.1.3 In addition, there are appropriate offsetting measures in place through the development of a landscape-scale HMP (see **Appendix 7.8**) to address cumulative peatland habitat losses arising from the construction and operation of the Connagill Cluster Grid Connections, and to deliver habitat enhancements to complement the conservation objectives for habitats and protected species within the Caithness and Sutherland Peatlands SAC / Ramsar.

8 REFERENCES

Atmos Consulting (2022) *Kirkton Energy Park Technical Appendix 9.4 – Information to inform the Habitats Regulation Appraisal*. Prepared on behalf of wind2 by Atmos Consulting.

Belltown Power (2023a) *Melvich Wind Energy Hub Environmental Statement Volume 1, Chapter 7: Ecology March 2023*. Prepared on behalf of Melvich Wind Energy Hub Limited by Belltown Power, Bristol.

Belltown Power (2023b) *Melvich Wind Energy Hub Environmental Statement Volume 4, Appendix 8.4: Habitat Regulations Appraisal March 2023*. Prepared on behalf of Melvich Wind Energy Hub Limited by Belltown Power, Bristol.

EON (2013) *Strathy South Wind Farm Environmental Statement Addendum Chapter A10 November 2013*.

RPS (2024) *Strathy South Underground Cable – Habitats Regulations Assessment*. Prepared on behalf of SSEN Transmission by RPS, Edinburgh [unpublished]

SSE (2020) *Strathy South Wind Farm 2020 Section 36C Application Environmental Impact Assessment Report Volume 2: Chapter 9 Ecology (non-avian)*.

SSE Generation Ltd (2021) *Strathy South 35 Turbine proposed Varied Development. Supplementary Information Report 2021*.

SLR (2022) *Kirkton Energy Park Environmental Impact Assessment Report Volume 2, Chapter 8 – Ecology November 2022*. Prepared on behalf of Kirkton Wind Farm Limited by SLR.

ANNEXES

Annex A
Caithness and Sutherland Peatlands SAC/ Ramsar Citation

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0013602**

SITENAME **Caithness and Sutherland Peatlands**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0013602

1.3 Site name

Caithness and Sutherland Peatlands

1.4 First Compilation date	1.5 Update date
1996-01	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	1996-01
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-03
National legal reference of SAC designation:	Regulations 8 and 11-15 of The Conservation (Natural Habitats, &c) Regulations 1994 (http://www.legislation.gov.uk/uksi/1994/2716/contents/made).

2. SITE LOCATION

Back to top

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-3.9375	58.33611111

2.2 Area [ha]:

143561.47

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKM6	Highlands and Islands

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Globa
3130			3158.35	0	G	B	B	B	B
3160			287.12	0	G	A	B	A	A
4010			23041.62	0	G	C	B	C	C
4030			2354.41	0	G	D			
4060			186.63	0	G	D			
7130	X		113671.97	0	G	A	B	A	A
7140			502.47	0	G	C	B	B	C
7150			100.49	0	G	C	B	B	C

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1355	Lutra lutra			p				P	DD	C	B	C	B
P	1528	Saxifraga hirculus			p	1001	10000	i		M	B	B	A	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

Back to top

4.1 General site character

Habitat class	% Cover
N07	78.5
N06	3.0
N09	0.5
N08	18.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology:acidic,granite,nutrient-poor,peat,sandstone2 Terrestrial: Geomorphology and landscape:upland

4.2 Quality and importance

Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojunceteafor which this is considered to be one of the best areas in the United Kingdom.Natural

dystrophic lakes and pondsfor which this is considered to be one of the best areas in the United Kingdom.Northern Atlantic wet heaths with Erica tetralixfor which the area is considered to support a significant presence.Transition mires and quaking bogsfor which the area is considered to support a significant presence.Depressions on peat substrates of the Rhynchosporionfor which the area is considered to support a significant presence.Blanket bogsfor which this is considered to be one of the best areas in the United Kingdom.Saxifraga hirculusfor which this is considered to be one of the best areas in the United Kingdom.which is known from 15 or fewer 10 x 10 km squares in the United Kingdom.Lutra lutrafor which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	B02		I
M	H03		B
M	A07		B
M	I01		B
L	D02		B
M	B01		I
H	F03		I
M	H02		B
L	G01		I
H	J01		I
M	H04		B
M	M01		B
M	C03		B
H	A04		I
M	K01		I
M	D01		B
H	H01		B
M	I02		B
H	J02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	F03		I
M	A04		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Scottish Natural Heritage 'site link' below provides access to the Conservation Objectives for this site. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): https://sitelink.nature.scot/site/8218
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]

UK01	1.7	UK04	100.0

6. SITE MANAGEMENT

Back to top

6.1 Body(ies) responsible for the site management:

Organisation:	Scottish Natural Heritage
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 02 February 1999

3. Country:

UK (Scotland)

4. Name of the Ramsar site:

Caithness and Sutherland Peatlands

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii**) an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

58 20 10 N 03 56 15 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Thurso

The Caithness and Sutherland Peatlands Ramsar site lies in the extreme north of mainland Britain.

Administrative region: Highland

10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 143502.79

Min. 16
Max. 675
Mean 200

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Caithness and Sutherland Peatlands Ramsar site contains a large proportion of the Caithness and Sutherland Peatlands which form one of the largest and most intact areas of blanket bog in the world. The peatlands include an exceptionally wide range of vegetation and surface pattern types, some of which are unknown elsewhere. This range of habitats supports a diverse range of breeding waterfowl including internationally important populations of North Scottish greylag goose and dunlin and nationally important populations of ten other waterfowl species.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site supports one of the largest and most intact areas of blanket bog in the world.

Ramsar criterion 2

The site supports a number of rare species of wetland plants and animals. The plants include three nationally rare mosses, eight nationally scarce vascular plants and four nationally scarce mosses. The insect fauna includes several nationally scarce species and one nationally rare species. The site supports nationally important breeding populations of ten waterfowl species.

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species regularly supported during the breeding season:

Dunlin , *Calidris alpina schinzii*, Baltic/UK/Ireland	1860 pairs, representing an average of 7.4% of the breeding population (Count, as at mid-1990s)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, peat, nutrient-poor, sedimentary, granite, sandstone, sandstone/mudstone, gravel, cobble
Geomorphology and landscape	upland, hilly
Nutrient status	oligotrophic
pH	acidic
Salinity	fresh
Soil	mainly organic
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Kinbrace, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/kinbrace.html) Max. daily temperature: 11.1° C Min. daily temperature: 3.1° C Days of air frost: 84.0 Rainfall: 993.8 mm Hrs. of sunshine: 1192.4

General description of the Physical Features:

The Caithness & Sutherland Peatlands are located across the northernmost parts of mainland Scotland. They form one of the largest and most intact areas of blanket bog in the world.

The peatlands include an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Caithness & Sutherland Peatlands are located across the northernmost parts of mainland Scotland. They form one of the largest and most intact areas of blanket bog in the world. The peatlands include an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Sediment trapping, Recharge and discharge of groundwater, Flood water storage / desynchronisation of flood peaks

19. Wetland types:

Inland wetland

Code	Name	% Area
U	Peatlands (including peat bogs swamps, fens)	94.9
Other	Other	2.8
O	Freshwater lakes: permanent	2.2
M	Rivers / streams / creeks: permanent	0.1

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The primary habitat of the Caithness and Sutherland Peatlands is active blanket bog. The dominant plant communities within this habitat vary from the wetter west to the drier east but all are dominated by dwarf shrubs, sedges and *Sphagnum* mosses. Among the dwarf shrubs, heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix* are common and widespread. In the west *Scirpus cespitosus-Eriophorum vaginatum* blanket mire (M17) and the closely associated *Scirpus cespitosus* wet heath (M15) are predominant. Particularly associated with the wet heath are bog myrtle *Myrica gale* and purple moor-grass *Molinia caerulea*. To the east *Erica tetralix-Sphagnum papillosum* (M18) and *Calluna vulgaris-Eriophorum vaginatum* (M19) blanket mires become predominant. In general the cover of *Calluna* tends to be greater in the drier eastern parts of the site. Throughout *Sphagnum* species are a characteristic feature of the vegetation and the main contributor to continuing peat accumulation. The most widespread and abundant species are *Sphagnum papillosum, S. tenellum* and *S. capillifolium*. Intimately associated with the blanket bog are dystrophic lochs (dubh lochans) which range in size from lochs of a few hectares to tiny bog pools.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Assemblage

This site is internationally important because it contains the following Habitats Directive Annex I features:

Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* (H3130), Natural dystrophic lakes and ponds (H3160), Northern Atlantic wet heaths with *Erica tetralix* (H4010), Blanket bogs (H7130), Transition mires and quaking bogs (H7140), Depressions on peat substrates of the *Rhynchosporion* (H7150).

Nationally important species occurring on the site.

Higher Plants.

Arabis petraea, Arctostaphylos alpinus, Betula nana, Deschampsia setacea, Hammarbya paludosa, Lycopodiella inundata, Lycopodium annotinum, Vaccinium microcarpum.

Nationally important species occurring on the site.

Lower Plants.

Dicranum bergeri, Sphagnum lindbergii, Sphagnum majus.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Red-throated diver , *Gavia stellata*, NW Europe	89 pairs, representing an average of 9.5% of the GB population (Count, as at mid 1990s)
Black-throated diver , *Gavia arctica arctica*, N Europe & W Siberia	25 pairs, representing an average of 16.1% of the GB population (1995-2004)
Eurasian wigeon , *Anas penelope*, NW Europe	43 pairs, representing an average of 14.3% of the GB population (Count, as at mid 1990s)
Eurasian teal , *Anas crecca*, NW Europe	106 pairs, representing an average of 7% of the GB population (Count, as at mid 1990s)
Black (common) scoter , *Melanitta nigra nigra*, W Siberia/W & N Europe/NW Africa)	27 pairs, representing an average of 28.4% of the GB population (Count, as at mid 1990s)
Hen harrier, *Circus cyaneus*, Europe	14 pairs, representing an average of 2.8% of the GB population (Count, as at mid 1990s)
Golden eagle , *Aquila chrysaetos*, Europe	5 pairs, representing an average of 1.2% of the GB population (Count, as at 1992)
Merlin , *Falco columbarius*, Europe	54 pairs, representing an average of 4.1% of the GB population (Count, as at mid 1990s)
European golden plover , *Pluvialis apricaria apricaria*, Britain/Ireland/Denmark/Germany	1064 pairs, representing an average of 4.7% of the GB population (Count, as at mid 1990s)
Eurasian curlew , *Numenius arquata arquata*, Europe -breeding	517 pairs, representing an average of 1.5% of the GB population (Count, as at mid 1990s)
Common greenshank , *Tringa nebularia*, Europe/W Africa	256 pairs, representing an average of 23.7% of the GB population (Count, as at mid 1990s)
Wood sandpiper , *Tringa glareola*, Europe	<5 pairs, representing an average of 100% of the GB population (Count, as at mid 1990s)

Arctic skua , *Stercorarius parasiticus*, NE Atlantic	39 apparently occupied territories, representing an average of 1.8% of the GB population (Seabird 2000 Census)
Short-eared owl , *Asio flammeus*, Europe	30 pairs, representing an average of 3% of the GB population (Count, as at mid 1990s)

Species Information

Nationally important species occurring on the site.

Mammals.

Lutra lutra (Habitats Directive Annex I feature (S1355)).

Invertebrates.

Oreodytes alpinus, Aeshna caerulea.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Archaeological/historical site
Environmental education/ interpretation
Forestry production
Livestock grazing
Scientific research
Sport fishing
Sport hunting
Tourism

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	
National/Crown Estate	+	
Private	+	

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism	+	
Commercial forestry		+
Cutting of vegetation (small-scale/subsistence)	+	
Fishing: recreational/sport	+	
Permanent arable agriculture		+
Rough or shifting grazing	+	
Hunting: recreational/sport	+	
Domestic water supply	+	

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	

Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:
The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Current Research/Surveys
Black-throated diver monitoring (RSPB): Ongoing monitoring, approximately 40 sites in the Caithness and Sutherland Peatlands SPA are monitored each year.
Moorland Bird Survey (RSPB): Ongoing monitoring 19 (2.5 km x 2.5 km) plots surveyed in 1988, 1991, 1995 & 2000.
Forsinard Reserve (RSPB): Key species (black-throated diver, common scoter and raptor species) monitored over entire reserve area each year. All bird species (waterfowl, raptors etc.) monitored in two fixed plots each year. Use of in-bye fields by golden plover monitored each year. All monitoring on reserve is from 1995.
Greenhouse gas emissions: University research projects hosted.

Research/surveys undertaken and completed
Upland Bird Survey (NCC) 1979-1986: Sample areas surveyed throughout peatlands in Caithness and Sutherland.
Peatland Survey of Northern Scotland (NCC) 1980-86: Classification and evaluation of vegetation types present.
Vegetation: Most of the component SSSIs have been surveyed to NVC standard.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The RSPB Forsinard reserve runs regular guided walks onto less sensitive parts of the peatlands.
The RSPB Forsinard reserve has a visitor centre (open April to October) and a waymarked trail (open all year).

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities.
Deer-stalking: Traditional deer-stalking (for stags, with paying guests) takes place over much of the site, generally from mid-August to mid-October.

Fishing: Traditional fly-fishing for trout is popular on many of the numerous lochs within the peatlands. Angling is generally by permit only and boats can be hired on some of the larger lochs. Disturbance caused by fishing may affect the breeding success of waterfowl in some places (see vulnerability statement).

Facilities provided.
No specific facilities other than tourist accommodation.

Seasonality.

All year.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Scottish Executive, Environment and Rural Affairs Department

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Scottish Natural Heritage, 2 Anderson Place, Edinburgh, EH6 5NP

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Anon. (n.d. [~1998]) *The Peatlands Trail. A visitor guide to the peatlands of Caithness and Sutherland*. Royal Society for the Protection of Birds?

Avery, MI & Haines Young, RH (1990) Population estimates for the dunlin *Calidris alpina* derived from remotely sensed satellite imagery of the Flow Country of northern Scotland. *Nature*, **344**, 860-862

Bates, MA, Shepherd, KB, Whitfield, P & Arnott, DA (1994b) A breeding wader and upland bird survey of selected sites in Caithness & Sutherland. *Scottish Natural Heritage Commissioned Research Report*, No. ***

Batten, LA, Bibby, CJ, Clement, P, Elliot, GD & Porter, RF (1990) *Red Data Birds in Britain. Action for rare, threatened and important species*. Poyser, London, for Nature Conservancy Council and Royal Society for the Protection of Birds

Campbell, LH & Talbot, TR (1987) The breeding status of black-throated diver (*Gavia arctica*) in Scotland. *British Birds*, **80**(1), 1-8

Charman, DJ (1990) *Origin and development of the Flow Country blanket mire, northern Scotland, with particular reference to patterned fens*. Unpublished PhD thesis, University of Southampton

Gibbons, DW, Bainbridge, IP, Mudge, GP, Tharme, AP & Ellis, PM (1997) The status and distribution of the red-throated diver *Gavia stellata* in Britain in 1994. *Bird Study* **44**, 194-205

Lavers, CP, Haines-Young, RH & Avery, MI (1996) The habitat associations of dunlin (*Calidris alpina*) in the Flow Country of northern Scotland and an improved model for predicting habitat quality. *Journal of Applied Ecology*, **33**, 279-290

Lindsay, RA, Charman, DJ, Everingham, F, O'Reilly, RM, Palmer, MA, Rowell TA & Stroud, DA (1988) *The Flow Country. The peatlands of Caithness and Sutherland*. Nature Conservancy Council, Peterborough

McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. www.jncc.gov.uk/SACselection

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Pritchard, DE, Housden, SD, Mudge, GP, Galbraith, CA & Pienkowski, MW (eds.) (1992) *Important Bird Areas in the United Kingdom including the Channel Islands and the Isle of Man*. Royal Society for the Protection of Birds, Sandy

Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Stroud, DA, Reed, TM, Pienkowski, MW & Lindsay, RA (1987) *Birds, bogs and forestry. The peatlands of Caithness and Sutherland*. Nature Conservancy Council, Peterborough

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