VOLUME 5: CHAPTER 5: ECOLOGY – ALTERNATIVE ALIGNMENT

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5. ECOLOGY – ALTERNATIVE ALIGNMENT

5.1 Executive Summary

5.1.1 This Chapter considers the potential impacts of the Proposed Development with the Alternative Alignment (hereafter referred to as the 'Alternative Alignment') as described in **Volume 5: Chapter 3: The Proposed Development – Alternative Alignment**, on non-avian ecology including designated sites, terrestrial and aquatic habitats, and protected species, and assesses the significance of likely predicted residual effects. The assessment is based on best practice guidance including the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland[1]. The Proposed Development with the Proposed Alignment (hereafter referred to as 'the Proposed Alignment') is assessed in **Volume 1: Chapter 7: Ecology**. A separate chapter has been prepared to assess the potential impacts of the Alternative Alignment on ornithology features (**Volume 5: Chapter 5: Ornithology – Alternative Alignment**).

5.1.2 The Alternative Alignment takes a slightly more northerly route than that of the Proposed Alignment to avoid the proposed Melvich Wind Energy Hub. Towers 19 – 31 are on the same alignment as the Proposed Alignment, and then from the point at which the Proposed Alignment heads in a broad easterly direction, the Alternative Alignment heads further north and east towards the A836 (Towers A1 – A15). The Alternative Alignment then heads southwards (Towers A16 – A27), returning to join the Proposed Alignment at Tower 47.

5.1.3 Given the nature of the Alternative Alignment, as for the Proposed Alignment, most of the impacts on terrestrial ecology features will arise from construction and will be temporary. Direct permanent habitat losses are restricted to the footprints of the towers, cable sealing end (CSE) compound and new permanent access tracks (that will be used for construction and ongoing maintenance during operation).

5.1.4 The Alternative Alignment comprises approximately 13.5 km of 132 kV overhead line (OHL) between Strathy North 'T' (near Dallangwell) to a CSE compound prior to entering the Connagill 275/132 kV substation via a short section of underground cable (UGC). As part of the Proposed Development (with either the Proposed Alignment or Alternative Alignment), an existing section of trident 'H' wood pole OHL infrastructure, on a similar alignment, will be removed.

5.1.5 As was the case for the Proposed Alignment, the Alternative Alignment is in close proximity to the Caithness and Sutherland Peatlands Special Area of Conservation (SAC) and Ramsar site, and its component West Halladale Site of Special Scientific Interest (SSSI). These designations are made up of internationally important habitats (including blanket bogs, oligotrophic and dystrophic lochs, mires, heath and peat bogs) supporting rare plants, otter and freshwater pearl mussel populations. As was also the case for the Proposed Alignment, the majority of the Alternative Alignment is outside the boundary of the SAC/ Ramsar/ SSSI, having been designed to avoid direct impacts to the most sensitive protected habitats. The same tower at the western end of the route (Tower 21) and a short section of new access track, which are common to both the Proposed Alignment and Alternative Alignment, are just within the designated site. However, the Alternative Alignment footprint impacts approximately 0.164 ha within the boundary of the designated sites, which is a tiny proportion (c. <0.0001%) of the Caithness and Sutherland Peatlands SAC / Ramsar (and its component West Halladale SSSI) alongside an existing access track at the very edge of the designations and the effect has been assessed as **Minor adverse (not significant)**. An Annex to the Shadow Habitats Regulations Appraisal (SHRA) for the Proposed Alignment has been prepared for the Alternative Alignment (see **Volume 4: Appendix V1-7.6**), to meet the requirements of the Conservation of Habitats and Species Regulations 2017. Likely significant effects could not be ruled out at the screening stage, although an appropriate assessment concluded that the Alternative Alignment would have no adverse effects on the integrity of the SAC / Ramsar site (either alone or in combination with any other plans or projects).

[1] CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine. Version 1.3 Updated September 2024. CIEEM, Winchester.

5.1.6 The Alternative Alignment would directly impact habitats within the Flow Country World Heritage Site (WHS), which was formally inscribed by UNESCO in July 2024 for its internationally important blanket bog, oligotrophic and dystrophic loch, mire, heath and peat bog habitats. Its boundary is largely contiguous, although not identical, with the Caithness and Sutherland Peatlands SAC / Ramsar designated site boundary (the WHS boundary extends further north beyond the SAC / Ramsar boundary towards Strathy and Melvich). The Alternative Alignment affects only a very small proportion of the WHS (c. 0.016%), and the effect is assessed as **Minor adverse (not significant)**. An Annex to the World Heritage Site Assessment in **Volume 4: Appendix V1-7.7** (has been prepared for the Alternative Alignment and concluded that the Alternative Alignment would result in no significant adverse effects on the attributes of the WHS.

5.1.7 The Caithness and Sutherland Peatlands Special Protection Area (SPA) is also overlapping with the Caithness and Sutherland Peatlands SAC / Ramsar and West Halladale SSSI designations, the potential impacts on which are assessed in **Volume 5: Chapter 6: Ornithology – Alternative Alignment** of this EIA Report.

5.1.8 The Alternative Alignment passes over upland habitats typical of the landscape, and similar to those passed over by the Proposed Alignment, which are dominated by mire and wet heath communities that are Annex I habitats[2] (for which the SAC / Ramsar has been designated), and some of which are Ground Water Dependent Terrestrial Ecosystems (GWDTE) that are reliant on ground water influences. However, due to the nature of the Proposed Alignment and Alternative Alignment, permanent habitat losses outside the boundary of the SAC / Ramsar designated site are minor and estimated at 10.64 ha in total. As part of the design process towers have been microsited to avoid / minimise impacts on GWDTEs that would be most vulnerable to indirect permanent habitat changes. Effects on non-designated habitats are assessed as **Minor adverse (not significant)**.

5.1.9 Signs of protected species including badger (*Meles meles*), otter (*Lutra lutra*), water vole (*Arvicola amphibious*), pine marten (*Martes martes*) were identified within the Study Area, although both the Proposed Alignment and Alternative Alignment have been assessed to result in no adverse effects upon these species. No reptiles were recorded in the Study Area; however, the habitats are suitable for common lizard (*Zootoca vivipara*) and adder (*Vipera berus*), both of which have been recorded in the wider local area, and these species may therefore be present. Embedded mitigation relevant to identified ecological receptors include the development and implementation of a site-specific Construction Environmental Management Plan (CEMP), which will be used in conjunction with the Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs). Furthermore, a suitably experienced Ecological Clerk of Works (ECoW) will be appointed to undertake pre-construction surveys for protected species and oversee construction works to minimise any potential effects on nature conservation interests.

5.1.10 No significant cumulative effects with any of the other grid connections that form part of the Connagill Cluster Grid Connections and their associated wind farms (consented and proposed) have been identified. A landscape scale Habitat Management Plan (HMP), combining the HMPs of the Connagill Cluster Grid Connection projects, is being developed in consultation with NatureScot to address the cumulative habitat losses of peatland, including within the boundaries of the Flow Country WHS and Caithness and Sutherland Peatlands SAC / Ramsar, and this HMP is applicable to both the Proposed Alignment and Alternative Alignment (see **Volume 4: Appendix V1-7.8**).

5.2 Introduction

5.2.1 This Chapter considers the potential impacts, including cumulative, of the Alternative Alignment described within **Volume 5: Chapter 3: The Proposed Development - Alternative Alignment**, on terrestrial (non-avian)

[2] Habitats that are listed in Annex I of the EU Habitats Directive (Directive 92/43/EC) that are under threat in their natural range, have a small natural range or present outstanding examples of typical characteristics, that member states must maintain, protect or restore to favourable conservation status within the EU. Within the UK these habitats are protected through the designation of SACs.

ecology including designated sites, terrestrial and aquatic habitats and protected species during construction and operation, and assesses the significance of likely predicted residual effects. Where relevant, this Chapter refers to **Volume 1: Chapter 7: Ecology** and associated figures and appendices where the text applies to both the Proposed Alignment and Alternative Alignment. The assessment is based on best practice guidance including the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2024)[1]. This Chapter is supported by a number of Figures and Technical Appendices, as listed within the table of contents.

5.2.2 The scope of the ecological assessment and baseline conditions were determined through a combination of desk study, field surveys, and consultation with relevant organisations. This process established ecological features that could potentially be impacted by the Proposed Alignment and Alternative Alignment.

5.2.3 This Chapter should be read in conjunction with, and is supported by, the following other chapters which are signposted as necessary throughout:

- **Volume 5: Chapter 6: Ornithology – Alternative Alignment** – which identifies and assesses potential effects on birds, including the ornithology features of the Caithness and Sutherland Peatlands SPA, Ramsar and West Halladale SSSI; and,
- **Volume 5: Chapter 7: Soils, Geology and Water – Alternative Alignment** – which identifies and assesses effects on hydrology, peat and soils, including hydrological effects on GWDTEs identified in the baseline section of this Chapter.

5.2.4 The assessment is based on the Alternative Alignment described in detail in **Volume 5: Chapter 3: The Proposed Development - Alternative Alignment** which comprises a CSE compound, approximately 13.5 km of 132 kV OHL supported by steel lattice towers, 10.9 km of existing access track to be upgraded, 7.9 km of new permanent access track and 6 km of new temporary access track.

Statement of Qualifications

5.2.5 This ecological assessment has been carried out by RPS using guidance from NatureScot (formerly Scottish Natural Heritage, SNH, 2018)[3] and the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2024)1. All staff contributing to this Chapter have professional experience in ecological impact assessment and ecological survey. A table presenting relevant qualifications and experience of key staff involved in the preparation of this Chapter is included in **Volume 4: Appendix V1-5.1: EIA Team Details**.

5.3 Scope of Assessment

Defining the Study Area

5.3.1 A key consideration in assessing the effects of any development on flora and fauna is to define the areas of habitat and the species that need to be considered. This requires the identification of a potential Zone of Influence (ZoI), which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from a site. The desk study area is shown in **Volume 2**: **Figure V5-5.1**.

5.3.2 In identifying these receptors, it is important to recognise that a development can affect flora and fauna directly (e.g. the land-take required) and indirectly, by affecting land beyond the development site (e.g. through noise generation or hydrological impacts). The approach that has been undertaken for this assessment is to identify 'sensitive ecological receptors' (species and habitats that are both valued and could be affected by the Alternative Alignment) and separately, to consider legally protected species.

[3] Scottish Natural Heritage and Historic Environment Scotland (2018). Environmental Impact Assessment Handbook - Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental impact Assessment process in Scotland.

Study Area

5.3.3 The Study Area encompasses the area over which all desk-based and field data were gathered to inform the assessment presented in this Chapter. The Field Study Area comprises habitats directly impacted by the Alternative Alignment, and incorporates temporary and permanent infrastructure, including Limits of Deviation (LoD) for the OHL, CSE compound, UGCs and access tracks and an appropriate buffer (see **Volume 2: Figure V5-5.1**). The Field Study Area therefore included land within 100 m of the alternative OHL and UGC alignment (50 m either side) and a minimum of 50 m from proposed new access tracks (25 m either side). The Desk Study Area was extended some kilometres beyond the LoD boundary to review information from all nearby wind farms and associated grid connections that are part of the Connagill Cluster Grid Connections.

Issues Scoped into Assessment

5.3.4 The issues scoped into the assessment are the same as detailed within **Section 7.3** of **Volume 1: Chapter 7: Ecology** with the exception of the Alternative Alignment and associated study area being considered rather than the Proposed Alignment.

Issues Scoped out Of Assessment

5.3.5 The issues scoped out of the assessment are the same as detailed within **Section 7.3** of **Volume 1: Chapter 7: Ecology** with the exception of the Alternative Alignment and associated study area being considered rather than the Proposed Alignment.

5.4 Consultation and Scoping

5.4.1 Full details of the consultation process and responses are included in **Volume 1: Chapter 4: Scope and Consultation** and associated appendices.

5.4.2 Further details on consultation and scoping responses for terrestrial ecology topics, which are common to both the Proposed Alignment and Alternative Alignment of the Proposed Development are summarised in **Table V1-7.1** of **Volume 1: Chapter 7: Ecology**.

5.5 Legislation, Policy and Guidance

5.5.1 This assessment has been undertaken with reference to relevant national and local legislation, policy and guidance, which are set out in **Section 7.5** of **Volume 1: Chapter 7: Ecology** and **Volume 4: Appendix V1-7.1**.

5.6 Methodology

Desk Study

5.6.1 The desk study methodology is set out in **Section 7.6** of **Volume 1: Chapter 7: Ecology**.

Field Survey

5.6.2 The field study methodology is set out in **Section 7.6** of **Volume 1: Chapter 7: Ecology.**

5.6.3 A summary of the field surveys that have been used to inform this ecological impact assessment (EcIA) is provided in **Table V1-7.2** of **Volume 1: Chapter 7: Ecology**, with further details in **Volume 4: Appendix V1-7.3 (Habitats)**, **Appendix V1-7.4 (Protected Species)** and **Appendix V1-7.5 (Bats)**.

Assessment of Effects

5.6.4 This assessment has been undertaken in accordance with the current EcIA guidance detailed by the CIEEM (CIEEM, 2024)[1]. Further details are provided in **Section 7.6** of **Volume 1: Chapter 7: Ecology** and **Volume 4: Appendix V1-7.2: Ecological Impact Assessment Methodology**.

5.7 Baseline Conditions

Designated Sites

5.7.1 Statutory designated sites within 10 km (for SAC and Ramsar sites) and 2 km (for SSSI and NNR) of the Proposed Alignment are set out in **Table V1-7.3** in **Section 7.7** of **Volume 1: Chapter 7: Ecology.** All of the designations listed are similarly relevant to the Alternative Alignment, with the OHL route mostly avoiding habitats within the Caithness and Sutherland Peatlands SAC / Ramsar and West Halladale SSSI, and only crossing a small section of designated habitats at its western end, which is common to both the Proposed and Alternative Alignments. One tower (Tower 21) and its access track are within the boundary of the SAC / Ramsar and SSSI.

5.7.2 As is the case for the Proposed Alignment, approximately half of the Alternative Alignment OHL also crosses the Flow Country WHS (between Towers 29 – 31; 31 – A1; A1 – A27 and A27 – 49).

Habitats

5.7.3 Detailed descriptions of the habitats present within the Study Area, which is common to both the Proposed Alignment and Alternative Alignment, along with an assessment of their condition and the aggregate areas covered are provided in **Section 7.7** of **Volume 1: Chapter 7: Ecology** and **Volume 4: Appendix V1-7.3.**

5.7.4 Although the Alternative Alignment is routed further north than the Proposed Alignment, the habitats within the Proposed Development site are largely contiguous to those assessed for the Proposed Alignment, comprising a mosaic of blanket bog and wet heath habitats between the River Strathy in the west and the Halladale River in the east (see **Volume 2: Figure V5-5.7**).

Protected Species

5.7.5 Details on protected species within the Study Area, including the desk study records provided by the Highland Biological Recording Group (HBRG), are provided in **Section 7.7** and **Table V1-7.4** of **Volume 1: Chapter 7: Ecology** and **Volume 4: Appendix V1-7.4: Protected Species Technical Report** (confidential) and **Appendix V1-7.5: Bat Technical Report**. Within the Alternative Alignment, as for the Proposed Alignment, protected species present (or potentially present) within the Study Area include roosting common pipistrelle bats at Bowside Lodge, otter, water vole, pine marten, wildcat, common lizard and adder. These species were assessed as Important Ecological Features (IEFs) and scoped into the ecological impact assessment.

5.8 Future Baseline

5.8.1 Details are provided in **Section 7.8, Volume 1: Chapter 7: Ecology**

5.9 Embedded Mitigation / Mitigation by Design

5.9.1 Details are provided in **Section 7.9, Volume 1: Chapter 7: Ecology**

5.10 Assessment of Likely Significant Effects

5.10.1 The same IEFs have been scoped into the assessment for the Alternative Alignment as for the Proposed Alignment, and the justification is presented in **Table V1-7.5** of **Section 7.10** of **Volume 1: Chapter 7: Ecology**

5.10.2 The potential effects on ecological receptors which may arise from the Alternative Alignment relate principally to the construction phase, which includes the construction of OHL towers, with their corresponding working areas and access tracks (temporary and permanent), a new CSE compound south-west of Connagill substation, dismantling of the redundant parts of the existing Strathy North 132 kV trident 'H' wood pole OHL and temporary diversion works.

5.10.3 Site access for construction for most of the OHL towers would mostly utilise the existing access tracks off the A836 and will be upgraded to be suitable for construction vehicles. Where access tracks (including existing sections of access track to be upgraded, and new sections of temporary and permanent access tracks) cross watercourses, temporary measures to protect watercourses (e.g. scaffolding and temporary bridges) would be installed. Sections of permanent and temporary track (floating stone road or tracking panels in more sensitive areas e.g. deeper areas of peat) would be constructed where possible to provide access to the tower / temporary pole construction areas. However, the assessment has assumed the worst-case scenario that cut methods would be used for all track construction. A small amount of woodland loss would be required within the unnamed plantation close to Kirkton, although the OHL route has been designed to avoid the plantation as far as possible and just clips the northern corner. There are further small losses of woodland in the eastern extent of the OHL route (see **Volume 5: Chapter 10** of this EIA Report).

5.10.4 Several towers are in close proximity to watercourses; Tower 19 is on the banks of the River Strathy and there are a number of watercourses crossed by the OHL route and the short section of UGC, although there would be no direct impacts on watercourses as a result of the steel lattice tower construction. The named watercourses that are crossed (heading west to east along the OHL route) are the same as those crossed by the Proposed Alignment, but further downstream by virtue of the more northerly OHL route alignment. In addition to those crossed by the Proposed Alignment (Alltan nam Muc, Allt an Reidhe Ruaidh, Allt na Ceardaich, Baligill Burn, Allt na Cleite, Achridigill Burn, Allt na h-Eaglaise and the Halladale River, along with several small unnamed tributaries of the Halladale River), the Alternative Alignment also crosses the Allt na Domhaich near to Portskerra. However, the locations of the new steel lattice towers have been designed to be offset from watercourses by a minimum of 20 m, with no construction activities undertaken within 10 m of the watercourse, although the OHL conductors would be strung across the various watercourses.

5.10.5 The predicted temporary and permanent land take for each element of the Alternative Alignment is summarised in **Table V5-5.1**.

Table V5-5.1: Predicted Temporary and Permanent Land Take (Alternative Alignment)

Proposed Development Element	Quantum	Construction (Temporary Land Take) (ha)	Operation (Permanent Land Take) (ha)
Access track (temporary)	6.0 km	3.0	None – all temporary land take would be reinstated post-construction
Access track (permanent)	7.9 km	5.14	3.95
Temporary construction working area at towers and temporary poles	37 steel lattice suspension towers 20 steel lattice angle/ tension towers 1 steel lattice terminal tower 30 (temporary) trident 'H' wood poles	23.29	None – all temporary land take would be reinstated post-construction

Proposed Development Element	Quantum	Construction (Temporary Land Take) (ha)	Operation (Permanent Land Take) (ha)
Cable Sealing End (CSE) Compound (plus earthworks)	1	0.3	0.3
Permanent land take for 132 kV steel lattice towers (excluding terminal tower which is within CSE compound)	58	N/A	0.74 (relates just to tower feet)
Underground cable (permanent)	780 m	3.12	None – all temporary land take would be reinstated post-construction
Underground cable (temporary)	485 m	1.94	None – all temporary land take would be reinstated post-construction

Construction Effects

Caithness and Sutherland Peatlands SAC/ Ramsar

Loss of and / or Damage to Designated Habitats

5.10.6 The impact to the Caithness and Sutherland Peatlands SAC / Ramsar is the same magnitude as that assessed for the Proposed Alignment, because Tower 21 and its access track, which are within the boundary of the designated site, are common to both alignments. Habitat losses are presented in **Table V1-7.7**: in **Section 7.10** of **Volume 1: Chapter 7: Ecology.** The unmitigated effect of temporary and permanent habitat losses within the Caithness and Sutherland Peatlands SAC / Ramsar is assessed as **Minor adverse (Not significant)**.

5.10.7 An Annex to the SHRA for the Proposed Alignment has been prepared for the Alternative Alignment and is presented in **Volume 4: Appendix V1-7.6**.

Loss of and / or Damage to Habitats Supporting Otter

5.10.8 Potential impacts to otter habitats are the same as assessed for the Proposed Alignment, and are detailed in **Section 7.10** of **Volume 1: Chapter 7: Ecology**, and it is concluded that effects on otter habitats are **Negligible (Not significant)**.

Disturbance to Otter

5.10.9 Potential impacts to otter habitats are the same as assessed for the Proposed Alignment, and are detailed in **Section 7.10** of **Volume 1: Chapter 7: Ecology**, and it is concluded that effects on otter habitats are **Negligible (Not significant)**.

West Halladale SSSI

Loss of and / or Damage to Notified Habitats

5.10.10 The impact to the West Halladale SSSI is the same magnitude as that assessed for the Proposed Alignment, because Tower 21 and its access track, which are within the boundary of the designated site, are common to

both alignment options. Habitat losses are presented in **Table V1-7.7** in **Section 7.10** of **Volume 1: Chapter 7: Ecology.** The unmitigated effect of temporary and permanent habitat losses within the West Halladale SSSI is assessed as **Negligible (Not significant)**.

Flow Country WHS

Loss of and / or Damage to Attributes

5.10.11 The assessment presented in respect of the Caithness and Sutherland Peatlands SAC / Ramsar is also applicable to the assessment of potential impacts on the habitat assemblage that is an attribute of the Flow Country WHS, because the boundary overlaps with the majority of the SAC / Ramsar although extends further north than that of the SAC / Ramsar and therefore overlaps with a greater proportion of the OHL route.

5.10.12 The Alternative Alignment is slightly longer, and a slightly higher number of steel lattice towers are within the WHS boundary (29 for the Alternative Alignment compared with 20 for the Proposed Alignment). The proportion of WHS habitat impacted by the Alternative Alignment is therefore 32.22 ha (this includes habitat both within and outwith the SAC / Ramsar, because the WHS boundary is larger), which is approximately 0.016 % of the total designated area of approximately 200,000 ha. However, the magnitude of impact is broadly the same as assessed for the Proposed Alignment, and therefore the unmitigated effect of temporary and permanent habitat losses within the Flow Country WHS is assessed as **Minor adverse (Not significant)**.

5.10.13 **Table V5-5.2** details the quantities of permanent and temporary habitat losses within the boundary of the WHS to the Alternative Alignment.

Table V5-5.2: Construction Habitat Loss and Damage Calculations within Flow Country WHS (By Habitat Type)

Habitat		Corresponding NVC Habitat Type	Areas (ha)			
			Direct Permanent Loss	Indirect Permanent Loss due to Habitat Change	Temporary Loss	Total (by habitat type)
Qualifying Annex I Habitats						
Bog		M15, M15b, M15c, M17, M17a, M17b, M18, M19, M20, M20b, M25, M25a, M25b	3.65	18.43	7.99	30.07
Dwarf Shrub Heath		H10, H12	0.27	0.00	0.74	1.01
Non-qualifying habitats						
Fen, Marsh and Swamp		M1, M4, M6, M6c, M23a, M23b	0.04	0.57	0.22	0.83

Habitat		Corresponding NVC Habitat Type	Areas (ha)			
			Direct Permanent Loss	Indirect Permanent Loss due to Habitat Change	Temporary Loss	Total (by habitat type)
Acid Grassland		U20, U20a, U20b, U2a, U4, U4b, OV23a	0.10	0.00	0.20	0.30
Dense Scrub		W1, W23, W23a	0.01	0.00	0.00	0.01
Total (all habitats)			**4.07**	**19.00**	**9.15**	**32.22**

5.10.14 An Annex to the WHS assessment for the Proposed Alignment has also been prepared for the Alternative Alignment and is presented in **Volume 4: Appendix V1-7.7.**

Habitats (Non-designated)

Loss of and / or Damage to Habitats

5.10.15 The Alternative Alignment identifies a total overall effect to non-designated upland habitats of 18.49 ha (compared to 13.49 ha for the Proposed Alignment), approximately 7.9 ha of which is temporary and reversible. As for the Proposed Alignment, the Annex I habitats impacted are blanket bog and dwarf shrub heath, which have European protection pertaining to them but are common and widespread in a regional context. Consequently, and as assessed for the Proposed Alignment, their conservation value is assessed as Regional. The other habitats affected, as assessed for the Proposed Alignment, are not particularly rare or notable but contribute to the overall Regional level importance of the peatland habitat mosaic within the area that falls outwith the SAC, Ramsar, WHS and SSSI designation.

5.10.16 The impact to non-designated habitats is therefore same magnitude as that assessed for the Proposed Alignment, although the habitat losses are slightly different for the Alternative Alignment. Calculations of habitat losses for the Alternative Alignment are presented in **Table V5-5.3.** As the differences are minor (c. 5 ha more habitat affected by the Proposed Alignment), the assessment undertaken for the Proposed Alignment is equally applicable for the Alternative Alignment and unmitigated effects to non-designated peatland habitats resulting from the construction are assessed as **Minor adverse (Not significant)**.

Table V5-5.3: Construction Habitat Loss and Damage Calculations for Non-designated Habitats (by Habitat Type)

Habitat	Corresponding NVC Habitat Type	Areas (ha)			
		Direct Permanent Loss	Indirect Permanent Loss due to Habitat Change	Temporary Loss	Total (by habitat type)
Annex I Habitats					
Bog	M15, M15b, M15c, M17,	0.93	6.58	3.29	10.80

Habitat	Corresponding NVC Habitat Type	Areas (ha)			
		Direct Permanent Loss	Indirect Permanent Loss due to Habitat Change	Temporary Loss	Total (by habitat type)
	M17a, M17b, M18, M19, M20, M20b, M25, M25a, M25b				
Dwarf Shrub Heath	H10, H12	0.06	0.00	0.35	0.41
Other Habitats					
Fen, Marsh and Swamp	M1, M4, M6, M6c, M23a, M23b	0.22	1.06	0.41	1.70
Acid Grassland	U20, U20a, U20b, U2a, U4, U4b, OV23a	0.84	0.00	1.71	2.54
Neutral Grassland	MG10, MG9, MG5, MG5c, MG6b, OV23a	0.17	0.00	0.31	0.48
Dense Scrub	W1, W23, W23a	0.11	0.00	0.00	0.11
Coniferous Woodland	N/A	0.03	0.00	0.00	0.03
Modified Grasslands	N/A	0.63	0.00	1.80	2.43
Total (all habitats)		**3.00**	**7.64**	**7.86**	**18.49**

Bats

5.10.17 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. Effects on bats are assessed as **Negligible (Not significant)**.

Water vole

5.10.18 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. The effects of habitat loss and damage on water vole are assessed as **Minor Adverse (Not significant**), and the effect of noise/ visual disturbance is assessed as **Negligible (Not significant)**.

Reptiles

5.10.19 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. Effects on reptiles are assessed as **Minor adverse (Not significant)**.

Pine Marten

5.10.20 Details are provided in **Section 7.10, Volume 1: Chapter 7: Ecology**. Effects on pine marten are assessed as **Negligible (Not significant)**.

Wildcat

5.10.21 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. Effects on wildcat are assessed as **Negligible (Not significant)**.

Operational Effects

Habitats

5.10.22 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. Effects on habitats during operation are assessed as **Minor adverse (Not significant)**.

Protected Species

5.10.23 Details are provided in **Section 7.10** of **Volume 1: Chapter 7: Ecology**. Effects on protected species during operation are assessed as **Negligible (Not significant)**.

5.11 Mitigation

5.11.1 Details are provided in **Section 7.11** of **Volume 1: Chapter 7: Ecology**.

5.12 Cumulative Effects

5.12.1 Details on the projects scoped into the cumulative effects assessment for the Proposed Alignment, which are equally applicable to the Alternative Alignment are provided in **Section 7.12** and **Table V1-7.10 of Volume 1: Chapter 7: Ecology**.

5.12.2 The only difference between the Proposed Alignment and the Alternative Alignment in respect of potential cumulative effects is the habitat impact within the Flow Country WHS (32.22 ha representing 0.016 % of the WHS for the Alternative Alignment, compared to 28.05 ha representing 0.015 % of the WHS for the Proposed Alignment); this is because the Alternative Alignment is longer and therefore requires more steel lattice towers and a temporary wood pole OHL diversion to be constructed within the WHS boundary, although the access tracks are shorter because the route is closer to the existing road / track network. A cumulative effects assessment has therefore been undertaken for the Alternative Alignment and is presented in **Table V5-5.4**. The very small change in habitat impacts for the Alternative Alignment compared to the Proposed Alignment does not meet the threshold for significant cumulative effects with any of the projects listed in **Table V1-7.10** of **Section 7.12** of **Volume 1: Chapter 7: Ecology,** because the difference in habitat impacts between the two options is considered negligible.

Table V5-5.4: Summary of Potential Cumulative Effects

Development Name	Potential Cumulative Effects with the Alternative Alignment		
	Caithness and Sutherland Peatlands SAC/ Ramsar and West Halladale SSSI	Flow Country WHS	Protected Species
Kirkton Energy Park (including Kirkton Substation)	There would be no direct habitat loss within the Caithness and Sutherland SAC / Ramsar, and therefore is no potential for cumulative effects with the Alternative Alignment. There would be no direct habitat loss within the West Halladale SSSI, and therefore is no potential for cumulative effects with the Alternative Alignment.	All turbines are within the WHS boundary, with a total permanent land take of 15.29 ha. When combined with the permanent and temporary habitat impacts resulting from the Alternative Alignment (32.22 ha), the cumulative total habitat impacts would be 47.51 ha, which represents approximately 0.02% of the total WHS area and is negligible when considered in the context of the wider site. Cumulative effects on the WHS are therefore assessed as **Negligible (not significant)**.	Pine marten, wildcat and badger were considered absent from affected habitats. The assessment concluded there would be no significant effects on otter and common pipistrelle bat, and therefore there is no potential for cumulative effects on these species with the Alternative Alignment.
Kirkton Energy Park Grid Connection	There is no potential for cumulative effects arising from this grid connection. The route of the grid connection falls outwith the designated sites of the surrounding area and the development is unlikely to affect qualifying interests of these sites.	**Table 4** of **Volume 4: Appendix V1-7.8** assesses the potential effects to habitats from the construction and operation of the Kirkton Energy Park Grid Connection as the design of this development is not complete. The assessment predicts that 0.327 ha of habitats may be affected by the grid connection. The proposed HMP seeks to compensate for the effects along with providing suitable enhancement. Consequently, it is considered that there would be no cumulative effects from the Kirkton Energy Park Grid Connection in combination with the Alternative Alignment.	The scheme may affect protected species, but as the Alternative Alignment would not significantly affect any protected species, the potential for cumulative effects is low.
Strathy South Wind Farm (and Strathy South Substation)	There would be no direct habitat loss within the Caithness and Sutherland SAC / Ramsar/ SSSI resulting from the turbine footprints.	There would be no direct habitat loss within the WHS resulting from the turbine footprints. There would be no direct permanent habitat loss within the WHS boundary. The access track route	The assessment concluded there would be no significant effects to protected species and therefore there is no potential for cumulative effects with the Alternative Alignment.

Development Name	Potential Cumulative Effects with the Alternative Alignment		
	Caithness and Sutherland Peatlands SAC/ Ramsar and West Halladale SSSI	**Flow Country WHS**	**Protected Species**
	The access track crosses the designated sites but is already in place (and would be upgraded); 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 combined with the permanent habitat losses resulting from the Alternative Alignment (0.132 ha), the cumulative total habitat loss would be 3.84 ha, which represents approximately 0.003% of the total designated area and is very small and localised when considered in the context of the wider site. Cumulative effects with the Alternative Alignment are therefore assessed as **Minor adverse (Not Significant).**	crosses the same habitats within the WHS as it does for the SAC/ Ramsar and SSSI because the boundaries overlap at this location. Such minor impacts in the context of the thousands of hectares of peatland within the WHS would reasonably continue to be below the threshold at which a significant effect would occur. Cumulative effects on the WHS are therefore assessed as **Negligible (not significant)**.	
Strathy South Wind Farm 'Southern Section' Grid Connection	The UGC would connect the consented Strathy South Wind Farm to a new CSE compound near Strathy Wood Wind Farm on-site substation. Although the UGC would directly impact land within the SAC / Ramsar and SSSI (approximately half of the route is within the designated site boundary), the alignment is included within the ground of the Strathy South Wind Farm upgraded access track which has been carefully chosen to avoid Annex I habitats. The UGC and upgraded access track route would potentially impact habitats 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. The	The UGC route impacts the same habitats within the WHS as it does for the SAC / Ramsar and SSSI because the boundaries overlap at this location. Such minor and temporary impacts in the context of the c.140,000 ha of peatland within the WHS would reasonably continue to be below the threshold at which a significant effect would occur. Cumulative effects on the WHS are therefore assessed as **Negligible (not significant)**.	No significant cumulative effects on protected species are predicted given the minor extent of the works, and that the impacts would occur alongside the existing track.

Development Name	Potential Cumulative Effects with the Alternative Alignment		
	Caithness and Sutherland Peatlands SAC/ Ramsar and West Halladale SSSI	Flow Country WHS	Protected Species
	impacts would also be temporary given the nature of the construction activities. Cumulative effects on designated habitats with the Alternative Alignment are therefore assessed as **Minor adverse (Not Significant).**		
Strathy Wood Wind Farm (and Strathy Wood Substation)	There would be no direct habitat loss within the Caithness and Sutherland SAC / Ramsar/ SSSI, and therefore there is no potential for cumulative effects with the Alternative Alignment.	There would be no direct habitat loss within the WHS, and therefore is no potential for cumulative effects with the Alternative Alignment.	The assessment concluded there would be no significant effects on protected species and therefore there is no potential for cumulative effects with the Alternative Alignment.
Strathy Wood Wind Farm Grid Connection	Direct habitat loss within the Caithness and Sutherland SAC / Ramsar / SSSI is calculated at 4.32 ha in total, and therefore the cumulative habitat losses with the Alternative Alignment are calculated at 4.36 ha. Cumulative habitat losses within the SAC / Ramsar / SSSI resulting from the construction and operation of projects within the Connagill Cluster would be addressed through a site-wide HMP and therefore it is reasonable to conclude that there would be no significant cumulative effects on the designated peatland habitats.	Direct habitat loss within the Flow Country WHS is calculated at 4.32 ha in total and therefore the cumulative habitat impacts (temporary and permanent) with the Alternative Alignment are calculated at 36.54 ha. It is reasonable to assume that the habitat enhancement measures proposed within the outline HMP for the Connagill Cluster Grid Connections would successfully mitigate impacts on the internationally important peatland habitats that are attributes of the WHS. No significant cumulative effects are therefore predicted with the Alternative Alignment.	The assessment concluded there would be no significant effects to protected species and therefore there is no potential for cumulative effects with the Alternative Alignment.
Strathy Switching Station	There would be no direct habitat loss within the Caithness and Sutherland SAC / Ramsar/ SSSI, and therefore there is no potential for cumulative effects with the Alternative Alignment.	There would be no direct habitat loss within the WHS, and therefore there is no potential for cumulative effects with the Alternative Alignment.	Given the minor footprint of the development, the potential for cumulative effects on protected species with the Alternative Alignment can be discounted.

5.13 Biodiversity Enhancement

5.13.1 Details are provided in **Section 7.13** of **Volume 1: Chapter 7: Ecology**.

5.14 Residual Effects

5.14.1 Details are provided in **Section 7.14** of **Volume 1: Chapter 7: Ecology**. The residual effects assessment for the Proposed Alignment is equally applicable to the Alternative Alignment, and no significant residual effects were identified.

5.15 Summary and Conclusions

5.15.1 As is the case for the Proposed Alignment, given the nature of the project, most of the impacts on terrestrial ecology features as a result of the Alternative Alignment will arise from construction, with direct habitat losses restricted to the footprints of the towers, temporary poles, CSE compound and the new sections of permanent access track. The Alternative Alignment has followed the mitigation hierarchy to avoid harm to ecological features through careful site selection and mitigating effects through embedded mitigation and mitigation by design.

5.15.2 Overall, although taking a slightly longer and more northerly route than the Proposed Alignment, the Alternative Alignment would be expected to have similar effects on IEFs as the Proposed Alignment. The Alternative Alignment results in a slightly greater impact on the Flow Country WHS because the OHL route is longer and therefore requires more steel lattice towers (and associated temporary and permanent access tracks) as well as temporary diversions. However, the magnitude of the change in habitat loss is very minor in the context of the vast area of land covered by the WHS designation, and effects to the WHS attributes are concluded to be not significant.

5.16 References

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